



### 1.3 Curriculum Enrichment

#### 1.3.1 Institution integrates crosscutting issues relevant to Professional Ethics, Gender, Human Values, Environment and Sustainability in transacting the Curriculum.

PES's Modern College of Pharmacy, Nigdi (MCOP) offers B. Pharm, M. Pharm and Pharm D programmes. MCOP is permanently affiliated to Savitribai Phule Pune University (SPPU) for B. Pharm and M.Pharm program and follows the curriculum prescribed by it. Institute has taken the initiative by recognizing the significance of cross cutting issues to cultivate and sustain the value of ethics in students of Pharmacy, to increase awareness about gender equality amongst students, to instil the sense of social responsibility and best character in the students, to increase the awareness about sustainability of environment. The achievements of these cross cutting issues are integrated through curricular, co-curricular and extracurricular activities are as given below.

#### Index

Sr No.	Cross cutting issues	Program wise/course wise emphasized the integration of cross cutting issue		
		Curriculum Courses (Summary)	Curricular Contents	Co-curricular and Extra-curricular activities
1	Professional ethics	<a href="#">View Document</a>	<a href="#">View Document</a>	<a href="#">View Document</a>
2	Gender		<a href="#">View Document</a>	<a href="#">View Document</a>
3	Human values		<a href="#">View Document</a>	<a href="#">View Document</a>
4	Environment and Sustainability		<a href="#">View Document</a>	<a href="#">View Document</a>



## Curriculum Courses

1.3.1 Institution integrates crosscutting issues relevant to Professional Ethics, Gender, Human Values, Environment and Sustainability in transacting the Curriculum.

Curriculum Courses Mapping with Cross Cutting Issues							
Sr. no	Course	Name of subject	Subject code	Professional ethics	Gender Equality	Human Values	Environment & Sustainability
1	F. Y. B. Pharm (Sem-I)	Pharmaceutics – I	BP103T	√	-	√	-
2	F. Y. B. Pharm (Sem-I)	Communication Skills	BP105T	-	-	√	-
3	F. Y. B. Pharm (Sem-I)	Remedial Biology	BP106 RBT	-	√	-	-
4	F. Y. B. Pharm (Sem-I)	Human Anatomy and Physiology	BP107P	√	-	-	-
5	F. Y. B. Pharm (Sem-I)	Pharmaceutical Analysis	BP108P	√	-	-	-
6	F. Y. B. Pharm (Sem-I)	Pharmaceutics – I	BP109P	√	-	-	-
7	F. Y. B. Pharm (Sem-I)	Pharmaceutical Inorganic Chemistry	BP110P	√	-	-	-
8	F. Y. B. Pharm (Sem-I)	Remedial Biology	BP112RB P	√	-	-	-
9	F. Y. B. Pharm (Sem-II)	Human Anatomy and Physiology II	BP201T	√	√	-	-
10	F. Y. B. Pharm (Sem-II)	Pathophysiology	BP204T	-	-	-	-



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11	F. Y. B. Pharm (Sem-II)	Computer application in pharmacy	BP205T	√	-	-	-
12	F. Y. B. Pharm (Sem-II)	Environmental Sciences	BP206T	-	-	-	√
13	F. Y. B. Pharm (Sem-II)	Human Anatomy and Physiology	BP207P	√	√	-	-
14	F. Y. B. Pharm (Sem-II)	Pharmaceutical Organic Chemistry-I	BP208P	√	-	-	-
15	F. Y. B. Pharm (Sem-II)	Biochemistry	BP209P	√	-	-	-
16	F. Y. B. Pharm (Sem-II)	Computer Applications in Pharmacy	BP210P	√	-	-	-
17	S. Y. B. Pharm (Sem-III)	Pharmaceutical Engineering	BP304T	-	-	-	√
18	S. Y. B. Pharm (Sem-III)	Pharmaceutical Organic Chemistry - II	BP305P	√	-	-	-
19	S. Y. B. Pharm (Sem-III)	Pharmaceutical Microbiology	BP307P	-	-	-	√
20	S. Y. B. Pharm (Sem-IV)	Pharmacology -I	BP404T	√	-	-	√
21	S. Y. B. Pharm (Sem-IV)	Pharmacognosy and phytochemistry -I	BP405T	√	-	-	√
22	S. Y. B. Pharm (Sem-IV)	Medicinal Chemistry-I	BP406P	√	-	-	-
23	T. Y. B. Pharm (Sem V)	Medicinal Chemistry-II	BP501T	-	√	-	-
24	T. Y. B. Pharm (Sem-V)	Industrial pharmacy-I	BP502T	√	-	-	-
25	T. Y. B. Pharm (Sem-V)	Pharmacology II	BP 503T	√	√	-	√
26	T. Y. B. Pharm (Sem-V)	Pharmaceutical Jurisprudence	BP 505T	√			√



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27	T. Y. B. Pharm (Sem-VI)	Herbal Drug Technology	BP603 T	√	-	-	√
28	T. Y. B. Pharm (Sem-VI)	Biopharmaceutics And Pharmacokinetics	BP604T	√	-	-	-
29	T. Y. B. Pharm (Sem-VI)	Pharmaceutical Biotechnology	BP605T	-	-	-	√
30	T. Y. B. Pharm (Sem-VI)	Pharmaceutical Quality Assurance	BP606 T	√	-	-	√
31	T. Y. B. Pharm (Sem-VI)	Pharmacology-III	BP608P	√	-	-	√
32	T. Y. B. Pharm (Sem-VI)	Herbal Drug Technology	BP609P	√	-	-	-
33	Final Year B. Pharm (Sem-VII)	Instrumental Methods of Analysis	BP701 T	√	-	-	-
34	Final Year B. Pharm (Sem-VII)	Industrial Pharmacy II	BP702 T	√	-	-	-
35	Final Year B. Pharm (Sem-VII)	Pharmacy Practice	BP 703T	√	-	√	-
36	Final Year B. Pharm (Sem-VII)	Instrumental Methods of Analysis	BP705P	√	-	-	-
37	Final Year B. Pharm (Sem-VIII)	Social and Preventive Pharmacy	BP 802T	√	-	√	-
38	Final Year B. Pharm (Sem-VIII)	Pharma Marketing Management	BP803ET	√	-	-	-
39	Final Year B. Pharm (Sem-VIII)	Pharmaceutical Regulatory Science	BP804ET	√	-	√	-
40	Final Year B. Pharm (Sem-VIII)	Pharmacovigilance	BP805ET	√	-	√	-
41	Final Year B. Pharm (Sem-VIII)	Quality Control & Standardization of Herbals	BP806T	√	-	-	-
42	Final Year B. Pharm (Sem-VIII)	Cosmetic Science	BP809ET	√	-	-	-



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43	Final Year B. Pharm (Sem-VIII)	Experimental Pharmacology	BP810ET	√	-	-	-
44	Final Year B. Pharm (Sem-VIII)	Dietary Supplements and Nutraceuticals	BP812ET	√	√	√	-
45	F. Y. M. Pharm (MPH)	Modern Pharmaceutics	MPH103T	√	-	-	-
46	F. Y. M. Pharm (MPH)	Regulatory Affair	MPH104T	√	-	-	-
47	F. Y. M. Pharm (MPH)	Pharmaceutics Practicals -II	MPH205P	√	-	-	-
48	F. Y. M. Pharm (MPC)	Pharmaceutical Chemistry Practical-I	MPC105P	√	-	-	-
49	F. Y. M. Pharm (MPC)	Advanced Spectral Analysis	MPC201T	√	-	-	-
50	F. Y. M. Pharm (MPC)	Pharmaceutical Chemistry Practical-II	MPC205P	√	-	-	-
51	F. Y. M. Pharm (MQA)	Quality Assurance Practical-I	MQA105 P	√	-	-	-
52	F. Y. M. Pharm (MQA)	Hazards and Safety Management	MQA201 T	√	-	√	√
53	F. Y. M. Pharm (MQA)	Quality Assurance Practical-II	MQA205 P	√	-	-	-
54	F. Y. M. Pharm (MPL)	Pharmacological and Toxicological Screening Methods-I	MPL103T	√	-	-	√
55	F. Y. M. Pharm (MPL)	Pharmacological Practical -I	MPL105P	√	-	-	-
56	F. Y. M. Pharm (MPL)	Pharmacological and Toxicological Screening Methods-II	MPL202T	√	√	-	-
57	F. Y. M. Pharm (MPL)	Clinical Research and Pharmacovigilance	MPL204T	√		-	-
58	F. Y. M. Pharm (MPA)	Pharmaceutical Validation		√		-	-



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59	F. Y. M. Pharm (MPA)	Pharmaceutical Analysis Practicals -II	MPA105P	√	-	-	-
60	F. Y. M. Pharm (MPA)	Quality Control and Quality Assurance	MPA203T	√	-	-	-
61	F. Y. M. Pharm (MPA)	Pharmaceutical Analysis Practicals -I	MPA205P	√	-	-	-
62	F. Y. M. Pharm (MPG)	Industrial Pharmacognostical Technology	MPG104T	√	-	-	-
63	F. Y. M. Pharm (MIP)	Intellectual Property Rights	MIP104T	√	-	-	-
64	F. Y. M. Pharm (MIP)	Industrial Pharmacy Practical -I	MIP105P	√	-	-	-
65	F. Y. M. Pharm (MPP)	Clinical Pharmacy Practice	MPP101T	√	-	√	-
66	F. Y. M. Pharm (MPP)	Clinical Research	MPP104T	√	-	√	-
67	F. Y. M. Pharm (MPP)	Principles of quality use of medicines	MPP201T	√	√	√	-
68	F. Y. M. Pharm (MPP)	Pharmacy Practice Practicals-II	MPP205P	√	-	-	-
69	F. Y. M. Pharm (MRA)	Clinical Research Regulations	MRA103 T	√	-	-	-
70	F. Y. M. Pharm (MRA)	Regulations And Legislation for Drugs & Cosmetics, Medical Devices, Biologicals & Herbals, And Food & Nutraceuticals In India And Intellectual Property Rights	MRA104 T	√	-	-	-
71	F. Y. Pharm. D.	Human Anatomy and Physiology(Practical)	1.1	√			-



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72	F. Y. Pharm. D.	Pharmaceutics (Practical)	1.2	√	-	-	-
73	F. Y. Pharm. D.	Medicinal Biochemistry (Practical)	1.3	√	-	-	-
74	F. Y. Pharm. D.	Pharmaceutical Organic Chemistry (Practical)	1.4	√	-	-	-
75	F. Y. Pharm. D.	Pharmaceutical Inorganic Chemistry (Practical)	1.5	√	-	-	-
76	S. Y. Pharm. D.	Pharmaceutical Microbiology (Practical)	2.2	√	-	-	-
77	S. Y. Pharm. D.	Pharmacognosy & Phytopharmaceuticals (Practical)	2.3	√	-	-	-
78	S. Y. Pharm. D.	Pharmacognosy & Phytopharmaceuticals (Theory)	2.3	-	-	-	√
79	S. Y. Pharm. D.	Community Pharmacy	2.5	√	-	√	-
80	T. Y. Pharm. D.	Pharmacology -II (Practical)	3.1	√	-	-	-
81	T. Y. Pharm. D.	Pharmaceutical Analysis (Practical)	3.2	√	-	-	-
82	T. Y. Pharm. D.	Pharmaceutical Jurisprudence (Theory)	3.4	√	-	-	√
83	T. Y. Pharm. D.	Pharmaceutical Formulations (Practical)	3.6	√	-	-	-
84	Forth Y. Pharm. D.	Hospital Pharmacy (Theory)	4.2	√	-	√	-
85	Forth Y. Pharm. D.	Clinical Pharmacy (Theory)	4.3	√	-	√	-
86	Fifth Y. Pharm. D.	Clinical Research (Theory)		√	-	-	-






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## Curriculum Content - Professional Ethics

	<p>Progressive Education Society's <b>MODERN COLLEGE OF PHARMACY</b> Accredited by NAAC &amp; NBA DST FIST Funded College 'Best College Award' by Savitribai Phule Pune University</p>	
<p>Approved by All India Council for Technical Education, New Delhi, Pharmacy Council of India, New Delhi, Directorate of Technical Education, Mumbai (MS), Permanently affiliated to Savitribai Phule Pune University, Pune &amp; Approved under Section (2 f) &amp; 12 (B) of UGC Act, 1956</p>		
<p>Sector No. 21, Yamunanagar, Nigdi, Pune - 411 044, (M.S.) Tel. : 020-27661314 / 15 E-mail : mcpnigdi44@gmail.com Website : www.mcop.org.in</p>		
<p>Prof. Dr. P. D. Chaudhari M.Pharm., Ph.D. Principal</p>		<p>Prof. Dr. Gajanan R. Ekbote M.S., M.N.A.M.S. Chairman, Business Council P.E.Society, Pune</p>
Ref :		Date :
<div style="text-align: center;"><h1>Professional Ethics</h1></div>		
<p>STRIVING TOWARDS EXCELLENCE FOREVER</p>		



BP103T. PHARMACEUTICS- I (Theory)

45 Hours

**Scope:** This course is designed to impart a fundamental knowledge on the preparatory pharmacy with arts and science of preparing the different conventional dosage forms.

**Objectives:** Upon completion of this course the student should be able to:

- Know the history of profession of pharmacy
- Understand the basics of different dosage forms, pharmaceutical incompatibilities and pharmaceutical calculations
- Understand the professional way of handling the prescription
- Preparation of various conventional dosage forms

**Course Content:**

**UNIT – I**

10 Hours

- **Historical background and development of profession of pharmacy:** History of profession of Pharmacy in India in relation to pharmacy education, industry and organization, Pharmacy as a career.
- **Dosage forms:** Introduction to dosage forms, classification and definitions
- **Prescription:** Definition, Parts of prescription, handling of Prescription and Errors in prescription.
- **Posology:** Definition, Factors affecting posology. Pediatric dose calculations based on age, body weight and body surface area.

**UNIT – II**

10 Hours

- **Pharmaceutical calculations:** Weights and measures – Imperial & Metric system, Calculations involving percentage solutions, alligation, proof spirit and isotonic solutions based on freezing point and molecular weight.
- **Powders:** Definition, classification, advantages and disadvantages, Simple & compound powders – official preparations, dusting powders, effervescent, efflorescent and hygroscopic powders, eutectic mixtures. Geometric dilutions.
- **Liquid dosage forms:** Advantages and disadvantages of liquid dosage forms. Excipients used in formulation of liquid dosage forms. Solubility enhancement techniques



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UNIT – III

10 Hours

- **Monophasic liquids:** Definitions and preparations of Gargles, Mouthwashes, Throat Paint, Eardrops, Nasal drops, Enemas, Syrups, Elixirs, Liniments and Lotions.
- **Biphasic liquids:**  
**Suspensions:** Definition, advantages and disadvantages, classifications, Preparation of suspensions; Flocculated and Deflocculated suspension & stability problems and methods to overcome.  
**Emulsions:** Definition, classification, emulsifying agent, test for the identification of type of Emulsion, Methods of preparation & stability problems and methods to overcome.

UNIT – IV

08 Hours

- **Suppositories:** Definition, types, advantages and disadvantages, types of bases, methods of preparations, Displacement value & its calculations, evaluation of suppositories.
- **Pharmaceutical incompatibilities:** Definition, classification, physical, chemical and therapeutic incompatibilities with examples.

UNIT – V

07 Hours

- **Semisolid dosage forms:** Definitions, classification, mechanisms and factors influencing dermal penetration of drugs. Preparation of ointments, pastes, creams and gels. Excipients used in semi solid dosage forms. Evaluation of semi solid dosage forms



  
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**BP107P. HUMAN ANATOMY AND PHYSIOLOGY (Practical)**

**4 Hours/week**

Practical physiology is complimentary to the theoretical discussions in physiology. Practicals allow the verification of physiological processes discussed in theory classes through experiments on living tissue, intact animals or normal human beings. This is helpful for developing an insight on the subject.

1. Study of compound microscope.
2. Microscopic study of epithelial and connective tissue
3. Microscopic study of muscular and nervous tissue
4. Identification of axial bones
5. Identification of appendicular bones
6. Introduction to haemocytometer.
7. Enumeration of white blood cell (WBC) count
8. Enumeration of total red blood corpuscles (RBC) count
9. Determination of bleeding time
10. Determination of clotting time
11. Estimation of haemoglobin content
12. Determination of blood group.
13. Determination of erythrocyte sedimentation rate (ESR).
14. Determination of heart rate and pulse rate.
15. Recording of blood pressure.
16. Visit to Blood bank.

**Recommended Books:**

1. Godkar P.B and Godkar D.P., Textbook of Medical Laboratory Technology. Bhalani Publishing House, Mumbai.
2. Joshi V.D. Practical Physiology. Vora Medical Publications, Mumbai.
3. DiFiore-Mariano S.H., Atlas of Human Histology. Lea and Febiger, Philadelphia.



  
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**BP108P. PHARMACEUTICAL ANALYSIS (Practical)**

**4 Hours/week**

**I. Preparation and standardization of**

- (1) Aq. Sodium Hydroxide I. P.
- (2) Aq. Sulphuric Acid I. P./ Aq. Hydrochloric Acid I. P.
- (3) Aq. Sodium Thiosulfate I. P.
- (4) Aq. Potassium Permanganate I. P.
- (5) Aq. Ceriic Ammonium Sulphate I. P.

**3 turns**

**II. Assay of the following compounds along with Standardization of Titrant**

- (1) Ammonium chloride by acid-base titration
- (2) Sodium benzoate I. P. by non-aqueous titration
- (3) Sodium chloride I. P. by precipitation titration
- (4) Calcium gluconate I. P. by complexometry
- (5) Hydrogen peroxide I. P./B. P. by Permanganometry
- (6) Ferrous sulphate I. P. by cerimetry
- (7) Copper sulphate I. P. by iodometry

**8 turns**

**III. Determination of Normality by electro-analytical methods**

- (1) Conductometric titrations of strong acid against strong base
- (2) Conductometric titration of strong acid and weak acid against strong base
- (3) Potentiometric titration of strong acid against strong base (Using Sigmoidal and First order derivative plot)

**3 turns**

**IV. Measurement of refractive index of some samples**

- (Glycerol, Water, Rectified Spirit, Castor Oil I. P.)

**1 turn**



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**BP109P. PHARMACEUTICS I (Practical)**

**4 Hours / week**

**1. Syrups**

- a) Syrup IP'66
- b) Compound syrup of Ferrous Phosphate BPC'68

**2. Elixirs**

- a) Piperazine citrate elixir
- b) Paracetamol pediatric elixir

**3. Linctus**

- a) Terpin Hydrate Linctus IP'66
- b) Iodine Throat Paint (Mandles Paint)

**4. Solutions**

- a) Strong solution of ammonium acetate
- b) Cresol with soap solution
- c) Lugol's SOLUTION

**5. Suspensions (Any two experiments)**

- a) Calamine lotion
- b) Magnesium Hydroxide mixture
- c) Aluminium Hydroxide gel

**6. Emulsions**

- a) Turpentine Liniment
- b) Liquid paraffin emulsion

**7. Powders and Granules (Any three experiments)**

- a) ORS powder (WHO)
- b) Effervescent granules
- c) Dusting powder
- d) Divided powders

**8. Suppositories (Any two experiments)**

- a) Glycero gelatin suppository
- b) Cocoa butter suppository
- c) Zinc Oxide suppository

**8. Semisolids (Any two experiments)**

- a) Sulphur ointment
- b) Non staining-iodine ointment with methyl salicylate
- c) Carbopol gel



  
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#### 9. Gargles and Mouthwashes

- a) Iodine gargle
- b) Chlorhexidine mouthwash

#### Recommended Books:

1. H.C. Ansel et al., Pharmaceutical Dosage Form and Drug Delivery System, Lippincott Williams and Walkins, New Delhi.
2. Carter S.J., Cooper and Gunn's-Dispensing for Pharmaceutical Students, CBS publishers, New Delhi.
3. M.E. Aulton, Pharmaceutics, The Science & Dosage Form Design, Churchill Livingstone, Edinburgh.
4. Indian pharmacopoeia.
5. British pharmacopoeia.
6. Lachmann, Theory and Practice of Industrial Pharmacy, Lea & Febiger Publisher, The University of Michigan.
7. Alfonso R. Gennaro Remington. The Science and Practice of Pharmacy, Lippincott Williams, New Delhi.
8. Carter S.J., Cooper and Gunn's. Tutorial Pharmacy, CBS Publications, New Delhi.
9. E.A. Rawlins, Bentley's Text Book of Pharmaceutics, English Language Book Society, Elsevier Health Sciences, USA.
10. Isaac Ghebre Sellassie: Pharmaceutical Pelletization Technology, Marcel Dekker, INC, New York.
11. Dilip M. Parikh: Handbook of Pharmaceutical Granulation Technology, Marcel Dekker, INC, New York.
12. Francoise Nieloud and Gilberte Marti-Mestres: Pharmaceutical Emulsions and Suspensions, Marcel Dekker, INC, New York.



  
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**BP110P. PHARMACEUTICAL INORGANIC CHEMISTRY (Practical)**  
**4 Hours/Week**

- I. Limit Test of the following:**  
(1) Chloride (2) Sulphate (3) Iron (4) Arsenic (5) Lead (6) Heavy metals **6 turns**
- II. Identification test**  
(1) Magnesium hydroxide (2) Ferrous sulphate (3) Sodium bicarbonate (4) Calcium gluconate (5) Copper sulphate **3 turns**
- III. Test for purity**  
(1) Swelling power of Bentonite  
(2) Neutralizing capacity of Aluminum hydroxide gel **3 turns**  
(3) Determination of Potassium iodate and iodine in Potassium Iodide
- IV. Preparation of Inorganic Pharmaceuticals**  
(1) Boric acid (2) Potash alum (3) Ferrous sulphate **3 turns**

**Recommended Books**

1. Beckett, A.H. and Stenlake, J. B. 1970, Practical Pharmaceutical Chemistry, Vol I & II, 4<sup>th</sup> edn, Stahlone Press of University of London.
2. Jeffery, G. H., Bassett, J., Mendham, J. and Cdenney, R., Vogel's Textbook of Quantitative Chemical Analysis, 5<sup>th</sup> edn, Thames Polytechnic, Longman Group, UK Ltd, London.
3. Gundu Rao, P. 2008, Pharmaceutical and Medicinal Inorganic Chemistry, Vallabh Prakashan.
4. Bentley, A.O., Driver, J.E. and Atherden, L.M. 1969, Bentley and Driver's Textbook of Pharmaceutical Chemistry, Oxford University Press, London.
5. Anand, S.K. and Chatwal, G.R. 2017, Inorganic Pharmaceutical Chemistry, Himalaya Publishing House Pvt Ltd.
6. Block, J.H., Roche, E.B., Soine, T.O and Wilson, C.O. 1974, Inorganic Medicinal and Pharmaceutical Chemistry, Philadelphia, PA.
7. Indian Pharmacopoeia, Ministry of Health and Family Welfare, Controller of Publications Edition, New Delhi.



  
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**BP112RBP.REMEDIAL BIOLOGY (Practical)**  
**2 Hours/week**

1. Introduction to experiments in biology
  - a) Study of Microscope
  - b) Section cutting techniques
  - c) Mounting and staining
  - d) Permanent slide preparation
2. Study of cell and its inclusions
3. Study of Stem, Root, Leaf, seed, fruit, flower and their modifications
4. Detailed study of frog by using computer models
5. Microscopic study and identification of tissues pertinent to Stem, Root Leaf, seed, fruit and flower
6. Identification of bones
7. Determination of blood group
8. Determination of blood pressure
9. Determination of tidal volume

**Reference Books**

1. Practical human anatomy and physiology. by S.R.Kale and R.R.Kale.
2. A Manual of pharmaceutical biology practical by S.B.Gokhale, C.K.Kokate and S.P.Shriwastava.
3. Biology practical manual according to National core curriculum .Biology forum of Karnataka. Prof .M.J.H.Shafi



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**BP 201T. HUMAN ANATOMY AND PHYSIOLOGY-II (Theory) 45 Hours**

**Scope:** This subject is designed to impart fundamental knowledge on the structure and functions of the various systems of the human body. It also helps in understanding both homeostatic mechanisms. The subject provides the basic knowledge required to understand the various disciplines of pharmacy.

**Objectives:** Upon completion of this course the student should be able to:

1. Explain the gross morphology, structure and functions of various organs of the human body.
2. Describe the various homeostatic mechanisms and their imbalances.
3. Identify the various tissues and organs of different systems of human body.
4. Perform the hematological tests like blood cell counts, haemoglobin estimation, bleeding/clotting time etc. and also **record blood pressure, heart rate, pulse and respiratory volume.**
5. Appreciate coordinated working pattern of different organs of each system
6. Appreciate the interlinked mechanisms in the maintenance of normal functioning (homeostasis) of human body.



**Course Content:**

<b>Unit-I</b>	<b>Nervous system</b>	<b>10 hours</b>
	Organization of nervous system, neuron, neuroglia, classification and properties of nerve fiber, electrophysiology, action potential, nerve impulse, receptors, synapse, neurotransmitters. Central nervous system: Meninges, ventricles of brain and cerebrospinal fluid, structure and functions of brain (cerebrum, brain stem, cerebellum), spinal cord (gross structure, functions of afferent and efferent nerve tracts, reflex activity)	
<b>Unit -II</b>	<b>Digestive system</b>	<b>08hours</b>
	Anatomy of GI Tract with special reference to anatomy and functions of stomach, ( Acid production in the stomach, regulation of acid production through parasympathetic nervous system, pepsin role in protein digestion) small intestine and large intestine, anatomy and functions of salivary glands, pancreas and liver, movements of GIT, digestion and absorption of nutrients and disorders of GIT. <b>Energetics:</b> Formation and role of ATP, Creatinine Phosphate and BMR.	
<b>Unit-III</b>	<b>Respiratory system</b>	<b>10 hours</b>
	Anatomy of respiratory system with special reference to anatomy of lungs, mechanism of respiration, regulation of respiration Lung Volumes	<b>6 hours</b>



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	and capacities transport of respiratory gases, artificial respiration, and resuscitation methods.	
	<b>Urinary system</b>	4 hours
	Anatomy of urinary tract with special reference to anatomy of kidney and nephrons, functions of kidney and urinary tract, physiology of urine formation, micturition reflex and role of kidneys in acid base balance, role of RAS in kidney and disorders of kidney.	
<b>Unit-IV</b>		08 hours
	<b>Endocrine system</b>	
	Classification of hormones, mechanism of hormone action, structure and functions of pituitary gland, thyroid gland, parathyroid gland, adrenal gland, pancreas, pineal gland, thymus and their disorders.	
<b>Unit-V</b>		09 hours
	<b>Reproductive system</b>	07 Hours
	Anatomy of male and female reproductive system, Functions of male and female reproductive system, sex hormones, physiology of menstruation, fertilization, spermatogenesis, oogenesis, pregnancy and parturition	
	<b>Introduction to genetics</b>	02 hours
	Chromosomes, genes and DNA, protein synthesis, genetic pattern of inheritance	
<b>Recommended Books</b>		
1. Essentials of Medical Physiology by K. Sembulingam and P. Sembulingam. Jaypee brothers medical publishers, New Delhi.		
2. Anatomy and Physiology in Health and Illness by Kathleen J.W. Wilson, Churchill Livingstone, New York		
3. Physiological basis of Medical Practice-Best and Taylor. Williams & Wilkins Co, Riverview, MI USA		
4. Text book of Medical Physiology- Arthur C. Guyton and John.E. Hall, Miamisburg, OH, U.S.A.		
5. Principles of Anatomy and Physiology by Tortora Grabowski. Palmetto, GA, U.S.A.		
6. Textbook of Human Histology by Inderbir Singh, Jaypee brothers medical publishers, New Delhi.		
7. Textbook of Practical Physiology by C.L. Ghai, Jaypee brothers medical publishers, New Delhi.		
8. Practical workbook of Human Physiology by K. Srinageswari and Rajeev Sharma, Jaypee brother's medical publishers, New Delhi.		
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**BP 204T. PATHOPHYSIOLOGY (THEORY)****45Hours**

**Scope:** Pathophysiology is the study of causes of diseases and reactions of the body to such disease producing causes. This course is designed to impart a thorough knowledge of the relevant aspects of pathology of various conditions with reference to its pharmacological applications, and understanding of basic pathophysiological mechanisms. Hence it will not only help to study the syllabus of pathology, but also to get baseline knowledge required to **practice medicine safely, confidently, rationally and effectively.** Pharmacotherapy of drugs is particularly not to be considered as a part of this subject from examination point of view as the subject deals with pathophysiological aspects of the diseases.

**Objectives:** Upon completion of the subject, student shall be able to –

1. Describe the etiology and pathogenesis of the selected disease states;
2. Name the signs and symptoms of the diseases

<b>Unit-I</b>	<b>Basic principles of Cell injury and Adaptation</b> Introduction & definitions Causes of cellular injury, Pathogenesis (Cell membrane damage, Mitochondrial damage, Ribosome damage, Nuclear damage), Morphology of cell injury – Adaptive changes (Atrophy, Hypertrophy, Hyperplasia, Metaplasia, Dysplasia), Cell swelling, Intracellular accumulation, Calcification, Enzyme leakage and cell death, acidosis and alkalosis, Electrolyte imbalance <b>Basic mechanism involved in the process of inflammation and repair</b> Introduction, Clinical signs of inflammation, Different types of Inflammation, Mechanism of Inflammation – Alteration in vascular permeability and blood flow, migration of WBC's, Mediators of inflammation, Basic principles of wound healing in the skin	<b>10 Hrs</b>
<b>Unit-II</b>	<b>Cardiovascular System:</b> Hypertension, Congestive heart failure, Ischemic heart diseases (angina, myocardial infarction, atherosclerosis and arteriosclerosis) <b>Respiratory system:</b> Asthma, Chronic obstructive airway diseases <b>Renal system:</b> Acute and chronic renal failure	<b>10 Hrs</b>
<b>Unit-III</b>	<b>Haematological Diseases:</b> Iron deficiency anaemia, Megaloblastic anaemia (Vit B12 and folic acid), Sickle cell anemia, Thalassemia, Hereditary acquired anemia, Hemophilia <b>Endocrine system:</b> Diabetes, Thyroid diseases (Hypothyroidism, hyperthyroidism, Goitre) Disorders of sex hormones (Amenorrhoea, polycystic ovarian syndrome, hypogonadism) <b>Nervous system:</b>	<b>12 Hrs</b>



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	Epilepsy, Parkinson's disease, Stroke, Psychiatric disorders: Depression, Schizophrenia and Alzheimer's disease	
	<b>Gastrointestinal system:</b>	
	Peptic Ulcer, Inflammatory Bowel Diseases, Jaundice, Hepatitis (A,B,C,D,E,F), Alcoholic liver disease	
<b>Unit-IV</b>	<b>Diseases of bones and joints</b>	<b>06 Hrs</b>
	Rheumatoid Arthritis, Osteoporosis, Gout	
	<b>Cancer:</b> Classification, etiology and pathogenesis of cancer	
<b>Unit-V</b>	<b>Infectious diseases</b>	<b>07 Hrs</b>
	Tuberculosis, Leprosy, Malaria, Dengue, Meningitis, Typhoid, Urinary tract infections	
	<b>Sexually transmitted diseases</b>	
	AIDS, Syphilis, Gonorrhea	

**REFERENCES:**

1. Vinay Kumar, Abul K. Abas, Jon C. Aster; Robbins & Cotran Pathologic Basis of Disease; South Asia edition; India; Elsevier; 2014.
2. Harsh Mohan; Text book of Pathology; 6<sup>th</sup> edition; India; Jaypee Publications; 2010.
3. Laurence B, Bruce C, Bjorn K. ; Goodman Gilman's The Pharmacological Basis of Therapeutics; 12<sup>th</sup> edition; New York; McGraw-Hill; 2011.
4. Best, Charles Herbert 1899-1978; Taylor, Norman Burke 1885-1972; West, John B (John Burnard); Best and Taylor's Physiological basis of medical practice; 12<sup>th</sup> ed; united states.
5. William and Wilkins, Baltimore; 1991 [1990 printing].
6. Nicki R. Colledge, Brian R. Walker, Stuart H. Ralston; Davidson's Principles and Practice of Medicine; 21<sup>st</sup> edition; London; ELBS/Churchill Livingstone; 2010.
7. Guyton A, John .E Hall; Textbook of Medical Physiology; 12<sup>th</sup> edition; WB Saunders Company; 2010.
8. Joseph DiPiro, Robert L. Talbert, Gary Yee, Barbara Wells, L. Michael Posey; Pharmacotherapy: A Pathophysiological Approach; 9<sup>th</sup> edition; London; McGraw-Hill Medical; 2014.
9. V. Kumar, R. S. Cotran and S. L. Robbins; Basic Pathology; 6<sup>th</sup> edition; Philadelphia; WB Saunders Company; 1997.
10. Roger Walker, Clive Edwards; Clinical Pharmacy and Therapeutics; 3<sup>rd</sup> edition; London; Churchill Livingstone publication; 2003.



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9. Physiological basis of Medical Practice-Best and Taylor. Williams & Wilkins Co, Riverview, MI USA
10. Text book of Medical Physiology- Arthur C. Guyton and John. E. Hall. Miamisburg, OH, U.S.A.
11. Human Physiology (vol 1 and 2) by Dr. C.C. Chatterje, Academic Publishers Kolkata

**BP 207 P. HUMAN ANATOMY AND PHYSIOLOGY (Practical)**


**4 Hours/week**

Practical physiology is complimentary to the theoretical discussions in physiology. Practicals allow the verification of physiological processes discussed in theory classes through experiments on living tissue, intact animals or normal human beings. This is helpful for developing an insight on the subject.

1. To study the integumentary and special senses using specimen, models, etc.,
2. To determine the Platelet count.
3. To perform the differential leukocyte count (DLC).
4. To determine the Armeth index.
5. Determination of osmotic fragility of RBCs.
6. To study the nervous system using specimen, models, etc.,
7. To study the endocrine system using specimen, models, etc
8. To demonstrate the general neurological examination
9. To demonstrate the function of olfactory nerve
10. To examine the different types of taste.
11. To demonstrate the visual acuity
12. To demonstrate the reflex activity
13. Recording of body temperature
14. To demonstrate positive and negative feedback mechanism.
15. Determination of tidal volume and vital capacity.
16. Study of Digestive, respiratory, cardiovascular systems, urinary and reproductive systems with the help of models, charts and specimens.
17. Recording of basal mass index.
18. Study of familyplanning devices and pregnancy diagnosis test.

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19. Demonstration of total blood count by cell analyzer.

20. Permanent slides of vital organs and gonads.

21. Visit to Hospital/ Pathology Laboratory.

**Recommended Books:**

1. Godkar P.B and Godkar D.P., Textbook of Medical Laboratory Technology. Bhalani Publishing House, Mumbai.
2. Joshi V.D. Practical Physiology. Vora Medical Publications, Mumbai.
3. DiFiore-Mariano S.H., Atlas of Human Histology. Lea and Febiger, Philadelphia.
4. Mukherjee, K.L., Medical Laboratory Technology. Tata McGraw Hill Publishing Company Ltd. New Delhi.
5. Beck, W.S., Human Design: Molecular, Cellular and Systemic Physiology. Harcourt Brace Jovanovich Inc. New York.
6. Chatterjee, C.C., Human Physiology. Medical Allied Agency, Kolkata.
7. Ganong, W.F., Review of Medical Physiology. Prentice-Hall International, London.
8. Guyton, A.C., Textbook of Medical Physiology. W. B. Saunders Co., Philadelphia, USA.
9. Tortora, G.J. and Grabowski, S.R., 2005.
10. Principles of Anatomy and Physiology. Harper Collins College Publishers, New York.
11. Vander, A.J., Sherman, J.H. and Luciano, D.S., Human Physiology. McGraw-Hill Publishing Co., USA.
12. Garg K., Bahel I. and Kaul M., A Textbook of Histology. CBS Publishers and Distributors, New Delhi.
13. Practical workbook of Human Physiology by K. Srinageswari and Rajeev Sharma, Jaypee Brother's medical publishers, New Delhi.



  
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**BP208P. PHARMACEUTICAL ORGANIC CHEMISTRY – I (Practical)**  
**4 Hours/Week**

- |   |                |
|---|----------------|
| <b>I. Safety measures in an organic laboratory.</b>   | <b>1 turn</b>  |
| <b>II. Introduction to laboratory techniques:</b> Calibration of thermometer, melting point, boiling point, distillation, and crystallization.  | <b>3 turns</b> |
| <b>III. Systematic qualitative analysis of unknown organic compounds (min 05)</b>   | <b>8 turns</b> |
| 1. Preliminary test: color, odour, aliphatic/aromatic compounds, saturation and unsaturation, etc.  |                |
| 2. Detection of elements like nitrogen, sulphur and halogen by Lassaigne's test.  |                |
| 3. Solubility test  |                |
| 4. Functional group test like phenols, amides, carbohydrates, amines, carboxylic acids, aldehydes and ketones, alcohols, esters, aromatic and halogenated hydrocarbons, nitro compounds and anilides. |                |
| 5. Melting point/Boiling point of organic compounds.  |                |
| 6. Identification of the unknown compound from the literature using melting point/ boiling point.   |                |
| <b>IV. Preparation of suitable solid derivatives from organic compounds</b>   | <b>2 turns</b> |
| <b>V. Building of molecular models of structures containing various functional groups</b>   | <b>1 turns</b> |

**Recommended Books**

1. Morrison, R. T. & Boyd, R. D., Textbook of Organic Chemistry, VI (ed.) ELBS, London, 1996
2. Pine, S. H, Organic Chemistry, V, Tata McGraw Hill, New Delhi, 2007
3. Finar, I. L., Organic Chemistry Vol. I, V (ed.), ELBS, Pearson Education, New Delhi, 2003
4. Finar, I. L., Organic Chemistry Vol. II, V (ed.), ELBS, Pearson Education, New Delhi, 2003
5. Eliel, E. L., "Stereochemistry of Carbon Compounds", Wiley-Interscience, 1994.



  
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**BP 209 P. BIOCHEMISTRY (Practical)**

**4 Hours / week**

- |  |         |
|--|---------|
| 1. Qualitative analysis of carbohydrates (Glucose, Fructose, Lactose, Maltose, Sucrose and Starch) | 3 turns |
| 2. Identification tests for amino acids (any one aromatic and one aliphatic)                       | 1 turn  |
| 3. Identification tests for proteins (albumin and casein)  | 1 turn  |
| 4. Qualitative analysis of urine for abnormal constituents (at least four abnormal constituents)   | 2 turns |
| 5. Determination of blood creatinine   | 1 turn  |
| 6. Determination of blood sugar by Folin-Wu method/Glucose-oxidase method                          | 1 turn  |
| 7. Determination of serum total cholesterol  | 1 turn  |
| 8. Preparation of buffer solution and measurement of pH (any two).                                 | 1 turn  |
| 9. Quantitative analysis of reducing sugars (DNSA method) and Proteins (Biuret method).            | 1 turn  |
| 10. Determination of salivary amylase activity.  | 1 turn  |
| 11. Study the effect of temperature on salivary amylase activity.                                  | 1 turn  |
| 12. Study the effect of substrate concentration on salivary amylase activity.                      | 1 turn  |

**Recommended Books**

1. David Nelson and Cox M. M., Lehninger's Principles of Biochemistry, 4/Ed., Palgrave Macmillan.
2. Robert K. Murry, Daryl K., Granner and Victor W. Rodwell, Harper's Biochemistry, 27/Ed, McGraw Hill.
3. Lubert Stryer, W.H., Freeman & Company, Biochemistry, New York
4. U. Satyanarayana & U. Chakrapani, Biochemistry, 3/Ed., Books & Allied (P) Ltd.
5. Rao, A. V. S. S. Rama Rao, Textbook of Biochemistry, first edition, UBS Publishers' Distributors Pvt. Ltd.
6. Deb, A. C. Viva & Practical Biochemistry, 3/Ed., New Central Book Agency (P) Ltd.
7. Conn Eric. E. and Stumpf, Paul K. et al., Outlines of Biochemistry, Wiley student edition.
8. Gupta R. C. and Bhargavan, S. Practical Biochemistry, 5/Ed, CBS publishers and distributors.
9. David T. Plummer, Introduction of Practical Biochemistry, 3/Ed, Tata McGraw-Hill Education Pvt. Ltd.
10. Rajagopal and Ramakrishna, Practical Biochemistry for Medical students, Orient BlackSwan (1983)
11. Harold Varley, Varley's Practical Clinical Biochemistry, 6/Ed., CBS Publishers, New Delhi.
12. David T. Plummer, Introduction to Practical Biochemistry, III (ed.), McGraw-Hill Publishing Co., New York, 1987.
13. Alan H. Gowenlock, Varley's Practical Clinical Biochemistry, VI (ed.), Butterworth-Heinemann Ltd., UK & CBS Publication, New Delhi, 2002.



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**BP210P. COMPUTER APPLICATIONS IN PHARMACY (Practical)**

1. Design a questionnaire using a word processing package to gather information about a particular disease.
2. Create a HTML web page to show personal information.
- 3 Retrieve the information of a drug and its adverse effects using online tools
- 4 Creating mailing labels Using Label Wizard , generating label in MS WORD
- 5 Create a database in MS Access to store the patient information with the required fields Using access
6. Design a form in MS Access to view, add, delete and modify the patient record in the database
7. Generating report and printing the report from patient database
8. Creating invoice table using – MS Access
9. Drug information storage and retrieval using MS Access
10. Creating and working with queries in MS Access
11. Exporting Tables, Queries, Forms and Reports to web pages
12. Exporting Tables, Queries, Forms and Reports to XML pages

**Recommended books :**

1. Computer Application in Pharmacy – William E.Fassett –Lea and Febiger, 600 South Washington Square, USA, (215) 922-1330.
2. Computer Application in Pharmaceutical Research and Development –Sean Ekins – Wiley-Interscience, A John Wiley and Sons, INC., Publication, USA
3. Bioinformatics (Concept, Skills and Applications) – S.C.Rastogi-CBS Publishers and Distributors, 4596/1- A, 11 Darya Gani, New Delhi – 110 002(INDIA)
4. Microsoft office Access - 2003, Application Development Using VBA, SQL Server, DAP and Infopath – Cary N.Prague – Wiley Dreamtech India (P) Ltd., 4435/7, Ansari Road, Daryagani, New Delhi – 110002



  
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**BP 405 T.PHARMACOGNOSY AND PHYTOCHEMISTRY I (Theory) - 45 Hours**

**Scope:** The subject involves the fundamentals of Pharmacognosy like scope, classification of crude drugs, their identification and evaluation, phytochemicals present in them and their medicinal properties.

**Objectives:** Upon completion of the course, the student shall be able

1. to know the techniques in the cultivation and production of crude drugs
2. to know the crude drugs, their uses and chemical nature
3. know the evaluation techniques for the herbal drugs
4. to carry out the microscopic and morphological evaluation of crude drugs

**Course Content:**

**UNIT-I**

**10 Hours**

**Introduction to Pharmacognosy:**

- (a) Definition, history, scope and development of Pharmacognosy
- (b) Sources of Drugs – Plants, Animals, Marine & Tissue culture
- (c) Organized drugs, unorganized drugs (dried latex, dried juices, dried extracts, gums and mucilages, oleoresins and oleo- gum-resins).

**Classification of drugs:**

Alphabetical, morphological, taxonomical, chemical, pharmacological, chemo and sero taxonomical classification of drugs

**Quality control of Drugs of Natural Origin:**

- Adulteration of drugs of natural origin. Evaluation by organoleptic, microscopic, physical, chemical and biological methods and properties.
- Quantitative microscopy of crude drugs including lycopodium spore method, leaf constants, camera lucida and diagrams of microscopic objects to scale with camera lucida.



  
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**UNIT-II**

**10 Hours**

**Cultivation, Collection, Processing and storage of drugs of natural origin:**

- Cultivation and Collection of drugs of natural origin
- Factors influencing cultivation of medicinal plants.
- Plant hormones and their applications.
- Polyploidy, mutation and hybridization with reference to medicinal plants

**Conservation of medicinal plants**

**UNIT-III**

**07 Hours**

**Plant tissue culture:**

- Historical development of plant tissue culture, types of cultures, Nutritional requirements, growth and their maintenance.
- Applications of plant tissue culture in pharmacognosy.
- Edible vaccines

**UNIT-IV**

**10 Hours**

**Plant description, morphology and anatomy:**

Leaves, Roots, Barks, Wood, Flowers, Fruits, Seeds, subterranean organs

**Introduction to secondary metabolites:**

Definition, classification, properties and test for identification of Alkaloids, Glycosides, Flavonoids, Tannins, Volatile oil and Resins

**UNIT-V**

**08 Hours**

Study of biological source, chemical nature and uses of drugs of natural origin containing following drugs

**Plant Products:**

- Fibers - Cotton, Jute, Hemp
- Hallucinogens, Teratogens, Natural allergens



  
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4. Tekade AR, Pande VV, Shastri KV. Pharmaceutical Engineering. First Edition, TechMax Publications, Pune. 2015.
5. Sambamurthy K. Pharmaceutical Engineering. First Edition, New Age International Publishers, New Delhi. 1998.

**BP305P. PHARMACEUTICAL ORGANIC CHEMISTRY - II (Practical) 4 Hours/Week**

1. Experiments involving laboratory techniques
  - Recrystallization 1 Turn
  - Steam distillation
2. Experiments involving Separation of Binary mixtures 2 Turns
3. Determination of saponification value of oil samples (Any two) 1 Turn
4. Synthesis of following compounds
  - Benzanilide /phenyl benzoate /acetanilide from aniline/ phenol/ aniline by benzoylation/acylation reaction
  - 2, 4, 6-Tribromoaniline/para-bromo acetanilide from aniline
  - p-bromo Acetanilide by halogenation (Bromination) reaction.
  - 5-Nitrosalicylic /meta-dinitrobenzene from salicylic acid/ nitrobenzene by nitration reaction
  - Benzoic acid/ Salicylic acid from alkyl benzoate/ alkyl salicylate by hydrolysis reaction. 11 Turns
  - 1-Phenylazo-2-naphthol from aniline by diazotization and coupling reactions/ phorbobenzoic acid from P-aminobenzoic acid by replacement reaction.
  - Benzil from benzoin by oxidation reaction
  - Dibenzal acetone from benzaldehyde by Claisen-Schmidt reaction



  
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common reactions like hydrolysis & oxidation. Accelerated stability testing in expiration dating of pharmaceutical dosage forms. Photolytic degradation and its prevention.

**Recommended Books:**

1. Physical Pharmacy by Alfred Martin, Sixth edition
2. Experimental pharmaceutics by Eugene, Parott.
3. Tutorial pharmacy by Cooper and Gunn.
4. Stocklosam J. Pharmaceutical calculations, Lea & Febiger, Philadelphia.
5. Liberman H.A, Lachman C., Pharmaceutical Dosage forms, Tablets, Volume-1 to 3, Marcel Dekkar Inc.
6. Liberman H.A, Lachman C, Pharmaceutical dosage forms. Disperse systems, volume 1 2, 3. Marcel Dekkar Inc.
7. Physical Pharmaceutics by Ramasamy C, and Manavalan R.

**BP 404 T. PHARMACOLOGY-I (Theory)**

**45Hours**

**Scope:**

The main purpose of the subject is to understand what drugs do to the living organisms and how their effects can be applied to therapeutics. The subject covers the information about the drugs, mechanism of action, physiological and biochemical effects (Pharmacodynamics) as well as absorption, distribution, metabolism and excretion (pharmacokinetics) along with the adverse effects, clinical uses, interactions, doses, contraindications and route of administration of different classes of drugs.

**Objectives:** Upon completion of the subject, student shall be able to –

1. Understand the pharmacological actions of different categories of drugs.
2. Explain the mechanism of action at organ system/sub cellular/macromolecular levels.
3. Apply the basic pharmacological knowledge in the prevention and treatment of various diseases.
4. Observe the effects of drugs on animal by simulated experiments.



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5. Appreciate correlation of pharmacology with other bio medical sciences.

**Course Content:**

**Unit-I**

**General Pharmacology:** 06 Hrs

**Introduction to Pharmacology** 03 Hrs

Definition, Historical landmarks and scope of pharmacology, Nature and source of drugs, Essential drugs concept and Routes of drug administration.

Dose response relationship, Therapeutic index, Agonists, Antagonists (competitive and non-competitive), Combined effects of drugs.

Factors modifying drug action.

**Pharmacokinetics** 03 Hrs

Membrane transport, Absorption, Distribution, Metabolism and Excretion of drugs. Enzyme induction, Enzyme inhibition, Introduction to kinetics of elimination.

**Unit-II**

**General Pharmacology** 12 Hrs

**Pharmacodynamics:** 07

Principles and mechanisms of drug action.

Receptor theories and classification of receptors, regulation of receptors. Drug receptors interactions, Signal transduction mechanisms, G-protein-coupled receptors, Ion channel receptors

Introduction to transmembrane enzyme linked receptors, JAK-STAT binding receptors and receptors that regulate transcription factors, Spare receptors.

**Adverse drug reactions:** 02

Addiction, Tolerance, Dependence, Tachyphylaxis, Idiosyncrasy, Allergy (explain with suitable examples).

**Drug interactions:** 03

Pharmacokinetic and pharmacodynamic drug interactions.



  
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**Drug discovery and clinical evaluation of new drugs:**

Introduction to drug discovery, Preclinical evaluation and Clinical trials.

Introduction to Pharmacovigilance

**Unit III**

**Pharmacology of drugs acting on Peripheral Nervous System** **08 Hrs**

Introduction to Autonomic Nervous System, Parasympathomimetics, **01**

Parasympatholytics, Sympathomimetics and Sympatholytics.

Neuromuscular blocking agents and skeletal muscle relaxants (peripheral). **02**

Local anaesthetic agents. **03**

Drugs used in myasthenia gravis and glaucoma **02**

**Unit-IV**

**Pharmacology of drugs acting on central nervous system** **10Hrs**

Neurohumoral transmission in the C.N.S.- **01**

Special emphasis to be given on importance of various neurotransmitters like with GABA, Glutamate, Glycine, Serotonin, Dopamine.

General anaesthetics and pre-anaesthetics **02**

Sedatives, Hypnotics and Centrally acting muscle relaxants **03**

Anti-epileptics **02**

Alcohol and Disulfiram **02**

**Unit-V**

**Pharmacology of drugs acting on Central Nervous System** **09Hrs**

Psychopharmacological agents: Antipsychotics, Antidepressants, Anti-anxiety agents, anti-manics and Hallucinogens **03**

Drugs used in Parkinson's disease and Alzheimer's disease **02**

CNS stimulants and Nootropics **02**

Opioid analgesics and antagonists (including addiction, abuse, tolerance and dependence) **02**



  
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**REFERENCES:**

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2. Katzung B. G., Masters S. B., Trevor A. J., Basic and clinical pharmacology, Tata Mc Graw-Hill
3. Goodman and Gilman's, The Pharmacological Basis of Therapeutics
4. Marry Anne K. K., Lloyd Yee Y., Brian K. A., Robbin L.C., Joseph G. B., Wayne A. K., Bradley R.W., Applied Therapeutics, The Clinical use of Drugs, The Point Lippincott Williams & Wilkins
5. Mycek M.J, Gelnet S.B and Perper M.M. Lippincott's Illustrated Reviews-Pharmacology
6. K.D.Tripathi. Essentials of Medical Pharmacology, JAYPEE Brothers Medical Publishers (P) Ltd, New Delhi.
7. Sharma H. L., Sharma K. K., Principles of Pharmacology, Paras medical publisher
8. Modern Pharmacology with clinical Applications, by Charles R. Craig & Robert,
9. Barar, F.S.K., Essentials of Pharmacotherapeutics; S. Chand and Company, New Delhi.
10. Das, M. M. and Dutta S. K. : R. Ghosh, s Modern Concepts on pharmacology and Therapeutics, ( HILTON and Co. Calcutta )
11. Satoskar , R.S. and Bhandarkar S.D. Pharmacology and Pharmacotherapeutics (PopularPrakashan, Bombay).
12. Harrison's Principle and Practice of Medicine, 18th Edition, Churchill, Livingston, London.
13. Roger and Walker. Clinical Pharmacy and Therapeutics, Churchill, Livingston, London.
14. Dipiro Joseph L. A pathphysiological Approach, Elsevier.
15. Davidson's Principle of Internal Medicine, McGraw-Hill companies.
16. Chatterjee, C.C., Human Physiology. Medical Allied Agency, Kolkata.
17. Ganong, W.F., Review of Medical Physiology. Prentice-Hall International, London.



  
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**Primary metabolites:** General introduction, detailed study with respect to chemistry, sources, preparation, evaluation, preservation, storage, therapeutic used and commercial utility as Pharmaceutical Aids and/or Medicines for the following Primary metabolites:

**Carbohydrates:** Acacia, Agar, Tragacanth, Honey

**Proteins and Enzymes:** Gelatin, casein, proteolytic enzymes (Papain, bromelain, serratiopeptidase, urokinase, streptokinase, pepsin).

**Lipids (Waxes, fats, fixed oils):** General methods of extraction of lipids.

Castor oil, Chaulmoogra oil, Shark liver oil and Cod liver oil, Wool Fat, Bees Wax

**Marine Drugs:**

Novel medicinal agents from marine sources a) Cardiovascular agents and b) Anti cancer agents

**BP406P. MEDICINAL CHEMISTRY – I (Practical)**

**4Hrs/week**

**Synthesis of following medicinally important compounds / drug intermediates with**

Recrystallization of compound and monitoring reactions with TLC

**Preparation of drugs/ intermediates (any six)**

**10 turns**

- 1,3-pyrazole
- 1,3-oxazole
- Benzimidazole
- Benztriazole
- 2,3- diphenyl quinoxaline
- Benzocaine
- Phenytoin
- Phenothiazine
- Barbiturate



  
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Purification of above synthesized compounds by Column chromatography 01 turn (any one)  
Determination of Partition coefficient and Ionization constants 04 turns  
(any two compounds).

**Recommended Books (Latest Editions)**

1. John E. Hoover, Remington's Pharmaceutical Sciences, Mack Publishing Company; 13<sup>th</sup> edition (1965).
2. Sean C. Sweetman, Martindale's extra pharmacopoeia, Pharmaceutical Society of Great Britain.
3. Organic Chemistry by I.L. Finar, Vol. II, Longmans Green & Co., 3rd E/d.
4. Daniel Lednicher, Lester A. Mitscher, The Organic Chemistry of Drug Synthesis, John Wiley & Sons, Inc, Vol. 1-5.
5. Indian Pharmacopoeia.
6. Text book of practical organic chemistry- A.I. Vogel.
7. Medicinal Chemistry By Ashutosh Kar

**BP 407P. PHYSICAL PHARMACEUTICS- II (Practical)**

**4 Hours/week**

1. Determination of particle size, particle size distribution using sieving method
2. Determination of particle size, particle size distribution using Microscopic method
3. Determination of bulk density, true density and porosity
4. Determine the angle of repose and influence of lubricant on angle of repose
5. Determination of viscosity of liquid using Ostwald's viscometer
6. Determination sedimentation volume with effect of different suspending agent
7. Determination sedimentation volume with effect of different concentration of single suspending agent
8. Determination of viscosity of semisolid by using Brookfield viscometer
9. Determination of reaction rate constant first order.
10. Determination of reaction rate constant second order
11. Accelerated stability studies
12. Determination of Cloud point and Krafft point of given surfactant.



  
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**Glucosidase inhibitors:** Acarbose, Voglibose.

**DPP IV inhibitors** -Sitagliptin, Teneligliptin

**SGLT2 inhibitors** – Empagliflozin, Canagliflozin

**b) Local Anesthetics: SAR of Local anesthetics**

**Benzoic Acid derivatives;** Mepylcaine, Cyclomethycaine, Piperocaine.

**Amino Benzoic acid derivatives;** Benzocaine, Procaine, Butacaine, Propoxycaine, Tetracaine.

**Lidocaine/Amide derivatives:** Lignocaine, Mepivacaine, Prilocaine, Etidocaine.

**Miscellaneous:** Phenacaine

**[Tolbutamide, Benzocaine]**

**Recommended Books (Latest Editions)**

1. Wilson and Giswold's Organic medicinal and Pharmaceutical Chemistry.
2. Foye's Principles of Medicinal Chemistry.
3. Graham L. Patrick's An Introduction to Medicinal Chemistry
4. Burger's Medicinal Chemistry, Vol I to IV.
5. Introduction to principles of drug design- Smith and Williams.
6. Remington's Pharmaceutical Sciences.
7. Martindale's extra pharmacopoeia.
8. Organic Chemistry by I.L. Finar, Vol. II.
9. The Organic Chemistry of Drug Synthesis by Lednicer, Vol. I to 5.
10. Indian Pharmacopoeia.
11. Text book of practical organic chemistry-A.I.Vogel.


**BP 502 T. Industrial Pharmacy I (Theory)**

**45 Hours**

**Scope:**

Course enables the student to understand and appreciate the influence of pharmaceutical additives and various pharmaceutical dosage forms on the performance of the drug product.



  
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**Objectives:**

Upon completion of the course the student shall be able to

1. illustrate various pharmaceutical dosage forms and their manufacturing techniques.
2. describe various factors to be considered in development of pharmaceutical dosage forms
3. Formulate solid, liquid and semisolid dosage forms and evaluate them for their quality

**Course content:**

**3 hours/ week**

**UNIT-I**

**03 Hours**

**Preformulation Studies:** Introduction to preformulation, goals and objectives, study of physicochemical characteristics of drug substances.

**UNIT-II**

**14 Hours**

**Tablets:**

a. Introduction, ideal characteristics of tablets, classification of tablets. Excipients, preformulation and Formulation of tablets, granulation methods, compression and processing problems, Equipments and tablet tooling.

b. Tablet coating: Types of coating, coating materials, formulation of coating composition, methods of coating, equipment employed and defects in coating.

c. Quality control tests: In process and finished product tests

Liquid orals: Preformulation, Formulation and manufacturing consideration of syrups and elixirs suspensions and emulsions; Filling and packaging; evaluation of liquid orals official in pharmacopoeia

**UNIT-III**

**08 Hours**

**Capsules:**

a. Hard gelatin capsules: Introduction, Production of hard gelatin capsule shells. Size of capsules, Filling, finishing and special techniques of formulation of hard gelatin capsules, manufacturing defects. In process and final product quality control tests for capsules.



  
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b. Soft gelatin capsules: Nature of shell and capsule content, size of capsules, importance of base adsorption and minin/gram factors, production, in process and final product quality control tests. Packing, storage and stability testing of soft gelatin capsules and their applications.

Pellets: Introduction, formulation requirements, pelletization process, equipments for manufacture of pellets

#### UNIT-IV

10 Hours

##### Parenteral Products:

- a. Definition, types, advantages and limitations. Preformulation factors and essential requirements, vehicles, additives, importance of isotonicity
- b. Production procedure, production facilities and controls, aseptic processing
- c. Formulation of injections, sterile powders, large volume parenterals and lyophilized products.
- d. Containers and closures selection, filling and sealing of ampoules, vials and infusion fluids. Quality control tests of parenteral products. Ophthalmic Preparations: Introduction, formulation considerations; formulation of eye drops, eye ointments and eye lotions; methods of preparation; labeling, containers; evaluation of ophthalmic preparations

#### UNIT-V

10 Hours

**Cosmetics:** Formulation and preparation of the following cosmetic preparations: lipsticks, shampoos, cold cream and vanishing cream, tooth pastes, hair dyes and sunscreens.

**Pharmaceutical Aerosols:** Definition, propellants, containers, valves, types of aerosol systems; preformulation, formulation and manufacture of aerosols; Evaluation of aerosols; Quality control and stability studies.

**Packaging Materials Science:** Materials used for packaging of pharmaceutical products, factors influencing choice of containers, legal and official requirements for containers, stability aspects of packaging materials, quality control tests.



  
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**Recommended Books: (Latest Editions)**

1. Pharmaceutical dosage forms - Tablets, volume 1 -3 by H.A. Liberman, Leon Lachman & J.B. Schwartz
2. Pharmaceutical dosage form - Parenteral medication vol- 1&2 by Liberman & Lachman
3. Pharmaceutical dosage form disperse system VOL-1 by Liberman & Lachman
4. Modern Pharmaceutics by Gilbert S. Banker & C.T. Rhodes, 3rd Edition
5. Remington: The Science and Practice of Pharmacy, 20th edition Pharmaceutical Science (RPS)
6. Theory and Practice of Industrial Pharmacy by Liberman & Lachman
7. Pharmaceutics- The science of dosage form design by M.E. Aulton, Churchill livingstone, Latest edition
8. Introduction to Pharmaceutical Dosage Forms by H. C. Ansel, Lea & Febiger, Philadelphia, 5th edition, 2005
9. Drug stability - Principles and practice by Cartensen & C.J. Rhodes, 3rd Edition, Marcel Dekker Series, Vol 107.

**BP503.T. PHARMACOLOGY-II (Theory)**

**45 Hours**

**Scope:**

This subject is intended to impart the fundamental knowledge on various aspects (classification, mechanism of action, therapeutic effects, clinical uses, side effects and contraindications) of drugs acting on different systems of body and in addition, emphasis on the basic concepts of bioassay.

**Objectives:** Upon completion of this course the student should be able to

1. Understand the mechanism of drug action and its relevance in the treatment of different diseases



  
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2. Demonstrate isolation of different organs/tissues from the laboratory animals by simulated experiments

3. Demonstrate the various receptor actions using isolated tissue preparation
4. Appreciate correlation of pharmacology with related medical sciences

**Course Content:**

**UNIT-I**

10hr

**Pharmacology of drugs acting on cardiovascular system**

- a. Introduction to hemodynamic and electrophysiology of heart.
- b. Drugs used in congestive heart failure
- c. Anti-hypertensive drugs.
- d. Anti-anginal drugs.
- e. Anti-arrhythmic drugs.
- f. Anti-hyperlipidemic drugs.

**UNIT-II**

**Pharmacology of drugs acting on cardiovascular system**

10hr

- a. Drug used in the therapy of shock.
- b. Hematinics, coagulants and anticoagulants.
- c. Fibrinolytics and anti-platelet drugs
- d. Plasma volume expanders

**Pharmacology of drugs acting on urinary system**

- a. Diuretics
- b. Anti-diuretics.

**UNIT-III**

**Autocoids and related drugs**

10hr

- a. Introduction to autocoids and classification
- b. Histamine, 5-HT and their antagonists.
- c. Prostaglandins, Thromboxanes and Leucotrienes
- d. Angiotensin, Bradykinin and Substance P.
- e. Non-steroidal anti-inflammatory agents
- f. Anti-gout drugs
- g. Antirheumatic drugs



  
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**UNIT-IV**

**Pharmacology of drugs acting on endocrine system**

08hr

- a. Basic concepts in endocrine pharmacology.
- b. Anterior Pituitary hormones- analogues and their inhibitors.
- c. Thyroid hormones- analogues and their inhibitors.
- d. Hormones regulating plasma calcium level- Parathormone, Calcitonin and Vitamin-D.
- d. Insulin, Oral Hypoglycemic agents and glucagon.
- e. ACTH and corticosteroids.

**UNIT-V**

**Pharmacology of drugs acting on endocrine system**

07hr

- a. Androgens and Anabolic steroids.
- b. Estrogens, progesterone and oral contraceptives.
- c. Drugs acting on the uterus.

**Bioassay**

- a. Principles, applications and types of bioassay.
- b. Bioassay of insulin, oxytocin, vasopressin, ACTH, d-tubocurarine, digitalis, histamine and 5-HT

**Recommended Books (Latest Editions)**

1. Rang H. P., Dale M. M., Ritter J. M., Flower R. J., Rang and Dale's Pharmacology, Churchill Livingstone Elsevier
2. Katzung B. G., Masters S. B., Trevor A. J., Basic and clinical pharmacology, Tata McGraw-Hill
3. Goodman and Gilman's, The Pharmacological Basis of Therapeutics
4. Marry Anne K. K., Lloyd Yee Y., Brian K. A., Robbin L.C., Joseph G. B., Wayne A.K., Bradley R.W., Applied Therapeutics, The Clinical use of Drugs. The Point Lippincott Williams & Wilkins
5. Mycek M.J, Gelnet S.B and Perper M.M. Lippincott's Illustrated Reviews-Pharmacology
6. K. D. Tripathi, Essentials of Medical Pharmacology, JAYPEE Brothers Medical Publishers (P) Ltd, New Delhi.
7. Sharma H. L., Sharma K. K., Principles of Pharmacology, Paras medical publisher



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**Volatile oils:** Mentha, Clove, Cinnamon, Fennel, Coriander,

**Tannins:** Catechu, Pterocarpus

**Resins:** Benzoin, Guggul, Ginger, Asafoetida, Myrrh, Colophony

**Glycosides:** Senna, Aloes, Bitter Almond

**Iridoids, Other terpenoids & Naphthaquinones:** Gentian, Artemisia, taxus, carotenoids

**UNIT-III**

**06 Hours**

**Isolation, Identification and Analysis of Phytoconstituents**

a) Terpenoids: Menthol, Citral, Artemisin

b) Glycosides: Glycyrrhetic acid & Rutin

c) Alkaloids: Atropine, Quinine, Reserpine, Caffeine

d) Resins: Podophyllotoxin, Curcumin

**UNIT-IV**

**06 Hours**

Industrial production, estimation and utilization of the following phytoconstituents:

Forskolin, Sennoside, Artemisinin, Diosgenin, Digoxin, Atropine, Podophyllotoxin, Caffeine,

Taxol, Vincristine and Vinblastine

**UNIT V**

**12 Hours**

**Basics of Phytochemistry**

Methods of extraction (Soxhlet, Maceration, Percolation, Supercritical fluid extraction,

Microwave assisted extraction, Ultrasound assisted extraction, Solid Phase Extraction)

Application of latest techniques like Spectroscopy, Chromatography and electrophoresis in the isolation, purification and identification of crude drugs

**Non-chromatographic separation techniques:** Fractional distillation, fractional liberation, sublimation, chemical derivatization, fractional crystallization, centrifugation, Froth floatation technique.

**BP 505 T. PHARMACEUTICAL JURISPRUDENCE (Theory)**

**45 Hours**

**Scope:**

This course is designed to impart basic knowledge on important legislations related to the profession of pharmacy in India.



  
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**Objectives:** Upon completion of the course, the student shall be able to understand:

1. The Pharmaceutical legislations and their implications in the development and marketing of pharmaceuticals.
2. Various Indian pharmaceutical Acts and Laws
3. The regulatory authorities and agencies governing the manufacture and sale of pharmaceuticals
4. The code of ethics during the pharmaceutical practice

**Course Content:**

**UNIT-I**

**10 Hours**

**Drugs and Cosmetics Act, 1940 and its rules 1945:**

Objectives, Definitions, Legal definitions of schedules to the Act and Rules Import of drugs – Classes of drugs and cosmetics prohibited from import, Import under license or permit. Offences and penalties. Manufacture of drugs – Prohibition of manufacture and sale of certain drugs,

Conditions for grant of license and conditions of license for manufacture of drugs, Manufacture of drugs for test, examination and analysis, manufacture of new drug, loan license and repacking license.

**UNIT-II**

**10 Hours**

**Drugs and Cosmetics Act, 1940 and its rules 1945.**

Detailed study of Schedule G, H, M, N, P, T, U, V, X, Y, Part XII B, Sch F & DMR (OA) Sale of Drugs – Wholesale, Retail sale and restricted license. Offences and penalties Labeling & packing of drugs- General labeling requirements and specimen labels for drugs and cosmetics, List of permitted colors. Offences and penalties.

Administration of the Act and Rules – Drugs Technical Advisory Board, Central drugs Laboratory, Drugs Consultative Committee, Government drug analysts, Licensing authorities, controlling authorities, Drugs Inspectors



  
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### UNIT-III

10 Hours

**Pharmacy Act –1948:** Objectives, Definitions, Pharmacy Council of India; its constitution and functions, Education Regulations, State and Joint state pharmacy councils; constitution and functions, **Registration of Pharmacists, Offences and 122 Penalties**

**Medicinal and Toilet Preparation Act –1955:** Objectives, Definitions, Licensing, Manufacture In bond and Outside bond, Export of alcoholic preparations, Manufacture of Ayurvedic, Homeopathic, Patent & Proprietary Preparations. Offences and Penalties.

**Narcotic Drugs and Psychotropic substances Act-1985 and Rules:** Objectives, Definitions, Authorities and Officers, **Constitution and Functions of narcotic & Psychotropic Consultative Committee**, National Fund for Controlling the Drug Abuse, Prohibition, Control and Regulation, **opium poppy cultivation and production of poppy straw, manufacture, sale and export of opium, Offences and Penalties**

### UNIT-IV

08 Hours

**Study of Salient Features of Drugs and Magic Remedies Act and its rules:** Objectives, Definitions, Prohibition of certain advertisements, Classes of Exempted advertisements, Offences and Penalties

**Prevention of Cruelty to animals Act-1960:** Objectives, Definitions, Institutional Animal Ethics Committee, **CPCSEA guidelines for Breeding and Stocking of Animals**, Performance of Experiments, Transfer and acquisition of animals for experiment, Records, Power to suspend or revoke registration, Offences and Penalties

**National Pharmaceutical Pricing Authority:** Drugs Price Control Order (DPCO)- 2013. Objectives, Definitions, Sale prices of bulk drugs, Retail price of formulations, Retail price and ceiling price of scheduled formulations, National List of Essential Medicines (NLEM)



  
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**UNIT-V**

**07 Hours**

**Pharmaceutical Legislations** – A brief review, Introduction, Study of drugs enquiry committee, Health survey and development committee, Hathi committee and Mudaliar committee

**Code of Pharmaceutical ethics** Definition, Pharmacist in relation to his job, trade, medical profession and his profession, Pharmacist's oath

**Medical Termination of Pregnancy Act**

**Right to Information Act**

**Introduction to Intellectual Property Rights (IPR)**

**Recommended books: (Latest Edition)**

1. Forensic Pharmacy by B. Suresh
2. Text book of Forensic Pharmacy by B.M. Mithal
3. Hand book of drug law-by M.L. Mehra
4. A text book of Forensic Pharmacy by N.K. Jain
5. Drugs and Cosmetics Act/Rules by Govt. of India publications.
6. Medicinal and Toilet preparations act 1955 by Govt. of India publications.
7. Narcotic drugs and psychotropic substances act by Govt. of India publications
8. Drugs and Magic Remedies act by Govt. of India publication
9. Bare Acts of the said laws published by Government. Reference books (Theory) 124

**BP 506 P. Industrial PharmacyI (Practical)**

**4 Hours/week**

1. Preformulation studies on paracetamol/aspirin/or any other drug
2. Preparation and evaluation of Paracetamol tablets
3. Preparation and evaluation of Aspirin tablets
4. Coating of tablets- film coating of tablets/granules
5. Preparation and evaluation of Tetracycline capsules



  
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2. Katzung B. G., Masters S. B., Trevor A. J., Basic and clinical pharmacology, Tata McGraw-Hill
3. Goodman and Gilman's, The Pharmacological Basis of Therapeutics
4. Marry Anne K. K., Lloyd Yee Y., Brian K. A., Robbin L.C., Joseph G. B., Wayne A.K., Bradley R.W., Applied Therapeutics, The Clinical use of Drugs. The Point Lippincott Williams & Wilkins
5. Mycek M.J, Gelnet S.B and Perper M.M. Lippincott's Illustrated Reviews- Pharmacology
6. K.D.Tripathi. Essentials of Medical Pharmacology, JAYPEE Brothers Medical Publishers (P) Ltd, New Delhi.
7. Sharma H. L., Sharma K. K., Principles of Pharmacology, Paras medical publisher
8. Modern Pharmacology with clinical Applications, by Charles R. Craig & Robert,
9. N.Udupa and P.D. Gupta, Concepts in Chronopharmacology.

#### BP 603 T. HERBAL DRUG TECHNOLOGY (Theory)

**Scope:** This subject gives the student the knowledge of basic understanding of herbal drug industry, the quality of raw material, guidelines for quality of herbal drugs, herbal cosmetics, natural sweeteners, nutraceutical etc. The subject also emphasizes on Good Manufacturing Practices (GMP), patenting and regulatory issues of herbal drugs

**Objectives:** Upon completion of this course the student should be able to:

1. understand raw material as source of herbal drugs from cultivation to herbal drug product
2. know the WHO and ICH guidelines for evaluation of herbal drugs
3. know the herbal cosmetics, natural sweeteners, nutraceuticals
4. appreciate patenting of herbal drugs, GMP.

**Course content:**

#### UNIT-I

11 Hours

Herbs as raw materials



  
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Definition of herb, herbal medicine, herbal medicinal product, herbal drug preparation Source of Herbs Selection, identification and authentication of herbal materials Processing of herbal raw material

**Biodynamic Agriculture**

Good agricultural practices in cultivation of medicinal plants including Organic farming.

Pest and Pest management in medicinal plants: Biopesticides/Bioinsecticides.

**Indian Systems of Medicine**

- a) Basic principles involved in Ayurveda, Siddha, Unani and Homeopathy
- b) Preparation and standardization of Ayurvedic formulations viz Aristas and Asawas, Ghutika, Churna, Lehya and Bhasma.

**Pharmacognosy in various systems of medicine:**

Role of Pharmacognosy in allopathy and traditional systems of medicine namely, Ayurveda, Unani, Siddha, Homeopathy and Chinese systems of medicine.

**UNIT-II**

**7 Hours**

**Nutraceuticals**

General aspects, Market, growth, scope and types of products available in the market. Health benefits and role of Nutraceuticals in ailments like Diabetes, CVS diseases, Cancer, Irritable bowel syndrome and various Gastro intestinal diseases.

Study of following herbs as health food: Alfaalfa, Chicory, Ginger, Fenugreek, Garlic, Honey, Amla, Ginseng, Ashwagandha, Spirulina

Study of Omega-3-polyunsaturated fatty acids, Dietary fibers, Carotenoids, proanthocyanidins, and Resveratrol

**Herbal-Drug and Herb-Food Interactions:** General introduction to interaction and classification. Study of following drugs and their possible side effects and interactions: Hypercium, kava-kava, Ginkobiloba, Ginseng, Garlic, Pepper & Ephedra

**UNIT-III**

**10 Hours**

**Herbal Cosmetics**



  
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Market overview, Sources and description of raw materials of herbal origin used via, fixed oils, waxes, gums colours, perfumes, protective agents, bleaching agents, antioxidants in products such as skin care, hair care and oral hygiene products.

**Herbal excipients:**

Market overview, Herbal Excipients – Significance of substances of natural origin as excipients – colorants, sweeteners, binders, diluents, viscosity builders, disintegrants, flavors & perfumes.

**Herbal formulations :**

Market overview, Conventional herbal formulations like syrups, mixtures and tablets and Novel dosage forms like phytosomes

**UNIT- IV**

**12 Hours**

**Evaluation of Drugs** WHO & ICH guidelines for the assessment of herbal drugs Stability testing of herbal drugs.

**Patenting and Regulatory requirements of natural products:**

a) Definition of the terms: Patent, IPR, Farmers right, Breeder's right, Bioprospecting and Biopiracy

b) Patenting aspects of Traditional Knowledge and Natural Products. Case study of Curcuma & Neem.

**Regulatory Issues** - Regulations in India (ASU DTAB, ASU DCC), Regulation of manufacture of ASU drugs - Schedule Z of Drugs & Cosmetics Act for ASU drugs.

**Other issues related to export of natural products** (such as CITES Certificate, DGFT Notification, Negative list of herbs, TRAFFIC)

**UNIT-V**


**05Hours**

**General Introduction to Herbal Industry**

- Herbal drugs industry: Present scope and future prospects.
- A brief account of plant based industries and institutions involved in work on medicinal and aromatic plants in India.

**Schedule T – Good Manufacturing Practice of Indian systems of medicine**



  
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- Components of GMP (Schedule – T) and its objectives
- Infrastructural requirements, working space, storage area, machinery and equipments, standard operating procedures, health and hygiene, documentation and records.

**BP 604 T. BIOPHARMACEUTICS AND PHARMACOKINETICS (Theory) 45 Hours**

**Scope:** This subject is designed to impart knowledge and skills of Biopharmaceutics and pharmacokinetics and their applications in pharmaceutical dosage form development.

**Objectives:** Upon completion of the course student shall be able to:

- Understand the basic concepts in biopharmaceutics and pharmacokinetics and their significance.
- Use plasma drug concentration-time data to calculate the pharmacokinetic parameters to describe the kinetics of drug absorption, distribution, metabolism, excretion, elimination.
- Understand the concepts of bioavailability and bioequivalence of drug products and their significance.
- Understand the concept of dissolution and application of in vitro in vivo correlation in drug product development.

**Course Content:**

**UNIT-I**

**10 Hours**

**Introduction to Biopharmaceutics**

**Absorption:** Mechanisms of drug absorption through GIT, factors influencing drug absorption through GIT, absorption of drug from Non per oral extra-vascular routes;

**Distribution:** Tissue permeability of drugs, binding of drugs, apparent volume of drug distribution, plasma and tissue protein binding, factors affecting protein-drug binding. Kinetics of protein binding, Clinical significance of protein binding of drugs

**UNIT- II**

**10 Hours**



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**Elimination:** Drug metabolism and basic understanding, metabolic pathways, factors affecting drug metabolism, renal excretion of drugs, factors affecting renal excretion of drugs, renal clearance, Non renal routes of drug excretion of drugs  
Biopharmaceutical classification system, theories of dissolution, dissolution test apparatus, dissolution models, *in-vitro-in-vivo* correlations

#### UNIT- III

10 Hours

**Bioavailability and Bioequivalence:** Definition and Objectives of bioavailability, absolute and relative bioavailability, measurement of bioavailability, bioequivalence studies and study designs, **Review of regulatory requirements for conducting bioequivalence study**, bio-waivers, methods to enhance the dissolution rates and bioavailability of poorly soluble drugs.

#### UNIT- IV

10 Hours

**Pharmacokinetics:** Definition and introduction to Pharmacokinetics, Compartment models, Non compartment models, physiological models, One compartment open model (a) Intravenous Injection (Bolus) (b) Intravenous infusion and (c) Extra vascular administrations. Pharmacokinetics parameters -  $K_E$ ,  $t_{1/2}$ ,  $V_d$ ,  $AUC$ ,  $K_a$ ,  $CL_T$  and  $CL_R$ - definitions methods of eliminations, understanding of their significance and application. Introduction to multi-compartment model.

#### UNIT- V

05 Hours

**Nonlinear Pharmacokinetics:** Introduction, Factors causing Non-linearity, Michaelis-menten equation, Determination of  $V_{max}$  and  $K_m$ . Significance of nonlinear pharmacokinetics, Explanation with example of drugs.

#### Recommended Books: (Latest Editions)

1. Biopharmaceutics and Clinical Pharmacokinetics by, Milo Gibaldi.
2. Biopharmaceutics and Pharmacokinetics; By Robert F Notari
3. Applied biopharmaceutics and pharmacokinetics, Leon Shargel and Andrew B.C.YU 4th edition, Prentice-Hall International edition.USA



  
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3. The Organic Chemistry of Drug Synthesis by Lednicer, Vol. 1 to 5.
4. Indian Pharmacopoeia.
5. Text book of practical organic chemistry-A.I.Vogel.
6. Medicinal Chemistry By Ashutosh Kar
7. Practical Pharmaceutical Chemistry: Part II Fourth Edition, A. H. Beckett, J. B. Stenlake.

**BP 608 P. PHARMACOLOGY-III (Practical)**

4Hrs/Week

Sr. No Experiment

1. Study of anti-ulcer activity of a drug using pylorus ligand (SHAY) rat model and NSAIDS induced ulcer model.
2. Study of effect of drugs on gastrointestinal motility
3. Effect of agonist and antagonists on guinea pig ileum
4. Estimation of serum biochemical parameters by using semi- autoanalyser
5. Effect of saline purgative on frog intestine
6. Hypoglycemic effect of insulin in rabbit
7. Test for pyrogens ( rabbit method)
8. Determination of acute oral toxicity (LD50) of a drug from a given data
9. Determination of acute skin irritation / corrosion of a test substance
10. Determination of acute eye irritation / corrosion of a test substance
11. Calculation of pharmacokinetic parameters from a given data
12. Biostatistics methods in experimental pharmacology( student's t test, ANOVA)
13. Biostatistics methods in experimental pharmacology (Chi square test, Wilcoxon Signed Rank test)
14. Bioassay of serotonin using rat fundus strip by three point bioassay.
15. Bioassay of acetylcholine using rat ileum/colon by four point bioassay.
16. Study of mydriatic and miotic effects on rabbit eye.



  
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\*Experiments are demonstrated by simulated experiments/videos

**Recommended Books (Latest Editions)**

1. Ghosh MN. Fundamentals of Experimental Pharmacology. Hilton & Company, Kolkata.
2. Kulkarni SK. Handbook of experimental pharmacology. Vallabh Prakashan.
3. Goyal RK. Practicals in Pharmacology, BS Shaha Prakashan.
4. Kasture SB. A handbook of experiments in pre-clinical pharmacology, Career Publications.
5. Bikas Medhi, Ajay Prakash. Practical Manual of Experimental and Clinical Pharmacology. Jaypee Publications.

**BP 609 P. HERBAL DRUG TECHNOLOGY (Practical)**

**4 hours/ week**

1. To perform preliminary phytochemical screening of crude drugs.
2. Determination of the alcohol content of Asava and Arista
3. Evaluation of excipients of natural origin
4. Incorporation of prepared and standardized extract in cosmetic formulations like creams, lotions and shampoos and their evaluation.
5. Incorporation of prepared and standardized extract in formulations like syrups, mixtures and tablets and their evaluation as per Pharmacopoeial requirements.
6. Monograph analysis of herbal drugs from recent Pharmacopoeias
7. Determination of Aldehyde content
8. Determination of Phenol content
9. Determination of total alkaloids

**Recommended Books: (Latest Editions)**

1. Textbook of Pharmacognosy by Trease & Evans.
2. Textbook of Pharmacognosy by Tyler, Brady & Robber.
3. Pharmacognosy by Kokate, Purohit and Gokhale
4. Essential of Pharmacognosy by Dr.S.H.Ansari
5. Pharmacognosy & Phytochemistry by V.D.Rangari
6. Pharmacopoeal standards for Ayurvedic Formulation (Council of Research in



  
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\*Experiments are demonstrated by simulated experiments/videos

**Recommended Books (Latest Editions)**

1. Ghosh MN. Fundamentals of Experimental Pharmacology. Hilton & Company, Kolkata.
2. Kulkarni SK. Handbook of experimental pharmacology. Vallabh Prakashan.
3. Goyal RK. Practicals in Pharmacology, BS Shaha Prakashan.
4. Kasture SB. A handbook of experiments in pre-clinical pharmacology, Career Publications.
5. Bikas Medhi, Ajay Prakash. Practical Manual of Experimental and Clinical Pharmacology. Juypee Publications.

**BP 609 P. HERBAL DRUG TECHNOLOGY (Practical)**


**4 hours/ week**

1. To perform preliminary phytochemical screening of crude drugs.
2. Determination of the alcohol content of Asava and Arista
3. Evaluation of excipients of natural origin
4. Incorporation of prepared and standardized extract in cosmetic formulations like creams, lotions and shampoos and their evaluation.
5. Incorporation of prepared and standardized extract in formulations like syrups, mixtures and tablets and their evaluation as per Pharmacopoeial requirements.
6. Monograph analysis of herbal drugs from recent Pharmacopoeias
7. Determination of Aldehyde content
8. Determination of Phenol content
9. Determination of total alkaloids

**Recommended Books: (Latest Editions)**

1. Textbook of Pharmacognosy by Trease & Evans.
2. Textbook of Pharmacognosy by Tyler, Brady & Robber.
3. Pharmacognosy by Kokate, Purohit and Gokhale
4. Essential of Pharmacognosy by Dr.S.H.Ansari
5. Pharmacognosy & Phytochemistry by V.D.Rangari
6. Pharmacopoeal standards for Ayurvedic Formulation (Council of Research in



  
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FINAL YEAR B. PHARM  
SEMESTER – VII

BP701T INSTRUMENTAL METHODS OF ANALYSIS (Theory)

45 Hours

**Scope:**

This subject deals with the application of instrumental methods in qualitative and quantitative analysis of drugs. This subject is designed to impart a fundamental knowledge on the principles and instrumentation of spectroscopic and chromatographic technique. This also emphasizes on theoretical and practical knowledge on modern analytical instruments that are used for drug testing.

**Objectives:**

Upon completion of the course the student shall be able to:

1. Upon completion of the course the student shall be able to
2. Illustrate the interaction of matter with electromagnetic radiations and justify its applications in drug analysis
3. Classify the chromatographic separation methods and choose appropriate technique for analysis of drugs.
4. Design methods for performing quantitative & qualitative analysis of drugs using various analytical instruments.

**Course Content:**

**UNIT –I**

10 Hours

**UV Visible spectroscopy**

Introduction to spectroscopy, Electronic transitions, chromophores, auxochromes, spectral shifts, solvent effect on absorption spectra, Beer and Lambert's law, Derivation and deviations.

Instrumentation - Sources of radiation, wavelength selectors, sample cells, detectors- Photo tube, Photomultiplier tube, Photo voltaic cell, Silicon Photodiode.

Applications - Spectrophotometric titrations, Single component and multi component Analysis

**Fluorimetry**

Theory, Concepts of singlet, doublet and triplet electronic states, internal and external conversions, factors affecting fluorescence, quenching, instrumentation and applications

**UNIT –II**

10 Hours

**FTIR spectroscopy**

Introduction, fundamental modes of vibrations in poly atomic molecules, sample handling, factors affecting vibrations

Instrumentation - Sources of radiation, wavelength selectors, detectors - Golay cell, Bolometer, Thermocouple, Thermister, Pyroelectric detector, FTIR instrument, sample handling attachments –DRS and ATR and applications

**Flame Photometry**



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Principle, interferences, instrumentation and applications  
**Atomic absorption spectroscopy**  
Principle, interferences, instrumentation and Applications  
**Nepheloturbidimetry**  
Introduction

**UNIT -III**

**10 Hours**

**Introduction to chromatography -**  
**Adsorption and partition column chromatography:**  
Methodology, advantages, disadvantages and applications.  
**Paper chromatography:**  
Introduction, methodology, development techniques, advantages, disadvantages and applications  
**Thin layer chromatography:**  
Introduction, Principle, Methodology, R<sub>f</sub> values, advantages, disadvantages and applications.  
**HPTLC:**  
Introduction, Instrumentation and applications

**UNIT -IV**

**08 Hours**

**Theory of Chromatography**  
Plate theory, Rate theory, System suitability parameters  
**Gas chromatography**  
Introduction, theory, instrumentation, temperature programming, advantages, disadvantages and applications  
**High performance liquid chromatography (HPLC)**  
Introduction, theory, instrumentation, advantages and applications.

**UNIT -V**

**07 Hours**

**Ion exchange chromatography-**  
Introduction, classification, ion exchange resins, properties, mechanism of ion exchange process, factors affecting ion exchange, methodology and applications  
**Gel chromatography-**  
Introduction, theory, instrumentation and applications  
**Affinity chromatography-** Introduction

**Recommended Books (Latest Editions):**

1. Instrumental Methods of Chemical Analysis by B.K Sharma
2. Organic spectroscopy by Y.R Sharma
3. Text book of Pharmaceutical Analysis by Kenneth A. Connors
4. Vogel's Text book of Quantitative Chemical Analysis by A.I. Vogel
5. Practical Pharmaceutical Chemistry by A.H. Beckett and J.B. Stenlake
6. Organic Chemistry by I. L. Finar
7. Organic spectroscopy by William Kemp
8. Quantitative Analysis of Drugs by D. C. Garrett
9. Quantitative Analysis of Drugs in Pharmaceutical Formulations by P. D. Sethi
10. Spectrophotometric identification of Organic Compounds by Silverstein.



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**BP702T INDUSTRIAL PHARMACY -II (Theory)**

**45 Hours**

**Scope:**

This course is designed to impart fundamental knowledge on pharmaceutical product development and translation from laboratory to market.

**Objectives:** Upon completion of the course, the student shall be able to:

1. Know the process of pilot plant and scale up of pharmaceutical dosage forms
2. Understand the process of technology transfer from lab scale to commercial batch
3. Know different Laws and Acts that regulate pharmaceutical industry
4. Understand the approval process and regulatory requirements for drug products

**Course Content:**

**UNIT-I**

**10 Hours**

**Pilot plant scale up techniques:**

General considerations - including significance of personnel requirements, space requirements, raw materials, Pilot plant scale up considerations for solids, liquid orals, semi solids and relevant documentation, SUPAC guidelines, Introduction to platform technology.

**UNIT-II**

**10 Hours**

**Technology development and transfer:**

WHO guidelines for Technology Transfer (TT): Terminology, Technology transfer protocol, Quality risk management, Transfer from R & D to production (Process, packaging and cleaning), Granularity of TT Process (API, excipients, finished products, packaging materials) Documentation, Premises and equipments, qualification and validation, quality control, analytical method transfer, Approved regulatory bodies and agencies, Commercialization - practical aspects and problems (case studies), TT agencies in India - APCTD, NRDC, TIFAC, BCIL, TBSE / SIDBI; TT related documentation - confidentiality agreement, licensing, MoU's, legal issues

**UNIT-III**

**10 Hours**

**Regulatory affairs:** Introduction, Historical overview of Regulatory Affairs, Regulatory authorities, Role of Regulatory affairs department, Responsibility of Regulatory Affairs Professionals

**Regulatory requirements for drug approval:**

Drug Development Teams, Non-Clinical Drug Development, Pharmacology, Drug Metabolism and Toxicology, General considerations of Investigational New Drug (IND) Application, Investigator's Brochure (IB) and New Drug Application (NDA), Clinical research / BE studies, Clinical Research Protocols, Biostatistics in Pharmaceutical



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Product Development, Data Presentation for FDA Submissions, Management of Clinical Studies.

**UNIT-IV**

**07 Hours**

**Indian Regulatory Requirements:**

Central Drug Standard Control Organization (CDSCO) and State Licensing Authority: Organization, Responsibilities, Certificate of Pharmaceutical Product (COPP), Regulatory requirements and approval procedures for New Drugs.

**UNIT-V**

**08 Hours**

**Quality management systems:**

Quality management & Certifications: Concept of Quality, Total Quality Management, Quality by Design (QbD), Six Sigma concept, Out of Specifications (OOS), Change control, Introduction to ISO 9000 series of quality systems standards, ISO 14000, NABL, GLP

**Recommended Books: (Latest Editions)**

1. Regulatory Affairs from Wikipedia, the free encyclopedia modified on 7<sup>th</sup> April available at [http://en.wikipedia.org/wiki/Regulatory\\_Affairs](http://en.wikipedia.org/wiki/Regulatory_Affairs).
2. International Regulatory Affairs Updates, 2005. available at <http://www.iraup.com/about.php>
3. Douglas J Pisano and David S. Mantus. Text book of FDA Regulatory Affairs a Guide for Prescription Drugs, Medical Devices, and Biologics' Second Edition.
4. Regulatory Affairs brought by learning plus, inc. available at <http://www.cgmp.com/ra.htm>.



  
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**BP703T PHARMACY PRACTICE (Theory)**

**45 Hours**

**Scope:**

In the changing scenario of pharmacy practice in India, for successful practice of Hospital Pharmacy, the students are required to learn various skills like drug distribution, drug information, and therapeutic drug monitoring for improved patient care. In community pharmacy, students will be learning various skills such as dispensing of drugs, responding to minor ailments by providing suitable safe medication, patient counseling for improved patient care in the community set up.

**Objectives:**

Upon completion of the course, the student shall be able to:

1. Know various drug distribution methods in a hospital
2. Appreciate the pharmacy stores management and inventory control
3. Monitor drug therapy of patient through medication chart review and clinical review.
4. Obtain medication history interview and counsel the patients
5. Identify drug related problems
6. Detect and assess adverse drug reactions
7. Interpret selected laboratory results (as monitoring parameters in therapeutics) of specific disease states
8. Know pharmaceutical care services
9. Do patient counseling in community pharmacy;
10. Appreciate the concept of rational drug therapy.

**Course Content:**

**UNIT-I**

**10 Hours**

**Hospital and its organization**

Definition, Classification of hospital- Primary, Secondary and Tertiary hospitals, Classification based on clinical and non- clinical basis, Organization Structure of a Hospital, and Medical staffs involved in the hospital and their functions.

**Hospital pharmacy and its organization**

Definition, functions of hospital pharmacy, Organization structure, Location, Layout and staff requirements, and Responsibilities and functions of hospital pharmacists.

**Adverse drug reaction**

Classifications - Excessive pharmacological effects, secondary pharmacological effects, idiosyncrasy, allergic drug reactions, genetically determined toxicity, toxicity following sudden withdrawal of drugs, Drug interaction- beneficial interactions, adverse interactions, and pharmacokinetic drug interactions, Methods for detecting drug interactions, spontaneous case reports and record linkage studies, and Adverse drug reaction reporting and management.



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### **Community Pharmacy**

Organization and structure of retail and wholesale drug store, types and design, Legal requirements for establishment and maintenance of a drug store, Dispensing of proprietary products, maintenance of records of retail and wholesale drug store.

### **UNIT-II**

**10 Hours**

#### **Drug distribution system in a hospital**

Dispensing of drugs to inpatients, types of drug distribution systems, charging policy and labelling, dispensing of drugs to ambulatory patients, and Dispensing of controlled drugs.

#### **Hospital formulary**

Definition, contents of hospital formulary, Differentiation of hospital formulary and Drug list, preparation and revision, and addition and deletion of drug from hospital formulary.

#### **Therapeutic drug monitoring**

Need for Therapeutic Drug Monitoring, Factors to be considered during the Therapeutic Drug Monitoring, and Indian scenario for Therapeutic Drug Monitoring.

#### **Medication adherence**

Causes of medication non-adherence, pharmacist role in the medication adherence, and monitoring of patient medication adherence.

#### **Patient medication history interview**

Need for the patient medication history interview, medication interview forms.

#### **Community pharmacy management**

Financial, materials, staff, and infrastructure requirements.

### **UNIT-III**

**10 Hours**

#### **Pharmacy and therapeutic committee**

Organization, functions, Policies of the pharmacy and therapeutic committee in including drugs into formulary, inpatient and outpatient prescription, automatic stop order, and emergency drug list preparation.

#### **Drug information services**

Drug and Poison information centre, Sources of drug information, Computerized services, and storage and retrieval of information.

#### **Patient counseling**

Definition of patient counseling; steps involved in patient counseling, and Special cases that require the pharmacist

#### **Education and training program in the hospital**

Role of pharmacist in the education and training program, Internal and external training program, Services to the nursing homes/clinics, Code of ethics for community pharmacy, and Role of pharmacist in the interdepartmental communication and community health education.

#### **Prescribed medication order and communication skills**

Prescribed medication order- interpretation and legal requirements, and Communication skills- communication with prescribers and patients.



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#### UNIT-IV

08 Hours

##### **Budget preparation and implementation**

Introduction to Clinical Pharmacy, Concept of clinical pharmacy, functions and responsibilities of clinical pharmacist, Drug therapy monitoring - medication chart review, clinical review, pharmacist intervention, Ward round participation, Medication history and Pharmaceutical care.

Dosing pattern and drug therapy based on Pharmacokinetic & disease pattern.

##### **Over the counter (OTC) sales**

Introduction and sale of over the counter, and Rational use of common over the counter medications.

#### UNIT-V

07 Hours

##### **Drug store management and inventory control**

Organization of drug store, types of materials stocked and storage conditions, Purchase and inventory control: principles, purchase procedure, purchase order, procurement and stocking, Economic order quantity, Reorder quantity level, and Methods used for the analysis of the drug expenditure.

##### **Investigational use of drugs**

Description, principles involved, classification, control, identification, role of hospital pharmacist, advisory committee.

##### **Interpretation of Clinical Laboratory Tests**

Blood chemistry, hematology, and urinalysis

#### **Recommended Books (Latest Edition):**

1. Merchant S.H. and Dr. J. S. Quadry. A textbook of hospital pharmacy, 4th ed. Ahmadabad: B.S. Shah Prakashan; 2001.
2. Parthasarathi G, Karin Nyfort-Hansen, Milap C Nahata. A textbook of Clinical Pharmacy Practice- essential concepts and skills, 1<sup>st</sup> ed. Chennai: Orient Longman Private Limited; 2004.
3. William E. Hassan. Hospital pharmacy, 5<sup>th</sup> ed. Philadelphia: Lea & Febiger; 1986.
4. Tipnis Bajaj. Hospital Pharmacy, 1<sup>st</sup> ed. Maharashtra: Career Publications; 2008.
5. Scott LT. Basic skills in interpreting laboratory data, 4th ed. American Society of Health System Pharmacists Inc; 2009.
6. Parmar N.S. Health Education and Community Pharmacy, 18th ed. India: CBS Publishers & Distributors; 2008.

#### **Journals:**

1. Therapeutic drug monitoring. ISSN: 0163-4356
2. Journal of pharmacy practice. ISSN: 0974-8326
3. American journal of health system pharmacy. ISSN: 1535-2900 (online)
4. Pharmacy times (Monthly magazine)



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BP705P

**INSTRUMENTAL METHODS OF ANALYSIS (Practical)**

04 Hours/  
Week

1. Weights and measures and pharmacopoeia in analysis
2. Determination of absorption maxima and effect of solvent on absorption maxima of organic compounds
3. Assay of Drug product as per IP (Assay of Paracetamol tablet by UV-Spectrophotometry)
4. Assay of Drug product by Calibration curve method
5. Assay of any drug/drug product by colorimetry.
6. Simultaneous estimation of multicomponent formulation by UV spectroscopy (SE/Q analysis)
7. Estimation of drug by fluorimetry
8. Study of quenching of fluorescence
9. Determination of sodium and potassium by flame photometry
10. Separation of amino acids by paper chromatography
11. Separation of sugars by thin layer chromatography
12. Separation of plant pigments by column chromatography
13. Demonstration of HPLC instrument
14. Demonstration of FTIR instrument
15. Interpretation of spectra of organic compounds by IR spectroscopy as per pharmacopoeia

**Recommended Books (Latest Editions)**

1. Instrumental Methods of Chemical Analysis by B.K Sharma
2. Organic spectroscopy by Y.R Sharma
3. Text book of Pharmaceutical Analysis by Kenneth A. Connors
4. Vogel's Text book of Quantitative Chemical Analysis by A.I. Vogel
5. Practical Pharmaceutical Chemistry by A.H. Beckett and J.B. Stenlake
6. Organic Chemistry by I. L. Finar
7. Organic spectroscopy by William Kemp
8. Quantitative Analysis of Drugs by D. C. Garrett
9. Quantitative Analysis of Drugs in Pharmaceutical Formulations by P. D. Sethi
10. HPLC by P.D.Sethi
11. HPTLC by P.D. Sethi
12. Spectrophotometric identification of Organic Compounds by Silverstein



  
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**B1802T SOCIAL AND PREVENTIVE PHARMACY (Theory)**

**45 Hours**

**Scope:**

The purpose of this course is to introduce to students a number of health issues and their challenges. This course also introduced a number of national health programmes. The roles of the pharmacist in these contexts are also discussed.

**Objectives:**

After the successful completion of this course, the student shall be able to:

1. Acquire high consciousness/realization of current issues related to health and pharmaceutical problems within the country and worldwide.
2. Develop a critical way of thinking based on current healthcare development.
3. Evaluate alternative ways of solving problems related to health and pharmaceutical issues.

**Course Content:**

**UNIT-I**

**10 Hours**

**Concept of health and disease:**

Definition, concepts and evaluation of public health.

Understanding the concept of prevention and control of disease, social causes of diseases and social problems of the sick.

**Sociology and health**

Socio cultural factors related to health and disease, Impact of urbanization on health and disease, Poverty and health

**Hygiene and health**

Personal hygiene and health care; avoidable habits.

**UNIT-II**

**10 Hours**

**Preventive medicine**

General principles of prevention and control of diseases such as cholera, SARS, Ebola virus, influenza, acute respiratory infections, malaria, chicken guinea, dengue, lymphatic filariasis, pneumonia, hypertension, diabetes mellitus, cancer, drug addiction-drug substance abuse

**UNIT-III**

**10 Hours**

**National health programs, its objectives, functioning and outcome of the following:**

HIV AND AIDS control programme, TB, Integrated disease surveillance program (IDSP), National leprosy control programme, National mental health program, National programme for prevention and control of deafness, Universal immunization programme, National programme for control of blindness, Pulse polio programme.



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**UNIT-IV**

**08 Hours**

National health intervention programme for mother and child, National family welfare programme, National tobacco control programme, National Malaria Prevention Program, National programme for the health care for the elderly, Social health programme; role of WHO in Indian national program

**UNIT-V**

**07 Hours**

Community services in rural, urban and school health: Functions of PHC, Improvement in rural sanitation, national urban health mission, Health promotion and education in school.

**Recommended Books (Latest edition):**

1. Short Textbook of Preventive and Social Medicine, Prabhakara GN, 2<sup>nd</sup> Edition, 2010, ISBN: 9789380704104, JAYPEE Publications
2. Textbook of Preventive and Social Medicine (Mahajan and Gupta), Edited by Roy Rabindra Nath, Saha Indranil, 4<sup>th</sup> Edition, 2013, ISBN: 9789350901878, JAYPEE Publications
3. Review of Preventive and Social Medicine (Including Biostatistics), Jain Vivek, 6<sup>th</sup> Edition, 2014, ISBN: 9789351522331, JAYPEE Publications
4. Essentials of Community Medicine: A Practical Approach, Hiremath Lalita D, Hiremath Dhananjaya A, 2<sup>nd</sup> Edition, 2012, ISBN: 9789350250440, JAYPEE Publications
5. Park Textbook of Preventive and Social Medicine, K Park, 21<sup>st</sup> Edition, 2011, ISBN-14: 9788190128285, BANARSIDAS BHANOT PUBLISHERS.
6. Community Pharmacy Practice, Ramesh Adepu, BSP publishers, Hyderabad

**Recommended Journals:**

1. Research in Social and Administrative Pharmacy, Elsevier, Ireland



  
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**BP803ET PHARMACEUTICAL MARKETING (Theory)**

**45 Hours**

**Scope:**

The pharmaceutical industry not only needs highly qualified researchers, chemists and technical people, but also requires skilled managers who can take the industry forward by managing and taking the complex decisions which are imperative for the growth of the industry. The Knowledge and Know-how of marketing management groom the people for taking a challenging role in **Sales and Product management**.

**Objective:**

The course aims to provide an understanding of marketing concepts and techniques and their applications in the pharmaceutical industry.

**Course Content:**

**UNIT-I**

**10 Hours**

**Marketing:**

Definition, general concepts and scope of marketing; Distinction between marketing & selling; Marketing environment; Industry and competitive analysis; Analyzing consumer buying behaviour; industrial buying behaviour.

**Pharmaceutical market:**

Quantitative and qualitative aspects; size and composition of the market; demographic descriptions and socio-psychological characteristics of the consumer; market segmentation & targeting. Consumer profile; Motivation and prescribing habits of the physician; patients' choice of physician and retail pharmacist. Analyzing the Market; Role of market research.

**UNIT-II**

**10 Hours**

**Product decision:**

Classification, product line and product mix decisions, product life cycle, product portfolio analysis; product positioning; New product decisions; Product branding, packaging and labelling decisions, Product management in pharmaceutical industry.

**UNIT-III**

**10 Hours**

**Promotion:**

Methods, determinants of promotional mix, promotional budget; An overview of personal selling, advertising, direct mail, journals, sampling, retailing, medical exhibition, public relations, **online promotional techniques for OTC Products**.



  
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#### UNIT-IV

08 Hours

##### Pharmaceutical marketing channels:

Designing channel, channel members, selecting the appropriate channel, conflict in channels, physical distribution management: Strategic importance, tasks in physical distribution management.

##### Professional sales representative (PSR):

Duties of PSR, purpose of detailing, selection and training, supervising, norms for customer calls, motivating, evaluating, compensation and future prospects of the PSR.

#### UNIT-V

07 Hours

##### Pricing:

Meaning, importance, objectives, determinants of price; pricing methods and strategies, issues in price management in pharmaceutical industry. An overview of DPCO

(Drug Price Control Order) and NPPA (National Pharmaceutical Pricing Authority).

##### Emerging concepts in marketing:

Vertical & Horizontal Marketing; Rural Marketing; Consumerism; Industrial Marketing; Global Marketing.

##### Recommended Books: (Latest Editions)

1. Philip Kotler and Kevin Lane Keller: Marketing Management, Prentice Hall of India, New Delhi
2. Walker, Boyd and Larreche : Marketing Strategy- Planning and Implementation, Tata MC GrawHill, New Delhi.
3. Dhruv Grewal and Michael Levy: Marketing, Tata MC Graw Hill
4. Arun Kumar and N Menakshi: Marketing Management, Vikas Publishing, India
5. Rajan Saxena: Marketing Management; Tata MC Graw-Hill (India Edition)
6. Ramaswamy, U.S & Nanakamari, S: Marketing Managemnt:Global Perspective, Indian Context, Macmillan India, New Delhi.
7. Shanker, Ravi: Service Marketing, Excell Books, New Delhi
8. Subba Rao Changanti, Pharmaceutical Marketing in India (GIFT – Excel series) Excel Publications.



  
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**BP804ET PHARMACEUTICAL REGULATORY SCIENCE (Theory)**

**45 Hours**

**Scope:**

This course is designed to impart the fundamental knowledge on the regulatory requirements for approval of new drugs, and drug products in regulated markets of India & other countries like US, EU, Japan, Australia, UK etc. It prepares the students to learn in detail on the regulatory requirements, documentation requirements, and registration procedures for marketing the drug products.

**Objectives:**

Upon completion of the subject student shall be able to;

1. Know about the process of drug discovery and development
2. Know the regulatory authorities and agencies governing the manufacture and sale of pharmaceuticals
3. Know the regulatory approval process and their registration in Indian and international markets.

**Course content:**

**UNIT-I**

**10 Hours**

**New Drug Discovery and development**

Stages of drug discovery, Drug development process, pre-clinical studies, non-clinical activities, clinical studies, Innovator and generics, Concept of generics, Generic drug product development.

**UNIT-II**

**10 Hours**

**Regulatory Approval Process**

Approval processes and timelines involved in Investigational New Drug (IND), New Drug Application (NDA), Abbreviated New Drug Application (ANDA). Changes to an approved NDA / ANDA.

**Regulatory authorities and agencies**

Overview of regulatory authorities of India, United States, European Union, Australia, Japan, Canada (Organization structure and types of applications)

**UNIT-III**

**10 Hours**

**Registration of Indian drug product in overseas market**

Procedure for export of pharmaceutical products, Technical documentation, Drug Master Files (DMF), Common Technical Document (CTD), electronic Common Technical Document (eCTD), ASEAN Common Technical Document (ACTD) research.



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**UNIT-IV**

**08 Hours**

**Clinical trials**

Developing clinical trial protocols, Institutional Review Board / Independent Ethics committee - formation and working procedures, Informed consent process and procedures, GCP obligations of Investigators, sponsors & Monitors, Managing and Monitoring clinical trials, Pharmacovigilance – safety monitoring in clinical trials

**UNIT-V**

**07 Hours**

**Regulatory Concepts**

Basic terminology, guidance, guidelines, regulations, Laws and Acts, Orange book, Federal Register, Code of Federal Regulatory, Purple book

**Recommended books (Latest edition):**

1. Drug Regulatory Affairs by Sachin Itkar, Dr. N.S. Vyawahare, Nirali Prakashan.
2. The Pharmaceutical Regulatory Process, Second Edition Edited by Ira R. Berry and Robert P. Martin, Drugs and the Pharmaceutical Sciences, Vol.185, Informa Health care publishers.
3. New Drug Approval Process: Accelerating Global Registrations By Richard A Guarino, MD, 5<sup>th</sup> edition, Drugs and the Pharmaceutical Sciences, Vol.190.
4. Guidebook for drug regulatory submissions / Sandy Weinberg. By John Wiley & Sons. Inc.
5. FDA Regulatory Affairs: a guide for prescription drugs, medical devices, and biologics /edited by Douglas J. Pisano, David Mantus.
6. Generic Drug Product Development, Solid Oral Dosage forms, Leon Shargel and Isader Kaufer, Marcel Dekker series, Vol.143
7. Clinical Trials and Human Research: A Practical Guide to Regulatory Compliance By Fay A. Rozovsky and Rodney K. Adams
8. Principles and Practices of Clinical Research, Second Edition Edited by John I. Gallin and Frederick P. Ognibene
9. Drugs: From Discovery to Approval, Second Edition By Rick Ng



  
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**BP805ET PHARMACOVIGILANCE (Theory)**

**45 Hours**

**Scope:**

This paper will provide an opportunity for the student to learn about development of pharmacovigilance as a science, basic terminologies used in pharmacovigilance, global scenario of Pharmacovigilance, train students on establishing pharmacovigilance programme in an organization, various methods that can be used to generate safety data and signal detection. This paper also develops the skills of classifying drugs, diseases and adverse drug reactions

**Objectives:**

At completion of this paper it is expected that students will be able to (know, do, and appreciate):

1. Understand importance of drug safety monitoring.
2. Explain History, development, National and international scenario of pharmacovigilance & comprehend dictionaries, coding and terminologies used in pharmacovigilance
3. Understand detection and assessment of new adverse drug reactions, Adverse drug reaction reporting systems and communication in pharmacovigilance, Pharmacovigilance Program of India (PvPI) requirement for ADR reporting in India ICH guidelines for ICSR, PSUR, expedited reporting, pharmacovigilance planning, CIOMS requirements for ADR reporting
4. Comprehend methods of safety data during pre-clinical, clinical and post approval phases of drugs' life cycle.
5. Write case narratives of adverse events and their quality.

**Course Content:**

**UNIT-I**

**10 Hours**

**Introduction to Pharmacovigilance**

History and development of Pharmacovigilance, Importance of safety monitoring of Medicine, WHO international drug monitoring programme, Pharmacovigilance Program of India (PvPI)

**Introduction to adverse drug reactions**

Definitions and classification of ADRs, Detection and reporting, Methods in Causality assessment, Severity and seriousness assessment, Predictability and preventability assessment, Management of adverse drug reactions

**Basic terminologies used in pharmacovigilance**

Terminologies of adverse medication related events, Regulatory terminologies



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**UNIT-II**

**10 Hours**

**Drug and disease classification**

Anatomical, therapeutic and chemical classification of drugs, International classification of diseases, Daily defined doses, International Nonproprietary Names for drugs

**Drug dictionaries and coding in pharmacovigilance**

WHO adverse reaction terminologies, MedDRA and Standardized MedDRA queries, WHO drug dictionary, Eudravigilance medicinal product dictionary

**Information resources in pharmacovigilance**

Basic drug information resources, Specialized resources for ADRs

**Establishing pharmacovigilance programme**

Establishing in a hospital, Establishment & operation of drug safety department in industry, Contract Research Organizations (CROs), Establishing a national programme.

**UNIT-III**

**10 Hours**

**Vaccine safety surveillance**

Vaccine Pharmacovigilance, Vaccination failure, Adverse events following immunization

**Pharmacovigilance methods**

Passive surveillance – Spontaneous reports and case series, Stimulated reporting,

Active surveillance – Sentinel sites, drug event monitoring and registries, Comparative observational studies – Cross sectional study, case control study and cohort study,

**Targeted clinical investigations**

**Communication in pharmacovigilance**

Effective communication in Pharmacovigilance, Communication in Drug Safety Crisis management, Communicating with Regulatory Agencies, Business Partners, Healthcare facilities & Media

**UNIT-IV**

**08 Hours**

**Safety data generation**

Pre-clinical phase, Clinical phase, Post approval phase (PMS)

**ICH Guidelines for Pharmacovigilance**

Organization and objectives of ICH, Expedited reporting, Individual case safety reports, Periodic safety update reports, Post approval expedited reporting, Pharmacovigilance planning, Good clinical practice in pharmacovigilance studies

**UNIT-V**

**07 Hours**

**Pharmacogenomics of adverse drug reaction**

Genetics related ADR with example focusing PK parameters.

**CIOMS**

CIOMS Working Groups, CIOMS Form

**CDSCO (India) and Pharmacovigilance**

D&C Act and Schedule Y

Differences in Indian and global pharmacovigilance requirements



  
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**BP806ET QUALITY CONTROL AND STANDARDIZATION OF HERBALS (Theory) 45 Hours**

**Scope:**

In this subject the student learns about the various methods and guidelines for evaluation and standardization of herbs and herbal drugs. The subject also provides an opportunity for the student to learn cGMP, GAP and GLP in traditional system of medicines.

**Objectives:**

Upon completion of the subject student shall be able to;

1. Know WHO guidelines for quality control of herbal drugs
2. Know Quality assurance in herbal drug industry
3. Know the regulatory approval process and their registration in Indian and international markets
4. Appreciate EU and ICH guidelines for quality control of herbal drugs

**Course Content**

**UNIT-I**

**10 Hours**

Basic tests for drugs – Pharmaceutical substances, Medicinal plants materials and dosage forms, WHO guidelines for quality control of herbal drugs, Evaluation of commercial crude drugs intended for use

**UNIT-II**

**10 Hours**

Quality assurance in herbal drug industry of cGMP, GAP, GMP and GLP in traditional system of medicine  
WHO guidelines on current Good Manufacturing Practices (cGMP) for Herbal Medicines, WHO guidelines on GACP for Medicinal Plants.

**UNIT-III**

**10 Hours**


EU and ICH guidelines for quality control of herbal drugs.  
Research Guidelines for Evaluating the Safety and Efficacy of Herbal Medicines

**UNIT-IV**

**08 Hours**

Stability testing of herbal medicines. Application of various chromatographic techniques in standardization of herbal products.  
Preparation of documents for new drug application and export registration  
GMP requirements and Drugs & Cosmetics Act provisions.



  
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**UNIT-V**

07 Hours

Regulatory requirements for herbal medicines.

WHO guidelines on safety monitoring of herbal medicines in pharmacovigilance systems.


Comparison of various Herbal Pharmacopoeias.

Role of chemical and biological markers in standardization of herbal products

**Recommended Books (Latest edition):**

1. Pharmacognosy by Trease and Evans
2. Pharmacognosy by Kokate, Purohit and Gokhale
3. Rangari, V.D., Text book of Pharmacognosy and Phytochemistry Vol. I, Carrier Pub., 2006.
4. Aggrawal, S.S., Herbal Drug Technology. Universities Press, 2002.
5. EMEA. Guidelines on Quality of Herbal Medicinal Products/Traditional Medicinal Products,
6. Mukherjee, P.W. Quality Control of Herbal Drugs: An Approach to Evaluation of Botanicals. Business Horizons Publishers, New Delhi, India, 2002.
7. Shinde M.V., Dhalwal K., Potdar K., Mahadik K. Application of quality control principles to herbal drugs. International Journal of Phytomedicine 1(2009); p. 4-8.
8. WHO. Quality Control Methods for Medicinal Plant Materials, World Health Organization, Geneva, 1998. WHO. Guidelines for the Appropriate Use of Herbal Medicines. WHO Regional Publications, Western Pacific Series No 3, WHO Regional office for the Western Pacific, Manila, 1998.
9. WHO. The International Pharmacopoeia, Vol. 2: Quality Specifications, 3rd edn. World Health Organization, Geneva, 1981.
10. WHO. Quality Control Methods for Medicinal Plant Materials. World Health Organization, Geneva, 1999.
11. WHO. WHO Global Atlas of Traditional, Complementary and Alternative Medicine. 2 vol. set. Vol. 1 contains text and Vol. 2, maps. World Health Organization, Geneva, 2005.
12. WHO. Guidelines on Good Agricultural and Collection Practices (GACP) for Medicinal Plants. World Health Organization, Geneva, 2004.



  
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**BP809ET COSMETIC SCIENCE (Theory)**

**45 Hours**

**Scope:**

This course is designed to impart fundamental knowledge of cosmetic and cosmeceutical products & their formulation studies.

**Objectives:**

Upon completion of the course, the student shall be able to:

1. Understand the concepts of cosmetics; anatomy of skin v/s hair, general excipients used in cosmetics.
2. Explain the concept of cosmeceuticals, history, difference between cosmetics & cosmeceuticals & cosmeceuticals agents
3. Know different **Laws and Acts that regulate pharmaceutical industry**
4. Understand the **approval process and regulatory requirements for drug products**

**Course contents**

**UNIT-I**

**10 Hours**

Classification of cosmetic and cosmeceutical products, Definition of cosmetics as per Indian and EU regulations, Evolution of cosmeceuticals from cosmetics, cosmetics as quasi and OTC drugs

**Cosmetic excipients:**

Surfactants, rheology modifiers, humectants, emollients, preservatives. Classification and application

**Skin:** Basic structure and function of skin.

**Hair:** Basic structure of hair. Hair growth cycle.

**Oral Cavity:** Common problem associated with teeth and gums.

**UNIT-II**

**10 Hours**

**Principles of formulation and building blocks of skin care products:**

Face wash, Moisturizing cream, Cold Cream, Vanishing cream and their advantages and disadvantages. Application of these products in formulation of cosmeceuticals.

**Antiperspirants & deodorants-** Actives & mechanism of action.

**Principles of formulation and building blocks of Hair care products:**


Conditioning shampoo, Hair conditioner, anti-dandruff shampoo. Hair oils,

Chemistry and formulation of Para-phenylene diamine based hair dye.

**Principles of formulation and building blocks of oral care products:**

Toothpaste for bleeding gums, sensitive teeth. Teeth whitening, Mouthwash.



  
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**UNIT-III**

**10 Hours**

Sun protection, Classification of Sunscreens and SPF.

**Role of herbs in cosmetics:**

Skin Care: Aloe and turmeric

Hair care: Henna and amla.

Oral care: Neem and clove

**Analytical cosmetics:**

BIS specification and analytical methods for shampoo, skin cream and toothpaste.

**UNIT-IV**

**08 Hours**

**Principles of Cosmetic Evaluation:** Principles of sebumeter, corneometer.

Measurement

of TEWL, Skin Color, Hair tensile strength, Hair combing properties, Soaps and syndet bars. Evolution and skin benefits.

**UNIT-IV**

**07 Hours**

Oily and dry skin, causes leading to dry skin, skin moisturisation. Basic understanding of the terms Comedogenic, dermatitis. Cosmetic problems associated with Hair and scalp: Dandruff, Hair fall causes

Cosmetic problems associated with skin: blemishes, wrinkles, acne, prickly heat and body odor.

Antiperspirants and Deodorants- Actives and mechanism of action

**References**

- 1) Harry's Cosmeticology, Wilkinson, Moore, Seventh Edition, George Godwin.
- 2) Cosmetics – Formulations, Manufacturing and Quality Control, P.P. Sharma, 4th Edition, Vandana Publications Pvt. Ltd., Delhi.
- 3) Text book of cosmeticology by Sanju Nanda & Roop K. Khar, Tata Publishers.



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**BP810ET EXPERIMENTAL PHARMACOLOGY (Theory)**

**45 Hours**

**Scope:**

This subject is designed to impart the basic knowledge of preclinical studies in experimental animals including design, conduct and interpretations of results.

**Objectives**

Upon completion of the course the student shall be able to,

1. Understand the applications of various commonly used laboratory animals.
2. Demonstrate the various screening methods used in preclinical research.
3. Comprehend and demonstrate the importance of biostatistics and research methodology.
4. Design and execute a research hypothesis independently.

**Course contents**

**UNIT-I**

**10 Hours**

**Laboratory Animals:**

Study of CPCSEA and OECD guidelines for maintenance, breeding and conduct of experiments on laboratory animals, Common lab animals: Description and applications of different species and strains of animals, Popular transgenic and mutant animals.

Techniques for collection of blood and common routes of drug administration in laboratory animals, Techniques of blood collection and euthanasia.

**UNIT-II**

**10 Hours**

**Preclinical screening models**

- a. Introduction: Dose selection, calculation and conversions, preparation of drug solution/suspensions, grouping of animals and importance of sham negative and positive control groups. Rationale for selection of animal species and sex for the study.
- b. Study of screening animal models for Diuretics, nootropics, anti-Parkinson's, antiasthmatics, Preclinical screening models: for CNS activity- analgesic, antipyretic, anti-inflammatory, general anaesthetics, sedative and hypnotics, antipsychotic, antidepressant, antiepileptic, antiparkinsonism, alzheimer's disease.

**UNIT-III**

**10 Hours**

**Preclinical screening models:**

for ANS activity, sympathomimetics, sympatholytics, parasympathomimetics, parasympatholytics, skeletal muscle relaxants, drugs acting on eye, local anaesthetics.



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**UNIT-IV**

**08 Hours**

Preclinical screening models:

for CVS activity- antihypertensives, diuretics, antiarrhythmic, antidyslipidemic, anti aggregatory, coagulants, and anticoagulants

Preclinical screening models for other important drugs like antiulcer, antidiabetic, anticancer and antiasthmatics

**UNIT-V**

**07 Hours**


Research methodology and Bio-statistics.

Selection of research topic, review of literature, research hypothesis and study design Pre-clinical data analysis and interpretation using Students't' test and One-way ANOVA. Graphical representation of data

**Recommended Books (latest edition):**

1. Fundamentals of experimental Pharmacology-by M.N.Ghosh
2. Hand book of Experimental Pharmacology-S.K.Kulakarni
3. CPCSEA guidelines for laboratory animal facility.
4. Drug discovery and Evaluation by Vogel H.G.
5. Drug Screening Methods by Suresh Kumar Gupta and S. K. Gupta
6. Introduction to biostatistics and research methods by PSS Sundar Rao and J Richard



  
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**BP812ET DIETARY SUPPLEMENTS AND NUTRACEUTICALS (Theory)**

**45 Hours**

**Scope:**

This subject covers foundational topic that are important for understanding the need and requirements of dietary supplements among different groups in the population.

**Objective:**

This module aims to provide an understanding of the concepts behind the theoretical applications of dietary supplements. By the end of the course, students should be able to:

1. Understand the need of supplements by the different group of people to maintain healthy life.
2. Understand the outcome of deficiencies in dietary supplements.
3. Recognize the components in dietary supplements and the application.
4. Acquaint with the regulatory and commercial aspects of dietary supplements including health claims.

**Course content:**

**UNIT-I**

**07 Hours**

Definitions of Functional foods, Nutraceuticals and Dietary supplements. Classification of Nutraceuticals, Health problems and diseases that can be prevented or cured by Nutraceuticals i.e. weight control, diabetes, cancer, heart disease, stress, osteoarthritis, hypertension etc.

Public health nutrition, maternal and child nutrition, nutrition and ageing, nutrition education in community.

Source, Name of marker compounds and their chemical nature, Medicinal uses and health benefits of following used as nutraceuticals/functional foods: Spirulina, Soyabean, Ginseng, Garlic, Broccoli, Gingko, Flaxseeds

**UNIT-II**

**15 Hours**

**Phytochemicals as nutraceuticals:** Occurrence and characteristic features (chemical nature medicinal benefits) of following

**Carotenoids-**  $\alpha$  and  $\beta$ -Carotene, Lycopene, Xanthophylls, lutein

**Sulfides:** Diallyl sulfides, Allyl trisulfide.

**Polyphenolics:** Resveratrol

**Flavonoids-** Rutin, Naringin, Quercetin, Anthocyanidins, catechins, Flavones

**Prebiotics / Probiotics.:** Fructo oligosaccharides, Lacto bacillum

**Phyto estrogens :** Isoflavones, daidzein, Geobustin, lignans

**Tocopherols**

Proteins, vitamins, minerals, cereal, vegetables and beverages as functional foods: oats,



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Wheat bran, rice bran, sea foods, coffee, tea and the like,

#### UNIT-III

07 Hours

**Introduction to free radicals:** Free radicals, reactive oxygen species, production of free radicals in cells, damaging reactions of free radicals on lipids, proteins, Carbohydrates, nucleic acids.

Dietary fibres and complex carbohydrates as functional food ingredients.

#### UNIT-IV

10 Hours

**Free radicals** in Diabetes mellitus, Inflammation, Ischemic reperfusion injury, Cancer, Atherosclerosis, Free radicals in brain metabolism and pathology, kidney damage, muscle damage. Free radicals involvement in other disorders. Free radicals theory of ageing.

**Antioxidants:** Endogenous antioxidants – enzymatic and nonenzymatic antioxidant defense, Superoxide dismutase, catalase, Glutathione peroxidase, Glutathione Vitamin C, Vitamin E,  $\alpha$ - Lipoic acid, melatonin Synthetic antioxidants: Butylated hydroxy Toluene, Butylated hydroxy Anisole.

Functional foods for chronic disease prevention.

#### UNIT-V

06 Hours

Effect of processing, storage and interactions of various environmental factors on the potential of nutraceuticals.

**Regulatory Aspects:** FSSAI, FDA, FPO, MPO, AGMARK. HACCP and GMPs on Food Safety. Adulteration of foods.

**Pharmacopoeial Specifications** for dietary supplements and nutraceuticals.

#### References:

1. Dietetics by Sri Lakshmi
2. Role of dietary fibres and nutraceuticals in preventing diseases by K.T Agusti and P.Faizal: BS Publication.
3. Advanced Nutritional Therapies by Cooper, K.A., (1996).
4. The Food Pharmacy by Jean Carper, Simon & Schuster, UK Ltd., (1988).
5. Prescription for Nutritional Healing by James F.Balch and Phyllis A.Balch 2<sup>nd</sup>Edn., Avery Publishing Group, NY (1997).
6. G. Gibson and C.williams Editors 2000 *Functional foods* Woodhead Publ. Co.London.
7. Goldberg, I. *Functional Foods*. 1994, Chapman and Hall, New York.
8. Labuza, T.P. 2000 Functional Foods and Dietary Supplements: Safety, Good Manufacturing Practice (GMPs) and Shelf Life Testing in *Essentials of Functional Foods* M.K. Sachmidl and T.P. Labuza eds. Aspen Press.
9. Handbook of Nutraceuticals and Functional Foods, Third Edition (Modern Nutrition)
10. Shils, ME, Olson, JA, Shike, M. 1994 *Modern Nutrition in Health and Disease*. Eighth edition. Lea and Febiger



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**BP813PW PROJECT WORK**

All the students shall undertake a project under the supervision of a teacher and submit a report. The area of the project shall directly relate any one of the elective subject opted by the student in semester VIII. The project shall be carried out in group not exceeding 5 in number. The project report shall be submitted in triplicate (typed & bound copy not less than 25 pages).

The internal and external examiner appointed for evaluation of the project shall be approved teachers of SPPU /Industrial Experts appointed by Principal of the respective institute.

Students shall be evaluated in groups for four hours (i.e., about half an hour for a group of five students). The projects shall be evaluated as per the criteria given below

***Evaluation of Dissertation Book***

Objective(s) of the work done	15 Marks
Methodology adopted	20 Marks
Results and Discussions	20 Marks
Conclusions and Outcomes	20 Marks
<b>Total</b>	<b>75 Marks</b>

***Evaluation of Presentation:***

Presentation of work	25 Marks
Communication skills	20 Marks
Question and answer skills	30 Marks
<b>Total</b>	<b>75 Marks</b>

**Explanation:**

The 75 marks assigned to the dissertation book shall be same for all the students in a group. However, the 75 marks assigned for presentation shall be awarded based on the performance of individual students in the given criteria.



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**MODERN PHARMACEUTICS  
(MPH 103T)**

**Scope**

Course designed to impart advanced knowledge and skills required to learn various aspects and concepts at pharmaceutical industries

**Objectives**

Upon completion of the course, student shall be able to understand


- The elements of preformulation studies.
- The Active Pharmaceutical Ingredients and Generic drug Product development
- Industrial Management and **GMP Considerations**.
- Optimization Techniques & Pilot Plant Scale Up Techniques
- **Stability Testing, sterilization process** & packaging of dosage forms.

**THEORY**

**60 HRS**

1. Preformation Concepts – Drug Excipient interactions - different methods, kinetics of stability, Stability testing. Theories of dispersion and pharmaceutical Dispersion (Emulsion and Suspension, SMEDDS) preparation and stability. Large and small volume parental – physiological and formulation consideration, Manufacturing and evaluation.  
**12 Hrs**
2. Optimization techniques in Pharmaceutical Formulation: Concept and parameters of optimization, Optimization techniques in pharmaceutical formulation and processing. Statistical design, Response surface method, Contour designs, Factorial designs and application in formulation .  
**10 Hrs**
3. Validation : Introduction to Pharmaceutical Validation, Scope & merits of Validation, **ICH & WHO guidelines for validation of equipments**, Validation of cone blender, mixer granulator and tablet compression machine, URS, DQ, IQ, OQ & P.Q. of facilities, Types of process validation. Process validation of any one dosage form. Technology transfer from R & D to pilot plant to plant scale.  
**12 Hrs**
4. GMP & Industrial Management: Objectives and policies of current good manufacturing practices, layout of buildings, services, equipments and their maintenance Production management: Production organization, materials management, handling and transportation, inventory management and control, production and planning control, Sales forecasting, budget and cost control, industrial and personal relationship. Concept of Total Quality Management.  
**10 Hrs**
5. Compression and compaction: Physics of tablet compression, compression, consolidation, effect of friction, distribution of forces, compaction profiles, Study of consolidation parameters, Heckel plots.  
**10 Hrs**
6. Diffusion parameters, Dissolution parameters and Pharmacokinetic parameters, Similarity factors –  $t_2$  and  $f_1$ , Disolution models including Higuchi, Peppas plot, zero order, first order and Hixson Crowell.  
**06 Hrs**



  
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## REGULATORY AFFAIRS (MPH 104T)

### SCOPE

Course designed to impart advanced knowledge and skills required to learn the concept of generic drug and their development, various regulatory filings in different countries, different phases of clinical trials and submitting regulatory documents: filing process of IND, NDA and ANDA

- To know the approval process of
- To know the chemistry, manufacturing controls and their regulatory importance
- To learn the documentation requirements for
- To learn the importance and

### OBJECTIVES

Upon completion of the course, it is expected that the students will be able to understand

- The Concepts of innovator and generic drugs, drug development process
- The Regulatory guidance's and guidelines for filing and approval process
- Preparation of Dossiers and their submission to regulatory agencies in different countries
- Post approval regulatory requirements for actives and drug products
- Submission of global documents in CTD/ eCTD formats
- Clinical trials requirements for approvals for conducting clinical trials
- Pharmacovigilance and process of monitoring in clinical trials.

### THEORY

60 Hrs

1. a) Documentation in Pharmaceutical industry: Master formula record, DMF (Drug Master File), distribution records, Generic drugs product development Introduction, Hatch-Waxman act and amendments, CFR (CODE OF FEDERAL REGULATION), drug product performance, in-vitro, ANDA regulatory approval process, NDA approval process, BE and drug product assessment, in-vivo, scale up process approval changes, post marketing surveillance, outsourcing BA and BE to CRO. **12 Hrs**  
b) Regulatory requirement for product approval: API, biologics, novel, therapies obtaining NDA, ANDA for generic drugs ways and means of US registration for foreign drugs. **12 Hrs**
2. CMC, post approval regulatory affairs, Regulation for combination products and medical devices. CTD and ECTD format, industry and FDA liaison, ICH - Guidelines of ICH-Q, S, E, M. Regulatory requirements of EU, MHRA, TGA and ROW countries. **12 Hrs**
3. Non clinical drug development: Global submission of IND, NDA, ANDA. Investigation of medicinal products dossier, dossier (IMPD) and investigator brochure (IB). **12 Hrs**



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4. Clinical trials: Developing clinical trial protocols. Institutional review board/ independent ethics committee Formulation and working procedures informed Consent process and procedures. HIPAA – new, requirement to clinical study process, pharmacovigilance safety monitoring in clinical trials. 12 Hrs

#### REFERENCES

1. Generic Drug Product Development, Solid Oral Dosage forms, Leon Shargel and IsaderKaufer, Marcel Dekker series, Vol.143
2. The Pharmaceutical Regulatory Process, Second Edition Edited by Ira R. Berry and Robert P.Martin, Drugs and the Pharmaceutical Sciences, Vol.185, Informa Health care Publishers.
3. New Drug Approval Process: Accelerating Global Registrations By Richard A Guarino, MD, 5th edition, Drugs and the Pharmaceutical Sciences, Vol.190.
4. Guidebook for drug regulatory submissions / Sandy Weinberg. By John Wiley & Sons, Inc.
5. FDA regulatory affairs: a guide for prescription drugs, medical devices, and biologics/edited By Douglas J. Pisano, David Mantus.
6. Clinical Trials and Human Research: A Practical Guide to Regulatory Compliance By Fay A.Rozovsky and Rodney K. Adams
7. [www.ich.org/](http://www.ich.org/)
8. [www.fda.gov/](http://www.fda.gov/)
9. [europa.eu/index\\_en.htm](http://europa.eu/index_en.htm)
10. <https://www.tga.gov.au/tga-basics>



  
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**PHARMACEUTICS PRACTICALS - II**  
(MPH 205P)

1. To study the effect of temperature change, non solvent addition, incompatible polymer addition in microcapsules preparation
2. Preparation and evaluation of Alginate beads
3. Formulation and evaluation of gelatin /albumin microspheres
4. Formulation and evaluation of liposomes/niosomes
5. Formulation and evaluation of spherules/microparticles
6. Improvement of dissolution characteristics of slightly soluble drug by Solid dispersion technique.
7. Comparison of dissolution of two different marketed products /brands
8. Protein binding studies of a highly protein bound drug & poorly protein bound drug
9. Case studies of Bioavailability studies of Paracetamol in animals.
10. Case studies of Pharmacokinetic and IVIVC data analysis
11. Case studies of In vitro cell studies for permeability and metabolism
12. Design of Experiment for any formulation using Design Expert® Software (Only formulation DOE is expected)
13. Formulation data analysis Using Design Expert® Software (Data analysis and interpretation of the previous experiment is expected)
14. Quality-by-Design in Pharmaceutical Development
15. Case studies of Computer Simulations in Pharmacokinetics and Pharmacodynamics
16. Case studies of Computational Modeling of Drug Disposition
17. Case studies of Developing Clinical Data Collection manual
18. Case studies of Sensitivity Analysis, and Population Modeling
19. Development and evaluation of Creams
20. Development and evaluation of Shampoo and Toothpaste base
21. To incorporate herbal and chemical actives to develop products to address Dry skin, acne, blemish, Wrinkles, bleeding gums and dandruff



  
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**PHARMACEUTICAL CHEMISTRY PRACTICAL - I**  
**(MPC 105P)**

1. Analysis of Pharmacopoeial compounds and their formulations by UV Vis spectrophotometer, RNA & DNA estimation
2. Simultaneous estimation of multi component containing formulations by UV spectrophotometry
3. Experiments based on Column chromatography
4. Experiments based on HPLC
5. Experiments based on Gas Chromatography
6. Estimation of riboflavin/quinine sulphate by fluorimetry
7. Estimation of sodium/potassium by flame photometry

**To perform the following reactions of synthetic importance**

1. Purification of organic solvents, column chromatography
2. Claisen-Schmidt reaction.
3. Benzyllic acid rearrangement.
4. Beckmann rearrangement.
5. Hoffmann rearrangement
6. Mannich reaction
7. Synthesis of medicinally important compounds involving more than one step along with purification and Characterization using TLC, melting point and IR spectroscopy (4 experiments)
8. Estimation of elements and functional groups in organic natural compounds
9. Isolation, characterization like melting point, mixed melting point, molecular weight determination, functional group analysis, co-chromatographic technique for identification of isolated compounds and interpretation of UV and IR data.
10. Some typical degradation reactions to be carried on selected plant constituents



  
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ADVANCED SPECTRAL ANALYSIS (MPC 201T)		60 Hrs
<b>Scope</b> This subject deals with various hyphenated analytical instrumental techniques for identification, characterization and quantification of drugs. Instruments dealt are LC-MS, GC-MS, ATR-IR, DSC etc.		
<b>Objectives</b> At completion of this course it is expected that students will be able to understand - <ul style="list-style-type: none"><li>• Interpretation of the NMR, Mass and IR spectra of various organic compounds</li><li>• Theoretical and practical skills of the hyphenated instruments</li><li>• Identification of organic compounds</li></ul>		
<b>UNIT-I</b> <b>UV and IR spectroscopy</b> <ul style="list-style-type: none"><li>• Woodward - Fieser rule for 1,3-butadienes, cyclic dienes and <math>\alpha</math>, <math>\beta</math>-carbonyl compounds and interpretation compounds of enones.</li><li>• ATR-IR, Interpretation of IR Spectra of Organic Compound</li></ul>		12 Hrs
<b>UNIT-II</b> <b>NMR spectroscopy</b> 1-D and 2-D NMR, NOESY and COSY, HECTOR, INADEQUATE techniques, Interpretation of organic compounds.		12 Hrs
<b>UNIT-III</b> <b>Mass Spectroscopy</b> Mass fragmentation and its rules, Fragmentation of important functional groups like alcohols, amines, carbonyl groups and alkanes, Meta stable ions, McLafferty rearrangement, Ring rule, Isotopic peaks, Interpretation of organic compounds.		12 Hrs
<b>UNIT-IV</b> <b>Chromatography:</b> Principle, Instrumentation and Applications of the following: a) GC-MS b) GC-AAS c) LC-MS d) LC-FTIR e) LC-NMR f) CE-MS g) Super critical fluid chromatography h) Flash chromatography i) LC-MS/MS		16 Hrs
<b>UNIT-V</b> a) <b>Thermal methods of analysis</b> Interpretation of TGA, DTA and DSC spectra of drug and excipients b) Bioassay, ELISA, Radioimmuno assay of digitalis and insulin.		8 Hrs

**REFERENCES**

1. Spectrometric Identification of Organic compounds – Robert M Silverstein, Sixth edition, John Wiley & Sons, 2004.
2. Principles of Instrumental Analysis – Douglas A Skoog, F. James Holler, Timothy A. Nieman, 5th edition, Eastern press, Bangalore, 1998.
3. Instrumental methods of analysis - Willards, 7th edition, CBS publishers.
4. Organic Spectroscopy – William Kemp, 3rd edition, ELBS, 1991.
5. Quantitative analysis of Pharmaceutical formulations by HPTLC – P D Setti, CBS Publishers, New Delhi.



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**PHARMACEUTICAL CHEMISTRY PRACTICALS – II**  
(MPC 205P)

- 1) Synthesis of organic compounds by adapting different approaches involving (3 experiments)
  - Oxidation
  - Reduction/hydrogenation
  - Nitration
- 2) Comparative study of synthesis of APIs/intermediates by different synthetic routes (2 experiments)
- 3) Assignments on regulatory requirements in API (2 experiments)
- 4) Comparison of absorption spectra by UV and Woodward - Fieser rule
- 5) Interpretation of organic compounds by FT-IR
- 6) Interpretation of organic compounds by NMR
- 7) Interpretation of organic compounds by MS
- 8) Determination of purity by DSC in pharmaceuticals
- 9) Identification of organic compounds using FT-IR, NMR, CNMR and Mass spectra
- 10) To carry out the preparation of following organic compounds
- 11) Preparation of 4-chlorobenzhydrylpiperazine. (An intermediate for cetirizine HCl).
- 12) Preparation of 4-iodotoluene from p-toluidine.
- 13) NaBH<sub>4</sub> reduction of vanillin to vanillyl alcohol
- 14) Preparation of umbelliferone by Pechmann reaction
- 15) Preparation of triphenyl imidazole
- 16) To perform the Microwave irradiated reactions of synthetic importance (Any two)
- 17) Determination of log P, MR, hydrogen bond donors and acceptors of selected drugs using softwares.
- 18) Calculation of ADMET properties of drug molecules and its analysis using softwares
- 19) Pharmacophore modeling
- 20) 2D-QSAR based experiments
- 21) 3D-QSAR based experiments
- 22) Docking study based experiment
- 23) Virtual screening based experiment

  
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**QUALITY ASSURANCE PRACTICAL - I**

(MQA 105P)

1. Analysis of Pharmacopoeial compounds in bulk and in their formulations (tablet / capsules / semisolids) by UV Vis spectrophotometer
2. Simultaneous estimation of multi-drug component containing formulations by UV spectrophotometry
3. Experiments based on HPLC
4. Experiments based on Gas Chromatography
5. Estimation of riboflavin/quinine sulphate by fluorimetry
6. Estimation of sodium/potassium by flame photometry or AAS
7. Case studies on –
  - Total Quality Management
  - Six Sigma
  - Change Management/ Change control, Deviations
  - Out of Specifications (OOS)
  - Out of Trend (OOT)
  - Corrective & Preventive Actions (CAPA)
  - Deviations
8. Development of Stability study protocol
9. Estimation of process capability
10. In process and finished product quality control tests for tablets, capsules, parenterals and semisolid dosage forms.
11. Assay of raw materials as per official monographs
12. Testing of related and foreign substances in drugs and raw materials
13. To carry out pre formulation study for tablets, parenterals (2 experiment).
14. To study the effect of pH on the solubility of drugs, (1 experiment)
15. Quality control tests for Primary and secondary packaging materials
16. Accelerated stability studies (1 experiment)
17. Improved solubility of drugs using surfactant systems (1 experiment)
18. Improved solubility of drugs using co-solvency method (1 experiment)
19. Determination of Pka and Log p of drugs.



  
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HAZARDS AND SAFETY MANAGEMENT (MQA 201T)	
	60 Hrs
<b>Scope</b> This course is designed to convey the knowledge necessary to understand issues related to different kinds of hazard and their management. Basic theoretical and practical discussions integrate the proficiency to handle the emergency situation in the pharmaceutical product development process and provides the principle based approach to solve the complex tribulations.	
<b>Objectives</b> At completion of this course it is expected that students will be able to <ul style="list-style-type: none"><li>Understand about environmental problems among learners.</li><li>Impart basic knowledge about the environment and its allied problems.</li><li>Develop an attitude of concern for the industry environment.</li><li>Ensure safety standards in pharmaceutical industry</li><li>Provide comprehensive knowledge on the safety management</li><li>Empower an ideas to clear mechanism and management in different kinds of hazard management system</li><li>Teach the method of Hazard assessment, procedure, methodology for provide safe industrial atmosphere.</li></ul>	
<b>UNIT-I</b> <ul style="list-style-type: none"><li>Multidisciplinary nature of environmental studies: Natural Resources and associated problems, Renewable and non-renewable resources, a) Forest resources; b) Water resources; c) Mineral resources; d) Energy resources; e) Land resources</li><li>Ecosystems: Concept of an ecosystem, Structure and function of an ecosystem. Environmental hazards: Hazards based on Air, Water, Soil and Radioisotopes.</li></ul>	12 Hrs
<b>UNIT-II</b> <ul style="list-style-type: none"><li>Air based hazards Sources, Types of Hazards, Air circulation, Air handling system, HVAC system, air maintenance in industry for sterile area and non sterile area.</li></ul>	12 Hrs
<b>UNIT-III</b> <ul style="list-style-type: none"><li>Chemical based hazards: Sources of chemical hazards, Hazards of Organic synthesis, sulphonating hazard, Organic solvent hazard. Control measures for chemical hazards. Management of combustible gases, Toxic gases and Oxygen displacing gases management, Regulations for chemical hazard, MSDS, Labelling guidelines, Management of over-exposure to chemicals and TLV concept, Disposal of hazardous material.</li></ul>	12 Hrs
<b>UNIT-IV</b> <ul style="list-style-type: none"><li>Fire and Explosion: Introduction, Industrial processes and hazards potential, Mechanical, electrical, thermal and process hazards, mechanical and chemical explosion, multiphase reactions. Safety and hazards regulations</li><li>Fire protection system: Fire prevention, types of fire extinguishers and critical Hazard management system, Preventive and protective management from fires and explosion- electricity passivation, ventilation, and sprinkling, proofing, fire walls, bunds, relief systems - relief valves, flares, scrubbers.</li></ul>	12 Hrs



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**UNIT-V**

- **Hazard and risk management:** Self-protective measures against workplace hazards. Critical training for risk management, Process of hazard management, ICH guidelines on risk assessment and Risk management methods and Tools, Preliminary hazard analysis
- **Factory act and rules, fundamentals of accident prevention, elements of safety programme and safety management, Physicochemical measurements of effluents, BOD, COD, Determination of some contaminants, Effluent treatment procedure, Role of emergency services.**

**12 Hrs**

**REFERENCES**

1. Y.K. Sing, Environmental Science, New Age International Pvt, Publishers, Bangalore
2. Quantitative Risk Assessment in Chemical Process Industries, American Institute of Chemical Industries, Centre for Chemical Process safety.
3. T.S.S. Dikshith, Hazardous Chemicals: Safety Management and Global Regulations, CRC press
4. M. N. Vyas, Safety and hazard management in chemical industries, Atlantic Publisher
5. Daniel A. Crowl, Joseph F. Louvar, Chemical Process Safety: Fundamentals with Applications, 3rd Edition, Prentice Hall, 2011
6. H. H. Fawcett and W.S. Wood, Safety and Accident Prevention in Chemical Operations, 2nd E/d, John Wiley & Sons, New York 1982.
7. C.S.Rao, Environmental Pollution Control Engineering, New Age international publisher
8. Phillip Carson, Clive Mumford, Butterworth-Heinemann, Hazardous Chemicals Handbook, Second edition, An imprint of Elsevier Science.



  
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**QUALITY ASSURANCE PRACTICAL – II PRACTICALS**  
(MQA 205P)

1. Organic contaminants residue analysis by HPLC
2. Identification of antibiotic residue by TLC
3. Estimation of Chlorine in Work Environment.
4. Sampling and analysis of SO<sub>2</sub> using Colorimetric method
5. Qualification of following Pharma equipment
  - a) Autoclave
  - b) Hot air oven
  - c) Powder Mixer (Dry)
  - d) Tablet Compression Machine
6. Validation of an analytical method for a drug
7. Process validation of any non-sterile or sterile dosage form
8. Validation of a processing area
9. Qualification of at least two analytical instruments
10. Cleaning validation of one equipment
11. Qualification of Pharmaceutical Testing Equipment (Dissolution testing apparatus, riability Apparatus, Disintegration Tester)
12. Check list for Bulk Pharmaceutical Chemicals vendors
13. Check list for tableting production.
14. Check list for sterile production area
15. Check list for Water for injection.
16. Design of plant layout: Sterile and non-sterile
17. Case study on application of QbD
18. Case study on application of PAT



  
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**PHARMACOLOGICAL AND TOXICOLOGICAL SCREENING METHODS - I**  
(MPL 103T)

**SCOPE**

This subject is designed to impart the knowledge on preclinical evaluation of drugs and recent experimental techniques in the drug discovery and development. The subject content helps the student to understand the maintenance of laboratory animals as per the guidelines, basic knowledge of various *in-vitro* and *in-vivo* preclinical evaluation processes

**OBJECTIVES**

Upon completion of the course the student shall be able to,

- Appraise the regulations and ethical requirement for the usage of experimental animals.
- Describe the various animals used in the drug discovery process and good laboratory practices in maintenance and handling of experimental animals
- Describe the various newer screening methods involved in the drug discovery process
- Appreciate and correlate the preclinical data to humans

**THEORY**

60 Hrs

**Unit-I Laboratory Animals**

12 Hrs

Common Laboratory animals: Description, handling and applications of different species and strains of animals.

Transgenic animals: Production, maintenance and applications.

CPCSEA Guidelines for experimental animals.

Anesthesia and euthanasia of experimental animals

Maintenance and breeding of laboratory animals.

Good laboratory Practice.

**Unit-II Preclinical screening of new substances for the pharmacological activity using *in vivo*, *in vitro* and other possible alternative methods in animals.**

12 Hrs

**CNS Pharmacology:**

General principles of preclinical screening, screening of behavioral and muscle coordination, CNS stimulants and depressants, anxiolytics, anti-psychotics, anti-epileptics, nootropics, Parkinsonism and Alzheimer's.

Drugs acting on Autonomic nervous system.

**Unit-III Preclinical screening of new substances for the pharmacological activity using *in vivo*, *in vitro* and other possible alternative methods in animals.**

12 Hrs


**Respiratory Pharmacology:**

Anti-asthmatics, drugs for COPD and anti-allergic.

**Reproductive Pharmacology:** Aphrodisiacs and anti-fertility agents

**Gastrointestinal drugs:**



  
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- Anti-ulcer, anti-emetic, anti-diarrheal and laxatives  
Analgesic, anti-inflammatory and anti-pyretic drugs.
- Unit-IV** **Preclinical screening of new substances for the pharmacological activity using *in vivo*, *in vitro* and other possible alternative methods in animals.** 12 Hrs
- Cardiovascular Pharmacology:**  
Anti-hypertensive, anti-arrhythmic, anti-anginals, anti-atherosclerotic, and diuretics.
- Drugs for metabolic disorders:**  
Anti-diabetic, anti-hyperlipidemic and anti-cancer drugs.  
Methods for screening of Hepatoprotective drugs.
- Unit-V** **Preclinical screening of new substances for the pharmacological activity using *in vivo*, *in vitro* and other possible alternative methods in animals.** 12 Hrs
- Immunosuppressant's and immunomodulators  
General principles of immunoassay: Theoretical basis and optimization of immunoassay, heterogeneous and homogenous immunoassay system. Immunoassay methods evaluation; protocol outline, objectives and preparation. Immunoassay for digoxin and insulin.  
Limitation of animal experimentation and alternate animal experiments.  
Extrapolation of *in vitro* data to preclinical and preclinical to humans.

#### REFERENCES

1. Biological standardization by J.H. Burn D.J. Finney and I.G. Goodwin.
2. Screening methods in Pharmacology by Robert Turner. A.
3. Evaluation of drugs activities by Laurence and Bachrach.
4. Methods in Pharmacology by Arnold Schwartz.
5. Fundamentals of experimental Pharmacology by M. N. Ghosh.
6. Pharmacological experiment on intact preparations by Churchill Livingstone.
7. Drug discovery and Evaluation by Vogel H.G.
8. Experimental Pharmacology by R. K. Goyal.
9. Preclinical evaluation of new drugs by S. K. Gupta.
10. Handbook of Experimental Pharmacology, S. K. Kulkarni.
11. Practical Pharmacology and Clinical Pharmacy, S. K. Kulkarni, 3rd Edition.
12. David R. Gross. Animal Models in Cardiovascular Research, 2<sup>nd</sup> Edition, Kluwer Academic Publishers, London, UK.
13. Rodents for Pharmacological Experiments, Dr. Tapan Kumar Chatterjee.
14. Practical Manual of Experimental and Clinical Pharmacology by Bikash Medhi, Ajay Prakash.



  
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**PHARMACOLOGICAL PRACTICAL-I**  
**(MPL 105P)**

1. Analysis of pharmacopoeial compounds & their formulations by UV Vis spectrophotometer.
2. Simultaneous estimation of multi component containing formulations by UV Spectrophotometry.
3. Experiments based on HPLC.
4. Experiments based on Gas Chromatography.
5. Estimation of riboflavin/quinine sulphate by Fluorimetry.
6. Estimation of sodium/potassium by flame photometry.

**LABORATORY ANIMALS EXPERIMENTS**

1. Various routes of drug administration.
2. Techniques of blood sampling, anesthesia and euthanasia of experimental animals.
3. Functional observation battery tests (modified Irwin test)
4. Evaluation of CNS stimulant, depressant, anxiogenics and anxiolytic, anticonvulsant activity.
5. Evaluation of analgesic, anti-inflammatory, local anesthetic, mydriatic and miotic activity.
6. Evaluation of diuretic activity.
7. Evaluation of antiulcer activity by pylorus ligation method.
8. Oral glucose tolerance test.
9. Isolation and identification of DNA from various sources (Bacteria, Cauliflower, onion, Goat liver).
10. Isolation of RNA from yeast
11. Estimation of proteins by Bradford/Lowry's in biological samples.
12. Estimation of RNA/DNA by UV Spectroscopy
13. Gene amplification by PCR.
14. Protein quantification Western Blotting.
15. Enzyme based in-vitro assays (MPO, AChEs,  $\alpha$ -amylase,  $\alpha$ -glucosidase).
16. Cell viability assays (MTT/Trypan blue/SRB).
17. DNA fragmentation assay by agarose gel electrophoresis.
18. DNA damage study by Comet assay.



  
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19. Apoptosis determination by fluorescent imaging studies.
20. Pharmacokinetic studies and data analysis of drugs given by different routes of administration using softwares.
21. Enzyme inhibition and induction activity
22. Extraction of drug from various biological samples and estimation of drugs in biological fluids using different analytical techniques (UV)
23. Extraction of drug from various biological samples and estimation of drugs in biological fluids using different analytical techniques (HPLC)

#### REFERENCES

1. CPCSEA, OECD, ICH, USFDA, Schedule Y, EPA guidelines.
2. Fundamentals of experimental Pharmacology by M. N. Ghosh.
3. Handbook of Experimental Pharmacology by S.K. Kulkarni.
4. Drug discovery and Evaluation by Vogel H.G.
5. Spectrometric Identification of Organic compounds – Robert M Silverstein,
6. Principles of Instrumental Analysis – Douglas A Skoog, F. James Holler, Timothy A. Nieman.
7. Vogel's Text book of quantitative chemical analysis –Jeffery, Basset, Mendham, Denney.
8. Basic Cell Culture protocols by Cheril D. Helgason and Cindy L. Mille.
9. Basic Cell Culture (Practical Approach) by J. M. Davis.
10. Animal Cell Culture: A Practical Approach by John R. Masters.
11. Practical Manual of Experimental and Clinical Pharmacology by Bikash Medhi, Ajay Prakash Jaypee brothers' medical publishers Pvt. Ltd



  
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**PHARMACOLOGICAL AND TOXICOLOGICAL SCREENING METHODS-II  
(MPL202T)**

**SCOPE**

This subject imparts knowledge on the preclinical safety and toxicological evaluation of drug and new chemical entity. This knowledge will make the student competent in regulatory toxicological evaluation.

**OBJECTIVES**

Upon completion of the course the student shall be able to:

- Explain the various types of toxicity studies.
- Appreciate the importance of ethical and regulatory requirements for toxicity studies.
- Demonstrate the practical skills require conducting the preclinical toxicity studies.

**THEORY**

**60 Hrs**

<b>Unit-I</b>	Basic definition and types of toxicology ( general, mechanistic, regulatory and descriptive ) Regulatory guidelines for conducting toxicity studies OECD, ICH, EPA and Schedule Y OECD principles of Good laboratory practice. History, concept and its importance in drug development	<b>12 Hrs</b>
<b>Unit -II</b>	Acute, Sub-acute and chronic-oral, dermal and inhalational studies as per OECD guidelines. Acute eye irritation, skin sensitization, dermal irritation & dermal toxicity studies. Test item characterization- importance and methods in regulatory toxicity studies.	<b>12 Hrs</b>
<b>Unit-III</b>	Reproductive toxicity studies, Male reproductive toxicity studies, Female reproductive studies (segment I and III), teratogenicity studies (segment II) Genotoxicity studies ( Ames Test, <i>in vitro</i> and <i>in vivo</i> Micronucleus and Chromosomal aberrations studies) In vivo carcinogenicity studies	<b>12 Hrs</b>
<b>Unit-IV</b>	IND enabling studies (IND studies): Definition of IND, importance of IND, industry perspective, list of studies needed for IND submission. Safety pharmacology studies: origin, concepts and importance of safety pharmacology Tier 1- CVS, CNS and respiratory safety pharmacology, HERG assay. Tier 2- GI, renal and other studies.	<b>12 Hrs</b>
<b>Unit-V</b>	Toxicokinetics – Toxicokinetic evaluation in preclinical studies, saturation kinetics. Importance and applications of toxicokinetic studies. Alternative methods to animal toxicity testing.	<b>12 Hrs</b>



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#### REFERENCES

1. Hand book on GLP, Quality practices for regulated non-clinical research and development (<http://www.who.int/tdr/publications/documents/glp-handbook.pdf>).
2. Schedule Y Guideline: drugs and cosmetics (second amendment) rules, 2005, ministry of health and family welfare (department of health) New Delhi.
3. Drugs from discovery to approval by Rick NG.
4. Animal Models in Toxicology, 3rd Edition, Lower and Bryan.
5. OECD test guidelines.
6. Principles of toxicology by Karen E. Stine, Thomas M. Brown.
7. Guidance for Industry M3(R2) Nonclinical Safety Studies for the Conduct of Human Clinical Trials and Marketing Authorization for Pharmaceuticals  
(<http://www.fda.gov/downloads/drugs/guidancecomplianceregulatoryinformation/guidances/ucm073246.pdf>)



  
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### CLINICAL RESEARCH AND PHARMACOVIGILANCE (MPL204T)

**SCOPE:**

This subject will provide a value addition and current requirement for the students in clinical research and pharmacovigilance. It will reach the students on conceptualizing, designing, conducting, managing and reporting of clinical trials. This subject also focuses on global scenario of Pharmacovigilance in different methods that can be used to generate safety data. It will teach the students in developing drug safety data in Pre-clinical, Clinical phases of Drug development and post market surveillance.

**OBJECTIVES:**

Upon completion of the course, the student shall be able to:

- Explain the regulatory requirements for conducting clinical trial.
- Demonstrate the types of clinical trial designs.
- Explain the responsibilities of key players involved in clinical trials.
- Execute safety monitoring, reporting and close-out activities.
- Explain the principles of Pharmacovigilance.
- Detect new adverse drug reaction and their assessment.
- Perform the adverse drug reaction reporting systems and communication in Pharmacovigilance.

**THEORY****60 Hrs****Unit-I Regulatory Perspective of Clinical Trials:****12 Hrs**

Origin and Principles of International Conference on Harmonization- Good Clinical Practice (ICH-GCP) guidelines.  
Ethical Committee: Institutional Review Board, Ethical guidelines for Biomedical Research and Human Participant Schedule Y, ICMR.  
Informed Consent Process: Structure and content of an Informed Consent Process Ethical principles governing informed consent process.

**Unit-II Clinical Trials: Types and Design****12 Hrs**

Experimental Study- RCT and Non RCT  
Observation Study: Cohort, Case control, Cross sectional  
Clinical trial Study Team  
Roles and responsibilities of Clinical Trial Personnel: Investigator, Study Coordinator, Sponsor, Contract Research Organization and its management

**Unit-III Clinical Trial Documentation-** Guidelines to the preparation of documents, Preparation of protocol, Investigator Brochure, Case Report Forms, Clinical Study Report Clinical Trial Monitoring Safety monitoring in CT**12 Hrs**

Adverse Drug Reactions: definition and types. Detection and reporting methods. Severity and seriousness assessment. Predictability and preventability assessment, Management of adverse drug reactions ; terminologies of ADR

**Unit-IV Basic aspects, terminologies and establishment of Pharmacovigilance****12 Hrs**

History and progress of Pharmacovigilance, Significant of safety



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monitoring, pharmacovigilance in India and international aspects, WHO international drug monitoring programme, WHO and Regulatory terminologies of ADR, evaluation of medication safety, Establishing pharmacovigilance centers in Hospitals, Industry and National programmes related to pharmacovigilance. Roles and responsibilities in Pharmacovigilance

**Unit-V**

**Methods, ADR reporting and tools used in Pharmacovigilance**

**12 Hrs**

International classification of diseases, International Non-proprietary names for drugs, Passive and Active surveillance, Comparative observational studies, Targeted clinical investigations and Vaccine safety surveillance. Spontaneous reporting system and Reporting to regulatory authorities, Guidelines for ADRs reporting. Arugs, Aris G Pharmacovigilance, Vigiflow, Statistical methods for evaluating medication safety data. Introduction to pharmacoepidemiology and pharmacoeconomics.

**REFERENCES**

1. Central Drugs Standard Control Organization- Good Clinical Practices, Guidelines for Clinical Trials on Pharmaceutical Products in India. New Delhi: Ministry of Health;2001.
2. International Conference on Harmonization of Technical requirements for registration of Pharmaceuticals for human use. ICH Harmonized Tripartite Guideline. Guideline for Good Clinical Practice.E6; May 1996.
3. Ethical guidelines for Biomedical Research on Human Subjects 2000. Indian Council of Medical Research, New Delhi.
4. Textbook of Clinical trials by David Machin, Simon Day and Sylvan Green. 2005. John Wiley and Sons.
5. Clinical Data management edited by R. K. Rondels, S A Varley, C F Webbs. Second edition, 2000. Wiley Publications.
6. Handbook of Clinical research. Julia Lloyd and Ann Raven Ed. Churchill Livingstone.
7. Principles of Clinical Research edited by Giovanna di Ignazio, di Giovanna and Haynes.



  
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## PHARMACEUTICAL VALIDATION (MPA 103T)

### SCOPE

The main purpose of the subject is to understand about validation and how it can be applied to industry and thus to improve the quality of the products. The subject covers the complete information about validation, types, methodology and application.

### OBJECTIVES

Upon completion of the subject student shall be able to

- Explain the aspect of validation
- Carryout validation of manufacturing processes
- Apply the knowledge of validation to instruments and equipments
- Validate the manufacturing facilities

### THEORY

60 Hrs

1. Introduction: Definition of Qualification and Validation, Advantage of Validation, Streamlining of Qualification & Validation process and Validation Master Plan.

Qualification: User Requirement Specification, Design Qualification, Factory Acceptance Test (FAT)/ Site Acceptance Test (SAT), Installation Qualification, Operational Qualification, Performance Qualification, Re – Qualification (Maintaining status – Calibration Preventive Maintenance, Change management), Qualification of Manufacturing Equipments, Qualification of Analytical Instruments and Laboratory equipments.

12 Hrs

2. Qualification of analytical instruments: Electronic balance, pH meter, UV-Visible spectrophotometer, FTIR, GC, HPLC, HPTLC Qualification of Glassware: Volumetric flask, pipette, Measuring cylinder, beakers and burette.

12 Hrs

3. Validation of Utility systems: Pharmaceutical Water System & pure steam, HVAC system, Compressed air and nitrogen. Cleaning Validation: Cleaning Validation – Cleaning Method development, Validation and validation of analytical method used in cleaning. Cleaning of Equipment, Cleaning of Facilities. Cleaning in place (CIP).

12 Hrs

4. Analytical method validation: General principles, Validation of analytical method as per ICH guidelines and USP. Computerized system validation: Electronic records and digital significance-21 CFR part 11 and GAMP 5.

12 Hrs

5. General Principles of Intellectual Property: Concepts of Intellectual Property (IP), Intellectual Property Protection (IPP), Intellectual Property Rights (IPR); Economic importance, mechanism for protection of Intellectual Property -patents, Copyright, Trademark; Factors affecting choice of IP protection; Penalties for violation; Role of IP



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in pharmaceutical industry; Global ramification and financial implications. Filing a patent applications; patent application forms and guidelines. Types patent applications—provisional and non-provisional, PCT and convention patent applications; International patenting requirement procedures and costs; Rights and responsibilities of a patentee; Practical aspects regarding maintaining of a Patent file; Patent infringement meaning and scope. Significance of transfer technology (TOT), IP and ethics—positive and negative aspects of IPP; Societal responsibility, avoiding unethical practices.

12 Hrs

#### REFERENCES

1. B. T. Loftus & R. A. Nash, "Pharmaceutical Process Validation", Drugs and Pharm Sci. Series, Vol. 129, 3rd Ed., Marcel Dekker Inc., N.Y.
2. The Theory & Practice of Industrial Pharmacy, 3rd edition, Leon Lachman, Herbert A. Lieberman, Joseph. L. Karig, Varghese Publishing House, Bombay.
3. Validation Master plan by Terveeks or Deeks, Davis Harwood International publishing.
4. Validation of Aseptic Pharmaceutical Processes, 2nd Edition, by Carleton & Agalloco, (Marcel Dekker).
5. Michael Levin, "Pharmaceutical Process Scale-Up", Drugs and Pharm. Sci. Series, Vol. 157, 2nd Ed., Marcel Dekker Inc., N.Y.
6. Validation Standard Operating Procedures: A Step by Step Guide for Achieving Compliance in the Pharmaceutical, Medical Device, and Biotech Industries, Syed Imtiaz Haider
7. Pharmaceutical Equipment Validation: The Ultimate Qualification Handbook, Phillip A. Cloud, Interpharm Press
8. Validation of Pharmaceutical Processes: Sterile Products, Frederick J. Carlton (Ed.) and James Agalloco (Ed.), Marcel Dekker, 2nd Ed.
9. Analytical Method validation and Instrument Performance Verification by Churg Chan, Heiman Lam, Y.C. Lee, Yue. Zhang, Wiley Inter Science.



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**PHARMACEUTICAL ANALYSIS PRACTICALS – II**  
(MPA 105P)

- 1) Analysis of Pharmacopoeial compounds and their formulations by UV Vis spectrophotometer
- 2) Simultaneous estimation of multi component containing formulations by UV spectrophotometry
- 3) Experiments based on HPLC
- 4) Experiments based on Gas Chromatography
- 5) Estimation of riboflavin/quinine sulphate by fluorimetry
- 6) Estimation of sodium/potassium by flame photometry
- 7) Assay of official compounds by different titrations
- 8) Assay of official compounds by instrumental techniques.
- 9) Quantitative determination of hydroxyl group.
- 10) Quantitative determination of amino group
- 11) Colorimetric determination of drugs by using different reagents
- 12) Impurity profiling of drugs
- 13) Calibration of glasswares
- 14) Calibration of pH meter
- 15) Calibration of UV-Visible spectrophotometer
- 16) Calibration of FTIR spectrophotometer
- 17) Calibration of GC instrument
- 18) Calibration of HPLC instrument
- 19) Cleaning validation of any one equipment
- 20) Determination of total reducing sugar
- 21) Determination of proteins
- 22) Determination of saponification value, Iodine value, Peroxide value, Acid value in food products
- 23) Determination of fat content and rancidity in food products
- 24) Analysis of natural and synthetic colors in food
- 25) Determination of preservatives in food
- 26) Determination of pesticide residue in food products
- 27) Analysis of vitamin content in food products
- 28) Determination of density and specific gravity of foods
- 29) Determination of food additives



  
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## QUALITY CONTROL AND QUALITY ASSURANCE (MPA 203T)

### SCOPE

This course deals with the various aspects of quality control and quality assurance aspects of pharmaceutical industries. It covers the important aspects like cGMP, QC tests, documentation, quality certifications, GLP and regulatory affairs.

### OBJECTIVES

At the completion of this subject it is expected that the student shall be able to know

- The cGMP aspects in a pharmaceutical industry
- To appreciate the importance of documentation
- To understand the scope of quality certifications applicable to Pharmaceutical industries
- To understand the responsibilities of QA & QC departments

### THEORY

1. Concept and Evolution of Quality Control and Quality Assurance Good Laboratory Practice, GMP, Overview of ICH Guidelines – QSEM, with special emphasis on Q-series guidelines.  
Good Laboratory Practices: Scope of GLP, Definitions, Quality assurance unit, protocol for conduct of non clinical testing, control on animal house, report preparation and documentation. **60 Hrs**
2. cGMP guidelines according to schedule M, USFDA (inclusive of CDER and CBER) Pharmaceutical Inspection Convention (PIC), WHO and EMEA covering: Organization and personnel responsibilities, training, hygiene and personal records, drug industry location, design, construction and plant lay out, maintenance, sanitation, environmental control, utilities and maintenance of sterile areas, control of contamination and Good Warehousing Practice. **CPCSEA guidelines. 12 Hrs**
3. Analysis of raw materials, finished products, packaging materials, in process quality control (IPQC), Developing specification (ICH Q6 and Q3)  
Purchase specifications and maintenance of stores for raw materials. In process quality control and finished products quality control for following formulation in Pharma industry according to Indian, US and British pharmacopoeias: tablets, capsules, ointments, suppositories, creams, parenterals, ophthalmic and surgical products (How to refer pharmacopoeias), Quality control test for containers, closures and secondary packing materials. **12 Hrs**
4. Documentation in pharmaceutical industry: Three tier documentation, Policy, Procedures and Work instructions, and records (Formats), Basic principles- How to maintain, retention and retrieval etc. Standard operating procedures (How to write), Master Formula Record, Batch Formula Record, Quality audit plan and reports. Specification and test procedures, Protocols and reports, Distribution records. Electronic data. **12 Hrs**
5. Manufacturing operations and controls: Sanitation of manufacturing premises, mix-ups and cross contamination, processing of intermediates and bulk products, packaging operations, IPQC, release of finished product, process deviations, change-in



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of components, time limitations on production, drug product inspection, expiry date calculation, calculation of yields, production record review, change control, sterile products, aseptic process control, packaging.

12 Hrs

#### REFERENCES

1. Quality Assurance Guide by organization of Pharmaceutical Procedures of India, 3rd revised edition, Volume I & II, Mumbai, 1996.
2. Good Laboratory Practice Regulations, 2nd Edition, Sandy Weinberg Vol. 69, Marcel Dekker Series, 1995.
3. Quality Assurance of Pharmaceuticals- A compedium of Guide lines and related materials Vol I & II, 2nd edition, WHO Publications, 1999.
4. How to Practice GMP's - P P Sharma, Vandana Publications, Agra, 1991.
5. The International Pharmacopoeia - vol I, II, III, IV & V - General Methods of Analysis and Quality specification for Pharmaceutical Substances, Excipients and Dosage forms, 3rd edition, WHO, Geneva, 2005.
6. Good laboratory Practice Regulations - Allen F. Hirsch, Volume 38, Marcel Dekker Series, 1989.
7. ICH guidelines
8. ISO 9000 and total quality management
9. The drugs and cosmetics act 1940 - Deshpande, Nilesh Gandhi, 4th edition, Susmit Publishers, 2006.
10. QA Manual - D.H. Shah, 1st edition, Business Horizons, 2000.
11. Good Manufacturing Practices for Pharmaceuticals a plan for total quality control - Sidney H. Willig, Vol. 52, 3rd edition, Marcel Dekker Series.
12. Steinborn L. GMP/ISO Quality Audit Manual for Healthcare Manufacturers and Their Suppliers, Sixth Edition, (Volume I - With Checklists and Software Package), Taylor & Francis; 2003.
13. Sarker DK. Quality Systems and Controls for Pharmaceuticals, John Wiley & Sons; 2008.




  
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**PHARMACEUTICAL ANALYSIS PRACTICALS - I**  
(MPA 205P)

1. Comparison of absorption spectra by UV and Woodward - Fieser rule
2. Interpretation of organic compounds by FT-IR
3. Interpretation of organic compounds by NMR
4. Interpretation of organic compounds by MS
5. Determination of purity by DSC in pharmaceuticals
6. Identification of organic compounds using FT-IR, NMR, CNMR and Mass spectra
7. Bio molecules separation utilizing various sample preparation techniques and Quantitative analysis of components by gel electrophoresis.
8. Bio molecules separation utilizing various sample preparation techniques and Quantitative analysis of components by HPLC techniques.
9. Isolation of analgesics from biological fluids (Blood serum and urine).
10. Protocol preparation and performance of analytical/Bioanalytical method validation.
11. Protocol preparation for the conduct of BA/BE studies according to guidelines.
12. In process and finished product quality control tests for tablets, capsules, parenterals and creams
13. Quality control tests for Primary and secondary packing materials
14. Assay of raw materials as per official monographs
15. Testing of related and foreign substances in drugs and raw materials
16. Preparation of Master Formula Record.
17. Preparation of Batch Manufacturing Record.
18. Quantitative analysis of rancidity in lipsticks and hair oil
19. Determination of aryl amine content and Developer in hair dye
20. Determination of foam height and SLS content of Shampoo.
21. Determination of total fatty matter in creams (Soap, skin and hair creams)
22. Determination of acid value and saponification value.
23. Determination of calcium thioglycolate in depilatories



  
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<b>INDUSTRIAL PHARMACOGNOSTICAL TECHNOLOGY (MPG 104T)</b>	<b>60 Hrs</b>
<p><b>SCOPE</b> To understand the Industrial and commercial potential of drugs of natural origin, integrate traditional Indian systems of medicine with modern medicine and also to know regulatory and quality policy for the trade of herbals and drugs of natural origin.</p> <p><b>OBJECTIVES</b> By the end of the course the student shall be able to know,</p> <ul style="list-style-type: none"><li>the requirements for setting up the herbal/natural drug industry.</li><li>the guidelines for quality of herbal/natural medicines and regulatory issues.</li><li>the patenting/IPR of herbals/natural drugs and trade of raw and finished materials.</li></ul>	
<p><b>UNIT 1</b> <b>Herbal drug industry:</b> Infrastructure of herbal drug industry Involved in production of standardized extracts and various Dosage forms. Current challenges in upgrading and modernization of herbal formulations. Entrepreneurship Development, Project selection, project report, technical knowledge, Capital venture, plant design, layout and construction. Pilot plant scale –up techniques, case studies of herbal extracts. Formulation and production management of herbals.</p>	<b>12 Hrs</b>
<p><b>UNIT 2</b> <b>Regulatory requirements for setting herbal drug industry:</b> Global marketing management. Indian and international patent law as applicable herbal drugs and natural products. Export - Import (EXIM) policy, TRIPS. Quality assurance in herbal/natural drug products. Concepts of TQM, GMP, GLP, ISO-9000.</p>	<b>12 Hrs</b>
<p><b>UNIT 3</b> <b>Monographs of herbal drugs:</b> General parameters of monographs of herbal drugs and comparative study in IP, USP, Ayurvedic Pharmacopoeia, Siddha and Unani Pharmacopoeia, American herbal pharmacopoeia, British herbal pharmacopoeia, WHO guidelines in quality assessment of herbal drugs.</p>	<b>12 Hrs</b>
<p><b>UNIT 4</b> <b>Testing of natural products and drugs:</b> Herbal medicines -clinical laboratory testing. Stability testing of natural products, protocols.</p>	<b>12 Hrs</b>
<p><b>UNIT 5</b> <b>Patents:</b> Indian and international patent laws, proposed amendments as applicable to herbal/natural products and process. Geographical indication, Copyright, Patentable subject matters, novelty, non obviousness, utility, enablement and best mode, procedure for Indian patent filing, patent processing, grant of patents, rights of patents, cases of patents, opposition and revocation of patents, patent search and literature, Controllers of patents.</p>	<b>12 Hrs</b>

**REFERENCES (Latest Editions of)**

- Herbal drug industry by R.D. Choudhary (1996), Eastern Publisher, New Delhi.
- GMP for Botanicals - Regulatory and Quality issues on Phytomedicine by Pulok K. Mukharjee (2003), 1st Edition, Business horizons Robert Verpoorte, New Delhi.



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**PHARMACOGNOSY PRACTICAL – I**  
(MPG 105P)

1. Analysis of Pharmacopoeial compounds of natural origin and their formulations by UV Vis spectrophotometer
2. Analysis of recorded spectra of simple phytoconstituents
3. Experiments based on Gas Chromatography
4. Estimation of sodium/potassium by flame photometry
5. Development of fingerprint of selected medicinal plant extracts commonly used in herbal drug industry viz. Ashwagandha, Tulsi, Bael, Amla, Ginger, Aloe, Vidang, Senna, Lawsonia by TLC/HPTLC method.
6. Methods of extraction
7. Phytochemical screening
8. Demonstration of HPLC- estimation of glycerhizin
9. Monograph analysis of clove oil
10. Monograph analysis of castor oil.
11. Identification of bioactive constituents from plant extracts
12. Formulation of different dosage forms and their standardisation.

**REFERENCES (Latest Editions of)**

1. Indian Pharmacopoeia, 2017.
2. Florey K., "Analytical Profiles of Drug Substances", Academic press, Harcourt Brace Publishers, New York.
3. Skoog D.A., "Principles of Instrumental Analysis", 5th edition, 1998, Estem Press, Bangalore.
4. Wagner H., Baldt S., "Plant Drug Analysis", Springer Publications, Berlin.
5. Deore S.L., Khadbadi S.S., et.al. "Experimental Phytopharmacognosy-A Comprehensive Guide", Nirali Prakashan, Mumbai,
6. Indian Herbal Pharmacopoeia, IDMA, Delhi.
7. Rangari V.D., "Pharmacognosy & Phytochemistry", Vol I &II, 3rd edition, Career Publications, Pune.
8. Kaushik A., et.al. "Formulation and Evaluation of Herbal Cough Syrup", European Journal of Pharmaceutical and Medical Research, Department of Pharmacy/Teerthankar Mahaveer University, Moradabad, India.



  
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### INTELLECTUAL PROPERTY RIGHTS (MIP 104T)

#### SCOPE

This course is designed to impart knowledge and skills necessary to train the students to be on par with the routine of Industrial activities in drug regulatory affairs

#### OBJECTIVES

- On completion of this course it is expected that students will be able to understand,
- Assist in Regulatory Audit process.
  - Establish regulatory guidelines for drug and drug products
  - The Regulatory requirements for contract research organization

#### THEORY

60 Hrs

1. Definition, Need for patenting, Types of Patents, Conditions to be satisfied by an invention to be patentable, Introduction to patent search. Parts of patents. Filing of patents. The essential elements of patent; Guidelines for preparation of laboratory note book, Non-obviousness in Patent.  
12 Hrs
2. Role of GATT, TRIPS, and WIPO  
12 Hrs
3. Brief introduction to Trademark protection and WHO Patents, IPR's and its types, Major bodies regulating Indian Pharmaceutical sector.  
12 Hrs
4. Brief introduction to CDSCO, WHO, USFDA, EMEA, TGA, MHRA, MCC, ANVISA  
12 Hrs
5. Regulatory requirements for contract research organization. Regulations for Biosimilars.  
12 Hrs

#### REFERENCES:

1. Pharmaceutical Process Validation: By Fra R. Berry and Robert A. Nash, Vol 57, 2nd Edition
2. Applied Production and Operation Management by Evans, Anderson and Williams
3. GMP for pharmaceuticals Material Management by K.K. Ahuja Published by CBS publishers
4. ISO 9000-Norms and explanations
5. GMP for pharmaceuticals- Willing S.H. Marcel and Dekker



  
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**INDUSTRIAL PHARMACY PRACTICAL – I**  
(MIP 105P)

1. Analysis of pharmacopoeial compounds and their formulations by UV Vis spectrophotometer
2. Simultaneous estimation of multi component containing formulations by UV spectrophotometry
3. Experiments based on HPLC / GC
4. Estimation of riboflavin/quinine sulphate by fluorimetry
5. Estimation of sodium/potassium by flame photometry
6. Effect of surfactants on the solubility of drugs.
7. Effect of pH on the solubility of drugs.
8. Stability testing of solution and solid dosage forms for photo degradation.
9. Stability studies of drugs in dosage forms at 25 RH, °C, 60% RH and 40°C, 75%
10. Compatibility evaluation of drugs and excipients (DSC & FTIR).
11. Preparation and evaluation of different polymeric membranes.
12. Formulation and evaluation of sustained release oral matrix tablet / oral reservoir system.
13. Formulation and evaluation of microspheres / microcapsules.
14. Formulation and evaluation of transdermal drug delivery systems.
15. Design and evaluation of face wash, body- wash, creams, lotions, shampoo, toothpaste, lipstick.
16. Electrophoresis of protein solution.
17. Preparation and evaluation of Liposome delivery system.



  
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## PHARMACY PRACTICE (MPP)

### CLINICAL PHARMACY PRACTICE (MPP 101T)

#### SCOPE

This course is designed to impart the basic knowledge and skills that are required to practice pharmacy including the provision of pharmaceutical care services to both healthcare professionals and patients in clinical settings.

#### OBJECTIVES

Upon completion of this course it is expected that students shall be able to :

- Understand the elements of pharmaceutical care and provide comprehensive patient care services
- Interpret the laboratory results to aid the clinical diagnosis of various disorders
- Provide integrated, critically analyzed medicine and poison information to enable healthcare professionals in the efficient patient management

#### THEORY

60 Hrs

1. Introduction to Clinical Pharmacy: Definition, evolution and scope of clinical pharmacy, International and national scenario of clinical pharmacy practice, Pharmaceutical care  
Clinical Pharmacy Services: Ward round participation, Drug therapy review (Drug therapy monitoring including medication order review, chart endorsement, clinical review and pharmacist interventions)  
12 Hrs
2. Clinical Pharmacy Services: Patient medication history interview, Basic concept of medicine and poison information services, Basic concept of pharmacovigilance, Hemovigilance, Materiovigilance and AEFI, Patient medication counselling, Drug utilisation evaluation, Documentation of clinical pharmacy services, Quality assurance of clinical pharmacy services.  
12 Hrs
3. Patient Data Analysis: Patient Data & Practice Skills: Patient's case history – its structure and significances in drug therapy management, Common medical abbreviations and terminologies used in clinical practice, Communication skills: verbal and non-verbal communications, its applications in patient care services.  
Lab Data Interpretation : Hematological tests, Renal function tests, Liver function tests,  
12 Hrs
4. Lab Data Interpretation: Tests associated with cardiac disorders, pulmonary function tests, Thyroid function tests, Fluid and electrolyte balance, Microbiological culture sensitivity tests.  
12 Hrs
5. Medicines & Poison Information Services : Medicine Information Service: Definition and need for medicine information service, Medicine information resources, Systematic approach in answering medicine information queries, Preparation of verbal and written response, Establishing a drug information centre.



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Poison Information Service: Definition, need, organization and functions of poison information centre. **12 Hrs**

**REFERENCES**

1. A Textbook of Clinical Pharmacy Practice - Essential concepts and skills - Parthasarathi G, Karin Nyfort-Hansen and Milap Nahata
2. Practice Standards and Definitions – The Society of Hospital Pharmacists of Australia
3. Basic skills in interpreting laboratory data – Scott LT, American Society of Health System Pharmacists Inc
4. Relevant review articles from recent medical and pharmaceutical literature.



  
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## CLINICAL RESEARCH (MPP 104T)

### SCOPE

This course aims to provide the students an opportunity to learn drug development process especially the phases of clinical trials and also the ethical issues involved in the conduct of clinical research. Also, it aims to impart knowledge and develop skills on conceptualizing, designing, conducting and managing clinical trials.

### OBJECTIVES

Upon completion of this course it is expected that students shall be able to:

- Know the new drug development process.
- Understand the regulatory and ethical requirements.
- Appreciate and conduct the clinical trials activities
- Know safety monitoring and reporting in clinical trials
- Manage the trial coordination process

### THEORY

60 Hrs

1. Drug development process: Introduction, various approaches to drug discovery, Investigational new drug application submission Ethics in Biomedical Research: Ethical Issues in Biomedical Research - Principles of ethics in biomedical research, Ethical committee [institutional review board] – its constitution and functions, Challenges in implementation of ethical guidelines, ICH GCP guidelines and ICMR guidelines in conduct of Clinical trials, Drug Safety Reporting. 12 Hrs
2. Types and Designs used in Clinical Research: Planning and execution of clinical trials, Various Phases of clinical trials, Bioavailability and Bioequivalence studies, Randomization techniques (Simple randomization, restricted randomization, blocking method and stratification), Types of research designs based on Controlling Method (Experimental, Quasi experimental, and Observational methods) Time Sequences (Prospective and Retrospective), Sampling methods (Cohort study, case Control study and cross sectional study), Health outcome measures (Clinical & Physiological, Humanistic and economic)  
Clinical Trial Study team: Roles and responsibilities of: Investigator, Study Coordinator, Sponsor, Monitor, and Contract Research Organization. 12 Hrs
3. Clinical trial Documents: Guidelines to the preparation of following documents: Protocols, Investigator's Brochure, Informed Consent Form, Case report forms, Contracts and agreements, Dairy Cards  
Clinical Trial Start up activities: Site Feasibility Studies, Site/Investigator selection, Pre-study visit, Investigator meeting, Clinical trial agreement execution, Ethics committee document preparation and submission 12 Hrs
4. Investigational Product: Procurement and Storage of investigation product  
Filing procedures: Essential documents for clinical trial, Trial Master File preparation and maintenance, Investigator Site File, Pharmacy File, Site initiation visit, Conduct, Report and Follow up  
Clinical Trial Monitoring and Close out:



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Preparation and conduct of monitoring visit: Review of source documents, CRF, ICF, IP storage, accountability and reconciliation, Study Procedure, EC communications, Safety reporting, Monitoring visit reporting and follow-up

Close-Out visit: Study related documents collection, Archival requirement, Investigational Product reconciliation and destruction, Close-Out visit report.

12 Hrs

5. Quality Assurance and Quality Control in Clinical Trials: Types of audits, Audit criteria, Audit process, Responsibilities of stakeholders in audit process, Audit follow-up and documentation, Audit resolution and Preparing for FDA inspections, Fraud and misconduct management, Data Management

Infrastructure and System Requirement for Data Management: Electronic data capture systems, Selection and implementation of new systems, System validation and test procedures, Coding dictionaries, Data migration and archival

Clinical Trial Data Management: Standard Operating Procedures, Data management plan, CRF & Data base design considerations, Study set-up, Data entry, CRF tracking and corrections, Data cleaning, Managing laboratory and ADR data,

Data transfer and database lock, Quality Control and Quality Assurance in CDM, Data mining and warehousing.

12 Hrs

#### REFERENCES

1. Principles and practice of pharmaceutical medicine, Second edition. Authors: Lionel D. Edward, Andrew J. Flether Anthony W Fos, Peter D Sloaner Publisher: Wiley;
2. Handbook of clinical research. Julia Lloyd and Ann Raven Ed. Churchill Livingstone
3. Principles of Clinical Research edited by Giovanna di Ignazio, Di Giovanna and Haynes.
4. Central Drugs Standard Control Organization. Good Clinical Practices- Guidelines for Clinical Trials on Pharmaceutical Products in India. New Delhi: Ministry of Health.
5. International Conference on Harmonisation of Technical requirements for registration of Pharmaceuticals for human use. ICH Harmonised Tripartite Guideline. Guideline for Good Clinical Practice. E6; May 1996.
6. Ethical Guidelines for Biomedical Research on Human Subjects. Indian Council of Medical Research, New Delhi.
7. Textbook of Clinical Trials edited by David Machin, Simon Day and Sylvan Green, John Wiley and Sons.
8. Clinical Data Management edited by R K Rondels, S A Varley, C F Webbs. Second Edition, Jan 2000, Wiley Publications.
9. Goodman & Gilman: JG Hardman, LE Limbard, McGraw Hill Publications.
10. Relevant review articles from recent medical and pharmaceutical literature



  
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### PRINCIPLES OF QUALITY USE OF MEDICINES (MPP 201T)

#### SCOPE:

This course is designed to impart basic knowledge and skills that are required to practice quality use of medicines (QUM) in different healthcare settings and also to promote quality use of medicines, in clinical practice, through evidence-based medicine approach.

#### OBJECTIVES:

Upon completion of this course it is expected that students shall be able to:

- Understand the principles of quality use of medicines
- Know the benefits and risks associated with use of medicines
- Understand regulatory aspects of quality use of medicines
- Identify and resolve medication related problems
- Promote quality use of medicines
- Practice evidence-based medicines

#### THEORY

60 Hrs

1. Introduction to Quality use of medicines (QUM): Definition and Principles of QUM, Key partners and responsibilities of the partners, Building blocks in QMC, Evaluation process in QMC, Communication in QUM, Cost effective prescribing. 12 Hrs
2. Concepts in QUM  
Evidence based medicine: Definition, concept of evidence based medicine, Approach and practice of evidence based medicine in clinical settings  
Essential drugs: Definition, need, concept of essential drug, National essential drug policy and list  
Rational drug use: Definition, concept and need for rational drug use, Rational drug prescribing, Role of pharmacist in rational drug use. 12 Hrs
3. QUM in various settings: Hospital settings, Ambulatory care / Residential care, Role of health care professionals in promoting the QUM, Strategies to promote the QUM, Impact of QUM on E-health, integrative medicine and multidisciplinary care. QUM in special population: Pediatric prescribing, Geriatric prescribing, prescribing in pregnancy and lactation, prescribing in immune compromised and organ failure patients. 12 Hrs
4. Regulatory aspects of QUM in India: Regulation including scheduling, Regulation of complementary medicines, Regulation of OTC medicines, Professional responsibility of pharmacist, Role of industry in QUM in medicine development. 12 Hrs
5. Medication errors: Definition, categorization and causes of medication errors, Detection and prevention of medication errors, Role of pharmacist in monitoring and management of medication errors  
Pharmacovigilance: Definition, aims and need for pharmacovigilance, Types, predisposing factors and mechanism of adverse drug reactions (ADRs), Detection,



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reporting and monitoring of ADRs, Causality assessment of ADRs, Management of ADRs, Role of pharmacist in pharmacovigilance. **12 Hrs**

**REFERENCES:**

1. A Textbook of Clinical Pharmacy Practice - Essential concepts and skills - Parthasarathi G, Karin Nyfort-Hansen and Milap Nahata
2. Andrews EB, Moore N. Mann's Pharmacovigilance
3. Dipiro JT, Talbert RL, Yee GC. Pharmacotherapy: A Pathophysiologic Approach
4. Straus SE, Richardson WS, Glasziou P, Haynes RB. Evidence-Based Medicine: How to practice and teach it
5. Cohen MR. Medication Errors
6. Online:
  - [http://medicinesaustralia.com.au/files/2012/05/MA\\_QUM\\_External\\_Reduced.pdf](http://medicinesaustralia.com.au/files/2012/05/MA_QUM_External_Reduced.pdf)
  - <http://curriculum.racgp.org.au/statements/quality-use-of-medicines/>
  - [http://www.rug.nl/research/portal/files/14051541/Chapter\\_2.pdf](http://www.rug.nl/research/portal/files/14051541/Chapter_2.pdf)
7. Relevant review articles from recent medical and pharmaceutical literature.



  
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**PHARMACY PRACTICE PRACTICAL – II**  
(MPP 205P)

**SCOPE**

Pharmacy Practice practical component includes experiments covering important topics of the courses Principles of Quality Use of Medicines, Pharmacotherapeutics-II, Clinical Pharmacokinetics & Therapeutic Drug Monitoring and Pharmacoepidemiology and Pharmacoeconomics.

**LIST OF EXPERIMENTS (24)**

1. Causality assessment of adverse drug reactions (three)
2. Detection and management of medication errors (three)
3. Rational use of medicines in special population (three)
4. Presentation of clinical cases of various disease conditions adopting Pharmaceutical Care Plan Model (eight)
5. Calculation of Bioavailability and Bioequivalence from the given data (two)
6. Interpretation of Therapeutic Drug Monitoring reports of a given patient (three)
7. Calculation of various Pharmacoeconomic outcome analyses for the given data (two)



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### CLINICAL RESEARCH REGULATIONS (MRA 103T)

#### SCOPE

This course is designed to impart the fundamental knowledge on the clinical development process of drugs, pharmaceuticals and Medical Devices, phases and conduct of clinical trials and research, regulations and guidance governing the conduct of clinical research in India, USA and EU. It prepares the students to learn in detail on various laws, legislations and guidance related to safety, efficacy, ethical conduct and regulatory approval of clinical research.

#### OBJECTIVES

- Upon completion of the course, the student shall be able to (know, do and appreciate)
- History, origin and ethics of clinical and biomedical research and evaluation
  - Clinical drug, medical device development process and different types and phases of clinical trials
  - Regulatory requirements and guidance for conduct of clinical trials and research

#### THEORY

60 Hrs

1. Clinical Drug Development Process
  - Different types of Clinical Studies
  - Phases of clinical trials, Clinical Trial protocol
  - Phase 0 studies
  - Phase I and subtype studies (single ascending, multiple ascending, dose escalation, methods, food effect studies, drug - drug interaction, PK end points)
  - Phase II studies (proof of concept or principle studies to establish efficacy)
  - Phase III studies (Multi ethnicity, global clinical trial, registration studies)
  - Phase IV studies (Post Marketing Studies; PSUR)
  - Clinical Investigation and Evaluation of Medical Devices & IVDs
  - Different Types of Studies
  - Key Concepts of Medical Device Clinical Evaluation Key concepts of Clinical Investigation
2. Ethics in Clinical Research:
  - Historical Perspectives: Nuremberg Code, Thalidomide study, Nazis Trials, Tuskegee Syphilis Study, The Belmont Report, The declaration of Helsinki
  - Origin of International Conference on Harmonization – Good Clinical Practice (ICH-GCP) guidelines.
  - The ethics of randomized clinical trials
  - The role of placebo in clinical trials
  - Ethics of clinical research in special population
  - Institutional Review Board / Independent Ethics Committee / Ethics Committee- composition, roles, responsibilities, review and approval process and ongoing monitoring of safety data

12 Hrs



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- Data safety monitoring boards,
- Responsibilities of sponsor, CRO, and investigator in ethical conduct of clinical research
- Ethical principles governing informed consent process
- Patient Information Sheet and Informed Consent Form
- The informed consent process and documentation

12 Hrs

3. Regulations governing Clinical Trials

- India: Clinical Research regulations in India - Schedule Y & Medical Device Guidance
- USA: Regulations to conduct drug studies in USA (FDA)
- NDA 505(b)(1) of the FD&C Act (Application for approval of a new drug)
- NDA 505(b)(2) of the FD&C Act (Application for approval of a new drug that relies, at least in part, on data not developed by the applicant)
- ANDA 505(j) of the FD&C Act (Application for approval of a generic drug product)
- FDA Guidance for Industry – Acceptance of Foreign Clinical Studies
- FDA Clinical Trials Guidance Document: Good Clinical Practice
- EU: Clinical Research regulations in European Union (EMA)

12 Hrs

4. Clinical Research Related Guidelines


- Good Clinical Practice Guidelines (ICH GCP E6)
- Indian GCP Guidelines
- ICMR Ethical Guidelines for Biomedical Research
- CDSCO guidelines
- GHTF study group 5 guidance documents
- Regulatory Guidance on Efficacy and Safety ICH Guidance's
- E4 – Dose Response Information to support Drug Registration
- E7 - Studies in support of General Population: Geriatrics
- E8 - General Considerations of Clinical Trials
- E10 - Choice of Control Groups and Related Issues in Clinical Trials
- E11 - Clinical Investigation of Medicinal Products in the Pediatric Population
- General biostatistics principle applied in clinical research

12 Hrs

5. USA & EU Guidance USA: FDA Guidance

- CFR 21Part 50: Protection of Human Subjects
- CFR 21Part 54: Financial Disclosure by Clinical Investigators
- CFR 21Part 312: IND Application
- CFR 21Part 314: Application for FDA Approval to Market a New Drug
- CFR 21Part 320: Bioavailability and bioequivalence requirements
- CFR 21Part 812: Investigational Device Exemptions
- CFR 21Part 822: Post-market surveillance
- FDA Safety Reporting Requirements for INDs and BA/BE Studies
- FDA Med Watch
- Guidance for Industry: Good Pharmacovigilance Practices and



  
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Pharmacoeconomic Assessment

- European Union: EMA Guidance
- EU Directives 2001
- EudraLex (EMA) Volume 3- Scientific guidelines for medicinal products for human use
- EU Annual Safety Report (ASR)
- Volume 9A - Pharmacovigilance for Medicinal Products for Human Use
- EU MDD with respect to clinical research
- ISO 14155

12 Hrs

REFERENCES

1. Clinical Trials and Human Research: A Practical Guide to Regulatory Compliance By Fay A. Rozovsky and Rodney K. Adams
2. HIPAA and Human Subjects Research: A Question and Answer Reference Guide By Mark Barnes, JD, LL.M and Jennifer Kulynych, JD, PhD
3. Principles and Practices of Clinical Research, Second Edition Edited by John I. Gallin and Frederick P. Ognibene
4. Reviewing Clinical Trials: A Guide for the Ethics Committee; Johan PE Karlberg and Marjorie A Speers; Karlberg, Johan Petter Einar, Hong Kong.
5. International Pharmaceutical Product Registration: Aspects of Quality, Safety and Efficacy; Anthony C. Cartwright; Taylor & Francis Inc., USA.
6. New Drug Approval Process: The Global Challenge; Guarino, Richard A; Marcel Dekker Inc., NY.
7. FDA regulatory affairs: a guide for prescription drugs, medical devices, and biologics; Douglas J. Pisano, David Mantus; CRC Press, USA
8. Country Specific Guidelines from official websites.
9. Drugs & Cosmetics Act & Rules and Amendments

RECOMMENDED WEBSITES:

1. EU Clinical Research Directive 2001  
<http://www.eorte.be/services/doc/clinical-eudirective-04-april-01.pdf>
2. Code of Federal Regulations, FDA:  
<http://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfcfr/cfrsearch.cfm>
3. Guidelines of International Conference on Harmonization:  
<http://www.ich.org/products/guidelines.html>
4. Eudralex Guidelines  
<http://www.gmpcompliance.info/euguide.htm>
5. FDA New Drug Application:  
<http://www.fda.gov/regulatoryinformation/legislation/FederalFoodDrugandCosmeticActFDCAct/FDCActChapterVDrugsandDevices/ucm108125.htm>



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**REGULATIONS AND LEGISLATION FOR DRUGS & COSMETICS, MEDICAL DEVICES, BIOLOGICALS & HERBALS, AND FOOD & NUTRACEUTICALS IN INDIA AND INTELLECTUAL PROPERTY RIGHTS (MRA 104T)**

**SCOPE**

This course is designed to impart fundamental knowledge on regulations and legislation in India w.r.t. Drugs & Cosmetics, Medical Devices, Biologicals & Herbals, and Food & Nutraceuticals. It prepares the students for basic regulatory requirements in India of Drugs & Cosmetics, Medical Devices, Biologicals & Herbals, and Food & Nutraceuticals. For manufacture, import & registration, export, sale, marketing authorization, clinical trials and intellectual property rights.

**OBJECTIVES**

Upon the completion of the course the student shall be able to:

- Know different Acts and guidelines that regulate Drugs & Cosmetics, Medical Devices, Biologicals & Herbals, and Food & Nutraceuticals industry in India.
- Understand the approval process and regulatory requirements for Drugs & Cosmetics, Medical Devices, Biologicals & Herbals, and Food & Nutraceuticals

**THEORY**

**60 Hrs**

1. Biologicals & Herbals, and Food & Nutraceuticals Acts and Rules (with latest amendments):
  - a. Drugs and Cosmetics Act 1940 and Rules 1945: DPCO and NPPA
  - b. Other relevant provisions (rules schedules and guidelines for approval of Drugs Cosmetics, Medical Devices, Biologicals & Herbals, and Food & Nutraceuticals in IndiaOther relevant Acts: Narcotics Drugs and Psychotropic Substances Act; Medicinal and Toilet Preparations (Excise Duties) Act, 1955; Pharmacy Act, 1948; Drugs and Magic Remedies (Objectionable Advertisements) Act, 1955; Prevention of Cruelty to Animals Act.

**12 Hrs**
2. Regulatory requirements and approval procedures for Drugs & Cosmetics Medical Devices, Biologicals & Herbals, and Food & Nutraceuticals CDSCO (Central Drug Standard Control Organization) and State Licensing Authority: Organization, Responsibilities
  - Rules, regulations, guidelines and standards for regulatory filing of Drugs & Cosmetics, Medical Devices, Biologicals & Herbals, and Food & Nutraceuticals
  - Format & contents of Regulatory dossier filing Clinical trial / investigations

**12 Hrs**
3. Indian Pharmacopoeial Standards, BIS standards and ISO and other relevant standards

**12 Hrs**



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4. Bioavailability and Bioequivalence data (BA &BE), BCS Classification of Drugs, Regulatory Requirements for Bioequivalence study  
Stability requirements: ICH and WHO  
Guidelines for Drug testing in animals/Preclinical Studies  
Animal testing: Rationale for conducting studies, CPCSEA Guidelines Ethical guidelines for human participants ICMR-DBT Guidelines for Stem Cell Research

12 Hrs

5. Intellectual Property Rights: Patent, Trademark, Copyright, Industrial Designs and Geographical Indications, Indian Patent Scenario. IPR vs Regulatory Affairs

12 Hrs

#### REFERENCES

1. Manual of Patent Practice & Procedure, 3rd Edition, by the Patent Office of India
2. Patent Failure How Judges, Bureaucrats, and Lawyers put innovators at risk by James Bessen and Michael J. Meurer
3. Principles and Practice of Clinical Trial Medicine by Richard Chin and Bruce Y. Lee
4. Ethical Guidelines for Biomedical Research on Human Participants by Indian Council of Medical Research New delhi 2006.
5. CPCSEA Guidelines for Laboratory Animal Facility by Committee for the purpose of control and supervision on experiments on animals (CPCSEA)
6. ICH E6 Guideline - "Good Clinical Practice" by ICH Harmonised Tripartite
7. Guidance for Industry on Submission of Clinical Trial Application for Evaluating Safety and Efficacy by CDSCO (Central Drug Standard Control Organisation)
8. Guidance for Industry on Requirement of Chemical & Pharmaceutical Information including Stability Study Data before approval of clinical trials / BE studies by CDSCO
9. Guidelines for Import and Manufacture of Medical Devices by CDSCO
10. Guidelines from official website of CDSCO



  
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### **I.1 HUMAN ANATOMY & PHYSIOLOGY (PRACTICAL)**

**Practical : 3 Hrs./Week**

**General Requirements:** Dissection box, Laboratory Napkin, muslin cloth, record, Observation book(100pages), Stationary items, Blood lancet.

**Course materials:**

**Text books**

Goyal, R. K, Natvar M.P, and Shah S.A, Practical anatomy, physiology and biochemistry, latest edition, Publisher: B.S Shah Prakashan, Ahmedabad.

**Reference books**

Ranade VG, Text book of practical physiology, Latest edition, Publisher: PVG, Pune  
Anderson Experimental Physiology, Latest edition, Publisher: NA

**List of Experiments:**

1. Study of tissues of human body
  - (a) Epithelial tissue.
  - (b) Muscular tissue.
2. Study of tissues of human body
  - (a) Connective tissue.
  - (b) Nervous tissue.
3. Study of appliances used in hematological experiments.
4. Determination of W.B.C. count of blood.
5. Determination of R.B.C. count of blood.
6. Determination of differential count of blood.
7. Determination of
  - (a) Erythrocyte Sedimentation Rate.
  - (b) Hemoglobin content of Blood.
  - (c) Bleeding time & Clotting time.
8. Determination of
  - (a) Blood Pressure.
  - (b) Blood group.
9. Study of various systems with the help of charts, models & specimens
  - (a) Skeleton system part I-axial skeleton.
  - (b) Skeleton system part II- appendicular skeleton.
  - (c) Cardiovascular system.
  - (d) Respiratory system.



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- (e) Digestive system.
- (f) Urinary system.
- (g) Nervous system.
- (h) Special senses.
- (i) Reproductive system.


- 10. Study of different family planning appliances.
- 11. To perform pregnancy diagnosis test.
- 12. Study of appliances used in experimental physiology.
- 13. To record simple muscle curve using gastrocnemius sciatic nerve preparation.
- 14. To record simple summation curve using gastrocnemius sciatic nerve preparation.
- 15. To record simple effect of temperature using gastrocnemius sciatic nerve preparation.
- 16. To record simple effect of load & after load using gastrocnemius sciatic nerve preparation.
- 17. To record simple fatigue curve using gastrocnemius sciatic nerve preparation.

**Scheme of Practical Examination:**

	Sessionals	Annual
Identification	04	10
Synopsis	04	10
Major Experiment	07	20
Minor Experiment	03	15
Viva	02	15
Max Marks	20	70
Duration	03hrs	04hrs

Note: Total sessional marks is 30 (20 for practical sessional plus 10 marks for regularity, promptness, viva-voce and record maintenance).



  
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- 7 Biphasic dosage forms: Suspensions and emulsions, Definition, advantages and disadvantages, classification, test for the type of emulsion, formulation, stability and evaluation.
- 8 Suppositories and pessaries: Definition, advantages and disadvantages, types of base, method of preparation, Displacement value and evaluation.
- 9 Galenicals: Definition, equipment for different extraction processes like infusion, Decoction, Maceration and Percolation, methods of preparation of spirits, tinctures and extracts.
- 10 Pharmaceutical calculations.
- 11 Surgical aids: Surgical dressings, absorbable gelatin sponge, sutures, ligatures and medicated bandages.
- 12 Incompatibilities: Introduction, classification and methods to overcome the incompatibilities.

### 1.2 PHARMACEUTICS (PRACTICAL)

Practical : 3 Hrs./Week

#### List of Experiments:

1. Syrups
  - a. Simple Syrup I.P
  - b. Syrup of Ephedrine Hcl NF
  - c. Syrup Vasaka IP
  - d. Syrup of ferrous Phosphate IP
  - e. Orange Syrup
2. Elixir
  - a. Piperizine citrate elixir BP
  - b. Cascara elixir BPC
  - c. Paracetamol elixir BPC
3. Linctus
  - a. Simple Linctus BPC
  - b. Pediatric simple Linctus BPC
4. Solutions
  - a. Solution of cresol with soap IP
  - b. Strong solution of ferric chloride BPC
  - c. Aqueous Iodine Solution IP
  - d. Strong solution of Iodine IP
  - e. Strong solution of ammonium acetate IP



  
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5. **Liniments**
    - a. Liniment of turpentine IP\*
    - b. Liniment of camphor IP
  6. **Suspensions\***
    - a. Calamine lotion
    - b. Magnesium Hydroxide mixture BP
  7. **Emulsions\***
    - a. Cod liver oil emulsion
    - b. Liquid paraffin emulsion
  8. **Powders\***
    - a. Eutectic powder
    - b. Explosive powder
    - c. Dusting powder
    - d. Insufflations
  9. **Suppositories\***
    - a. Boric acid suppositories
    - b. Chloral suppositories
  10. **Incompatibilities**
    - a. Mixtures with Physical
    - b. Chemical & Therapeutic incompatibilities
- \* colourless bottles required for dispensing \* Paper envelope (white), butter paper and white paper required for dispensing.

**Scheme of Practical Examination:**

	Sessionals	Annual
Synopsis	05	15
Major Experiment	10	25
Minor Experiment	03	15
Viva	02	15
Max Marks	20	70
Duration	03hrs	04hrs

Note : Total sessional marks is 30 (20 for practical sessional plus 10 marks for regularity, promptness, viva-voce and record maintenance).



  
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**1.3 MEDICINAL BIOCHEMISTRY (PRACTICAL)**

Practical : 3 Hrs./Week

**Title of the Experiment:**

- 1 Qualitative analysis of normal constituents of urine.\*
  - 2 Qualitative analysis of abnormal constituents of urine.\*
  - 3 Quantitative estimation of urine sugar by Benedict's reagent method.\*\*
  - 4 Quantitative estimation of urine chlorides by Volhard's method.\*\*
  - 5 Quantitative estimation of urine creatinine by Jaffe's method.\*\*
  - 6 Quantitative estimation of urine calcium by precipitation method.\*\*
  - 7 Quantitative estimation of serum cholesterol by Libermann Burchard's method.\*\*
  - 8 Preparation of Folin Wu filtrate from blood.\*
  - 9 Quantitative estimation of blood creatinine.\*\*
  - 10 Quantitative estimation of blood sugar Folin-Wu tube method.\*\*
  - 11 Estimation of SGOT in serum.\*\*
  - 12 Estimation of SGPT in serum.\*\*
  - 13 Estimation of Urea in Serum.\*\*
  - 14 Estimation of Proteins in Serum.\*\*
  - 15 Determination of serum bilirubin\*\*
  - 16 Determination of Glucose by means of Glucoseoxidase.\*\*
  - 17 Enzymatic hydrolysis of Glycogen/Starch by Amylases.\*\*
  - 18 Study of factors affecting Enzyme activity. (pH & Temp.)\*\*
  - 19 Preparation of standard buffer solutions and its pH measurements (any two)\*
  - 20 Experiment on lipid profile tests\*\*
  - 21 Determination of sodium, calcium and potassium in serum.\*\*
- \*\* indicate major experiments & \* indicate minor experiments

**Assignments:**

Format of the assignment

1. Minimum & Maximum number of pages.
2. It shall be computer draft copy.
3. Reference(s) shall be included at the end.
4. Name and signature of the student.
5. Assignment can be a combined presentation at the end of the academic year.
6. Time allocated for presentation may be 8+2 Min.

**Scheme of Practical Examination:**

	Sessionals	Annual
Synopsis	05	15
Major Experiment	10	25
Minor Experiment	03	15
Viva	02	15
Max Marks	20	70
Duration	03hrs	04hrs

Note : Total sessional marks is 30 (20 for practical sessional plus 10 marks for regularity, promptness, viva-voce and record maintenance).



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- 12 Mechanism of aldol condensation, claisen condensation, cannizzaro reaction, crossed aldol condensation, crossed cannizzaro reaction, benzoin condensation, perkin condensation. Knoevenagel, Reformatsky reaction, Wittig reaction, Michael addition.
- 13 Hoffman rearrangement: Migration to electron deficient nitrogen, Sandmeyer's reaction, basicity of amines, diazotisation and coupling, acidity of phenols, Williamson synthesis, Fries rearrangement, Kolbe reaction, Reimer tieman's reactions.
- 14 Nucleophilic aromatic substitution: Bimolecular displacement mechanisms, orientation, comparison of aliphatic nucleophilic substitution with that of aromatic.
- 15 Oxidation reduction reaction.
- 16 Study of the following official compounds- preparation, test for purity, assay and medicinal uses of Chlorbutol, Dimercaprol, Glyceryl trinitrate, Urea, Ethylene diamine dihydrate, Vanillin, Paraldehyde, Ethylene chloride, Lactic acid, Tartaric acid, citric acid, salicylic acid, aspirin, methyl salicylate, ethyl benzoate, benzyl benzoate, dimethyl phthalate, sodium lauryl sulphate, saccharin sodium, mephensin.

#### 1.4 PHARMACEUTICAL ORGANIC CHEMISTRY (PRACTICAL)

Practical : 3 Hrs./Week

- I. Introduction to the various laboratory techniques through demonstration involving synthesis of the following compounds (at least 8 compounds to be synthesised):
  1. Acetanilide / aspirin (Acetylation)
  2. Benzanilide / Phenyl benzoate (Benzoylation)
  3. P-bromo acetanilide / 2,4,6 - tribromo aniline (Bromination)
  4. Dibenzylidene acetone (Condensation)
  5. 1-Phenylazo-2-naphthol (Diazotisation and coupling)
  6. Benzoic acid / salicylic acid (Hydrolysis of ester)
  7. M-dinitro benzene (Nitration)
  8. 9, 10 - Anthraquinone (Oxidation of anthracene) / preparation of benzoic acid from toluene or benzaldehyde
  9. M-phenylene diamine (Reduction of M-dinitrobenzene) / Aniline from nitrobenzene
  10. Benzophenone oxime
  11. Nitration of salicylic acid
  12. Preparation of picric acid
  13. Preparation of O-chlorobenzoic acid from O-chlorotoluene
  14. Preparation of cyclohexanone from cyclohexanol



  
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**II. Identification of organic compounds belonging to the following classes by :**

Systematic qualitative organic analysis including preparation of derivatives  
Phenols, amides, carbohydrates, amines, carboxylic acids, aldehyde and ketones,  
Alcohols, esters, hydrocarbons, anilides, nitrocompounds.

**III. Introduction to the use of stereo models:**

Methane, Ethane, Ethylene, Acetylene, Cis alkene, Trans alkene, inversion of  
configuration.

**Scheme of Practical Examination:**

	Sessionals	Annual
Synopsis	05	15
Major Experiment	10	25
Minor Experiment	03	15
Viva	02	15
Max Marks	20	70
Duration	03hrs	04hrs

Note: Total sessional marks is 30 (20 for practical sessional plus 10 marks for  
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- 16 Essential Trace elements
- 17 Antimicrobials
- 18 Pharmaceutical aids
- 19 Dental Products
- 20 Miscellaneous compounds
- 21 Radio Pharmaceuticals

### 1.5 PHARMACEUTICAL INORGANIC CHEMISTRY (PRACTICAL)

Practical : 3 Hrs./Week

1. Limit test (6 exercises)
  - a. Limit test for chlorides
  - b. Limit test for sulphates
  - c. Limit test for iron
  - d. Limit test for heavy metals
  - e. Limit test for arsenic
  - f. Modified limit tests for chlorides and sulphates
2. Assays (10 exercises)
  - a. Ammonium chloride- Acid-base titration
  - b. Ferrous sulphate- Cerimetry
  - c. Copper sulphate- Iodometry
  - d. Calcium gluconate- Complexometry
  - e. Hydrogen peroxide – Permanganometry
  - f. Sodium benzoate – Nonaqueous titration
  - g. Sodium chloride – Modified volhard's method
  - h. Assay of KI –  $\text{KIO}_3$  titration
  - i. Gravimetric estimation of barium as barium sulphate
  - j. Sodium antimony gluconate or antimony potassium tartarate
3. Estimation of mixture (Any two exercises)
  - a. Sodium hydroxide and sodium carbonate
  - b. Boric acid and Borax
  - c. Oxalic acid and sodium oxalate
4. Test for identity (Any three exercises)
  - a. Sodium bicarbonate
  - b. Barium sulphate
  - c. Ferrous sulphate
  - d. Potassium chloride



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5. Test for purity (Any two exercises)
- Swelling power in Bentonite
  - Acid neutralising capacity in aluminium hydroxide gel
  - Ammonium salts in potash alum
  - Adsorption power heavy Kaolin
  - Presence of Iodates in KI
6. Preparations (Any two exercises)
- Boric acids
  - Potash alum
  - Calcium lactate
  - Magnesium sulphate

**Scheme of Practical Examination :**

	Sessionals	Annual
Synopsis	05	15
Major Experiment	10	25
Minor Experiment 1 & 2	03	15
Viva	02	15
Max Marks	20	70
Duration	03hrs	04hrs

Note : Total sessional marks is 30 (20 for practical sessional plus 10 marks for regularity, promptness, viva-voce and record maintenance).



  
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3. Detailed syllabus and lecture wise schedule :

Title of the topic

- 1 Introduction to the science of microbiology. Major divisions of microbial world and Relationship among them.
- 2 Different methods of classification of microbes and study of Bacteria, Fungi, virus, Rickettsiae, Spirochetes.
- 3 Nutritional requirements, growth and cultivation of bacteria and virus. Study of different important media required for the growth of aerobic and anaerobic bacteria & fungi. Differential media, enriched media and selective media, maintenance of lab cultures.
- 4 Different methods used in isolation and identification of bacteria with emphasis to different staining techniques and biochemical reactions. Counting of bacteria -Total and Viable counting techniques.
- 5 Detailed study of different methods of sterilization including their merits and demerits. Sterilization methods for all pharmaceutical products. Detailed study of sterility testing of different pharmaceutical preparations . Brief information on Validation.
- 6 Disinfectants- Study of disinfectants, antiseptics, fungicidal and virucidal agents factors affecting their activation and mechanism of action. Evaluation of bactericidal, bacteristatic, , virucidal activities, evaluation of preservatives in pharmaceutical preparations.
- 7 Immunology- Immunity, Definition, Classification, General principles of natural immunity, Phagocytosis, acquired immunity( active and passive ) . Antigens, chemical nature of antigens structure and formation of Antibodies, Antigen-Antibody reactions. Bacterial exotoxins and endotoxins. Significance of toxoids in active immunity, Immunization programme, and importance of booster dose.
- 8 Diagnostic tests : Schick's Test, Elisa test, Western Blot test, Southern Blot PCR Widal, QBC, Mantoux Peripheral smear. Study of malarial parasite.
- 9 Microbial culture sensitivity Testing: Interpretation of results Principles and methods of different microbiological assays, microbiological assay of Penicillin, Streptomycin and vitamin B<sub>2</sub> and B<sub>12</sub>. Standardisation of vaccines and sera.
- 10 Study of infectious diseases: Typhoid, Tuberculosis, Malaria, Cholera, Hepatitis, Meningitis, Syphilis & Gonorrhea and HIV.

**2.2 PHARMACEUTICAL MICROBIOLOGY (PRACTICAL)**

Practical : 3 Hrs./Week

Title of the Experiment:

- 1 Study of apparatus used in experimental microbiology\*.
- 2 Sterilisation of glass ware's. Preparation of media and sterilisation.\*
- 3 Staining techniques – Simple staining ; Gram's staining ; Negative staining\*\*
- 4 Study of motility characters\*.
- 5 Enumeration of micro-organisms (Total and Viable)\*
- 6 Study of the methods of isolation of pure culture.\*
- 7 Bio chemical testing for the identification of micro\*-organisms.



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- 8 Cultural sensitivity testing for some micro-organisms.\*
  - 9 Sterility testing for powders and liquids.\*
  - 10 Determination of minimum inhibitory concentration.\*
  - 11 Microbiological assay of antibiotics by cup plate method.\*
  - 12 Microbiological assay of vitamins by Turbidometric method\*\*
  - 13 Determination of RWC.\*\*
  - 14 Diagnostic tests for some common diseases, Widal, malarial parasite.\*\*
- \* Indicate minor experiment & \*\* indicate major experiment

**Assignments:**

- 1 Visit to some pathological laboratories & study the activities and equipment/instruments used and reporting the same.
- 2 Visit to milk dairies (Pasturization) and microbial laboratories (other sterilization methods) & study the activities and equipment/instruments used and reporting the same.
3. Library assignments
  - a. Report of recent microbial techniques developed in diagnosing some common diseases.
  - b. Latest advancement developed in identifying, cultivating & handling of microorganisms.

**Format of the assignment:**

1. Minimum & Maximum number of pages.
2. It shall be computer draft copy.
3. Reference(s) shall be included at the end.
4. Name and signature of the student.
5. Assignment can be a combined presentation at the end of the academic year.
6. Time allocated for presentation may be 8+2 Min.

**Scheme of Practical Examination:**

	Sessionals	Annual
Synopsis	05	15
Major Experiment	10	25
Minor Experiment	03	15
Viva	02	15
Max Marks	20	70
Duration	03hrs	04hrs

Note : Total sessional marks is 30 (20 for practical sessional plus 10 marks for regularity, promptness, viva-voce and record maintenance).



  
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### 2.3 PHARMACOGNOSY & PHYTOPHARMACEUTICALS (PRACTICAL)

Practical : 3 Hrs./Week

**General Requirements:** Laboratory Napkin, Observation Book 150 pages Zero brush, Needle, Blade, Match box.

**List of experiments:**

- 1 Introduction of Pharmacognosy laboratory and experiments.
- 2 Study of cell wall constituents and cell inclusions.
- 3 Macro, powder and microscopic study of Datura.
- 4 Macro, powder and microscopic study of Senna.
- 5 Macro, powder and microscopic study of Cassia.cinnamon.
- 6 Macro, powder and microscopic study of Cinchona.
- 7 Macro, powder and microscopic study of Ephedra.
- 8 Macro, powder and microscopic study of Quassia.
- 9 Macro, powder and microscopic study of Clove.
- 10 Macro, powder and microscopic study of Fennel.
- 11 Macro, powder and microscopic study of Coriander.
- 12 Macro, powder and microscopic study of Isapgol.
- 13 Macro, powder and microscopic study of Nux vomica.
- 14 Macro, powder and microscopic study of Rauwolfia.
- 15 Macro, powder and microscopic study of Liquorice.
- 16 Macro, powder and microscopic study of Ginger.
- 17 Macro, powder and microscopic study of Podophyllum.
- 18 Determination of Iodine value.
- 19 Determination of Saponification value and unsaponifiable matter.
- 20 Determination of ester value.
- 21 Determination of Acid value.
- 22 Chemical tests for Acacia.
- 23 Chemical tests for Tragacanth.
- 24 Chemical tests for Agar.
- 25 Chemical tests for Starch.
- 26 Chemical tests for Lipids.(castor oil,sesame oil, shark liver oil,bees wax)
- 27 Chemical tests for Gelatin.

**Scheme of Practical Examination:**

	Sessionals	Annual
Identification	04	10
Synopsis	04	10
Major Experiment	07	20
Minor Experiment	03	15
Viva	02	15
Max Marks	20	70
Duration	03hrs	04hrs

Note : Total sessional marks is 30 (20 for practical sessional plus 10 marks for regularity, promptness, viva-voce and record maintenance.



  
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## 2.5 COMMUNITY PHARMACY (THEORY)

Theory : 2 Hrs. /Week

1. **Scope:** In the changing scenario of pharmacy practice in India, Community Pharmacists are expected to offer various pharmaceutical care services. In order to meet this demand, students will be learning various skills such as dispensing of drugs, responding to minor ailments by providing suitable safe medication, patient counselling, health screening services for improved patient care in the community set up.
2. **Objectives:** Upon completion of the course, the student shall be able to –
  - a. know pharmaceutical care services;
  - b. know the business and professional practice management skills in community pharmacies;
  - c. do patient counselling & provide health screening services to public in community pharmacy;
  - d. respond to minor ailments and provide appropriate medication;
  - e. show empathy and sympathy to patients; and
  - f. appreciate the concept of Rational drug therapy.

### Text Books:

- a. Health Education and Community Pharmacy by N.S.Parmar.
- b. WHO consultative group report.
- c. Drug store & Business management by Mohammed Ali & Jyoti.

### Reference books:

- a. Handbook of pharmacy – health care. Edt. Robin J Harman. The Pharmaceutical press.
- b. Comprehensive Pharmacy Review – Edt. Leon Shargel. Lippincott Williams & Wilkins.

### Special requirements:

1. Either the college is having model community pharmacy (meeting the schedule N requirement) or sign MoU with at least 4-5 community pharmacies nearby to the college for training the students on dispensing and counselling activities.
2. Special equipments like B.P apparatus, Glucometer, Peak flow meter, and apparatus for cholesterol estimation.

### 3. Scheme of evaluation (80 Marks)

- |  |    |
|--|----|
| 1. Synopsis  | 10 |
| 2. Major Experiment  | 30 |
| (Counselling of patients with specific diseases – emphasis should be given on Counselling introduction, content, process and conclusion) |    |
| 3. Minor Experiment (Ability to measure B.P/ CBG / Lung function)  | 15 |
| 4. Prescription Analysis (Analyzing the prescriptions for probable drug interaction and ability to tell the management)                  | 15 |
| 5. Viva – Voce   | 10 |



  
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4. Lecture wise programme :

Topics

- 1 **Definition, scope, of community pharmacy**  
Roles and responsibilities of Community pharmacist
- 2 **Community Pharmacy Management**
  - a) Selection of site, Space layout, and design
  - b) Staff, Materials- coding, stocking
  - c) Legal requirements
  - d) Maintenance of various registers
  - e) Use of Computers: Business and health care soft wares
- 3 **Prescriptions** – parts of prescription, legality & identification of medication related problems like drug interactions.
- 4 **Inventory control in community pharmacy**  
Definition, various methods of Inventory Control  
ABC, VED, EOQ, Lead time, safety stock
- 5 **Pharmaceutical care**  
Definition and Principles of Pharmaceutical care.
- 6 **Patient counselling**  
Definition, outcomes, various stages, barriers, Strategies to overcome barriers  
Patient information leaflets- content, design, & layouts, advisory labels
- 7 **Patient medication adherence**  
Definition, Factors affecting medication adherence, role of pharmacist in improving the adherence.
- 8 **Health screening services**  
Definition, importance, methods for screening  
Blood pressure/ blood sugar/ lung function and Cholesterol testing
- 9 **OTC Medication- Definition, OTC medication list & Counselling**
- 10 **Health Education**  
WHO Definition of health, and health promotion, care for children, pregnant & breast feeding women, and geriatric patients.  
Commonly occurring Communicable Diseases, causative agents, Clinical presentations and prevention of communicable diseases – Tuberculosis, Hepatitis, Typhoid, Amoebiasis, Malaria, Leprosy, Syphilis, Gonorrhea and AIDS  
Balance diet, and treatment & prevention of deficiency disorders  
Family planning – role of pharmacist
- 11 **Responding to symptoms of minor ailments**  
Relevant pathophysiology, common drug therapy to, Pain, GI disturbances (Nausea, Vomiting, Dyspepsia, diarrhea, constipation), Pyrexia, Ophthalmic symptoms, worms infestations.
- 12 **Essential Drugs concept and Rational Drug Therapy**  
Role of community pharmacist
- 13 **Code of ethics for community pharmacists**



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**3.1 PHARMACOLOGY – II (PRACTICAL)****Practical : 3 Hrs./Week****List of Experiments:**

1. Study of laboratory animals and their handling (a. Frogs, b. Mice, c. Rats, d. Guinea pigs, e. Rabbits).
2. Study of physiological salt solutions used in experimental pharmacology.
3. Study of laboratory appliances used in experimental pharmacology.
4. Study of use of anesthetics in laboratory animals.
5. To record the dose response curve of Ach using isolated ileum/rectus abdominis muscle preparation.
6. To carry out bioassay of Ach using isolated ileum/rectus abdominis muscle preparation by interpolation method.
7. To carry out bioassay of Ach using isolated ileum/rectus abdominis muscle preparation by three point method.
8. To record the dose response curve of Histamine using isolated guinea-pig ileum preparation.
9. Study of agonistic and antagonistic effects of drugs using isolated guinea-pig ileum preparation.
10. To carry out bioassay of Histamine using isolated guinea-pig ileum preparation by interpolation method.
11. To carry out bioassay of Histamine using guinea-pig ileum preparation by three point method.
12. To study the routes of administration of drugs in animals (Rats, Mice, Rabbits).
13. Study of theory, principle, procedure involved and interpretation of given results for the following experiments:
  - a) Analgesic property of drug using analgesimeter.
  - b) Antiinflammatory effect of drugs using rat-paw edema method.
  - c) Anticonvulsant activity of drugs using maximal electroshock and pentylene tetrazole methods.
  - d) Antidepressant activity of drugs using pole climbing apparatus and pentobarbitone induced sleeping time methods.
  - e) Locomotor activity evaluation of drugs using actophotometer and rotorod.
  - f) Cardiotonic activity of drugs using isolated frog heart and mammalian heart preparations.

**Scheme of Practical Examination:**

	Sessionals	Annual
Identification	02	10
Synopsis	04	10
Major Experiment (Bioassay)	08	30
Minor Experiment (Interpretation of given Graph or simulated experiment)	04	10
Viva	02	10
Max Marks	20	70
Duration	3hrs	4hrs

Note : Total sessional marks is 30 (20 for practical sessional plus 10 marks for regularity, promptness, viva-voce and record maintenance).



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- **Fluorimetric Analysis:** Theory, luminescence, factors affecting fluorescence, quenching. Instrumentation, Applications, fluorescent indicators, study of pharmaceutically important compounds estimated by fluorimetry.
- b. **Flame Photometry:** Theory, nebulisation, flame and flame temperature, interferences, flame spectrometric techniques and instrumentation and pharmaceutical applications.
- c. **Atomic Absorption Spectrometry:** Introduction, Theory, types of electrodes, instrumentation and applications.
- d. **Atomic Emission Spectroscopy:** Spectroscopic sources, atomic emission spectrometers, photographic and photoelectric detection.
- e. **NMR & ESR (Introduction only):** Introduction, theoretical aspects and applications.
- f. **Mass Spectroscopy: (Introduction only)** – Fragmentation, types of ions produced mass spectrum and applications.
- g. **Polarimetry: (Introduction only)** – Introduction to optical rotatory dispersion, circular dichroism, polarimeter.
- h. **X-RAY Diffraction: (Introduction only)** – Theory, reciprocal lattice concept, diffraction patterns and applications.
- i. **Thermal Analysis:** Introduction, instrumentation, applications, and DSC and DTA.


### 3.2 PHARMACEUTICAL ANALYSIS (PRACTICAL)

Practical : 3 Hrs./Week

#### List of Experiments:

1. Separation and identification of Amino Acids by Paper Chromatography.
2. Separation and identification of Sulpha drugs by TLC technique.
3. Effect of pH and solvent on the UV spectrum of given compound.
4. Comparison of the UV spectrum of a compound with that of its derivatives.
5. Determination of dissociation constant of indicators using UV-Visible spectroscopy.
6. Conductometric titration of mixture of acids with a strong base.
7. Potentiometric titration of an acid with a strong base.
8. Estimation of drugs by Fluorimetric technique.
9. Study of quenching effect in fluorimetry.
10. Colourimetric estimation of Sulpha drugs using BMR reagent.



  
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11. Simultaneous estimation of two drugs present in given formulation.
12. Assay of Salicylic Acid by colourimetry.
13. Determination of Chlorides and Sulphates in Calcium gluconate by Nepheloturbidimetric Method.
14. Determination of Na/K by Flame Photometry.
15. Determination of pKa using pH meter.
16. Determination of specific rotation.
17. Comparison of the IR spectrum of a compound with that of its derivatives.
18. Demonstration of HPLC.
19. Demonstration of HPTLC.
20. Demonstration of GC-MS.
21. Demonstration of DSC.
22. Interpretation of NMR spectra of any one compound.

**Reference Books:**

1. Text Book of Pharm. Analysis by Higuchi. T and Hasen. E. B., New York Inter Science Publishers.
2. Quantitative Pharma. Analysis by Jenkins, The Blakiston division, New York.
3. Quantitative Drug Analysis, by Garrot. D, Chapman & Hall Ltd., London.
4. Undergraduate Instrumental Analysis by James. E., CBS Publishers.
5. Instrumental Analysis by Willard and Merritt, EWP, East West Press Ltd., Delhi/Madras.
6. Pharm Analysis by Skoog and West, Sounders Maniplal College Publishing.
7. Text Book of Chemical Analysis, by A.I.Vogel, ELBS with Macmillan press, Hampshire.
8. Textbook of Pharm. Analysis by K.A.Connors, John Wiley & Sons, New York, Brisbane, Singapore.
9. Textbook of Pharm. Analysis (Practical) by Beckett & Stenlake, CBS Publishers, Delhi.
10. Textbook of Drug Analysis by P.D. Sethi., CBS Publishers, Delhi.
11. Spectroscopy by Silverstein, John & Wiley & Sons. Inc., Canada & Singapore.
12. How to practise GMP-A Plan for total quality control by P.P. Sharma, Vandana Publications, Agra.
13. The Science & Practice of Pharmacy by Remington Vol-I & II, Mack Publishing Co. Pennsylvania.
14. TLC by Stahl, Spring Verlay.
15. Text Book of Pharm. Chemistry by Chatten, CBS Publications.
16. Spectroscopy by William Kemp, ELBS with Macmillan Press, Hampshire.
17. LP.-1996, The Controller of Publications, New Delhi.
18. BPC- Dept. of Health, U.K. for HMSO.
19. USP - Mack Publishing Co., Easton, PA.
20. The Extra Pharmacopoeia - The Pharm. Press, London.



  
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### 3.4 PHARMACEUTICAL JURISPRUDENCE (THEORY)

Theory : 2 Hrs. /Week

1. **Scope of the Subject:** (4-6 lines): This course exposes the student to several important legislations related to the profession of pharmacy in India. The Drugs and Cosmetics Act, along with its amendments are the core of this course. Other acts, which are covered, include the Pharmacy Act, dangerous drugs, medicinal and toilet preparation Act etc. Besides this the new drug policy, professional ethics, DPCO, patent and design Act will be discussed.
2. **Objectives of the Subject:** Upon completion of the subject student shall be able to (Know, do, and appreciate) –
  - a. practice the Professional ethics;
  - b. understand the various concepts of the pharmaceutical legislation in India;
  - c. know the various parameters in the Drug and Cosmetic Act and rules;
  - d. know the Drug policy, DPCO, Patent and design act;
  - e. understand the labeling requirements and packaging guidelines for drugs and cosmetics;
  - f. be able to understand the concepts of Dangerous Drugs Act, Pharmacy Act and Excise duties Act; and
  - g. other laws as prescribed by the Pharmacy Council of India from time to time including International Laws.

#### Text books (Theory)

Mithal, B M. Textbook of Forensic Pharmacy. Calcutta :National; 1988.

#### Reference books (Theory)

- a. Singh, KK, editor. Beotra's the Laws of Drugs, Medicines & cosmetics. Allahabad: Law Book House; 1984.
- b. Jain, NK. A Textbook of forensic pharmacy. Delhi: Vallabh prakashan ; 1995.
- c. Reports of the Pharmaceutical enquiry Committee
- d. I.D.M.A., Mumbai. DPCO 1995
- e. Various reports of Amendments.
- f. Deshapande, S.W. The drugs and magic remedies act 1954 and rules 1955. Mumbai: Susmit Publications; 1998.
- g. Eastern Book Company .The narcotic and psychotropic substances act 1985, Lucknow: Eastern; 1987.

### 3. Detailed syllabus and lecture wise schedule:

#### Title of the topic

1. **Pharmaceutical Legislations** – A brief review.
2. Principle and Significance of professional ethics. Critical study of the code of pharmaceutical ethics drafted by PCI.
3. **Drugs and Cosmetics Act, 1940, and its rules 1945.**  
Objectives, Legal definition, Study of Schedule's with reference to Schedule B, C&C1, D, E1, F&F1, F2, F3, FF, G, H, J, K, M, N, P, R, V, W, X, Y.  
Sales, Import, labeling and packaging of Drugs And Cosmetics  
Provisions Relating to Indigenous Systems.  
Constitution and Functions of DTAB,DCC,CDL.  
Qualification and duties –Govt. analyst and Drugs Inspector.



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4. **Pharmacy Act –1948.**  
Objectives Legal Definitions, General Study, Constitution and Functions of State & Central Council, Registration & Procedure, ER.
5. **Medicinal and Toilet Preparation Act –1955.**  
Objectives, Legal Definitions, Licensing, Bonded and Non Bonded Laboratory, Ware Housing, Manufacture of Ayurvedic, Homeopathic, Patent & Proprietary Preparations.
6. **Narcotic Drugs and Psychotropic substances Act-1985 and Rules.** Objectives, Legal Definitions, General Study, Constitution and Functions of narcotic & Psychotropic Consultative Committee, National Fund for Controlling the Drug Abuse, Prohibition, Control and regulations, Schedules to the Act.
7. **Study of Salient Features of Drugs and magic remedies Act and its rules.**
8. **Study of essential Commodities Act Relevant to drugs price control Order.**
9. **Drug Price control Order & National Drug Policy (Current).**
10. **Prevention Of Cruelty to animals Act-1960.**
11. **Patents & design Act-1970.**
12. **Brief study of prescription and Non-prescription Products.**

4. Assignments:

**Format of the assignment**

1. Minimum & Maximum number of pages
2. It shall be a computer draft copy
3. Reference(s) shall be included at the end.
4. Name and signature of the student
5. Assignment can be a combined presentation at the end of the academic year.
6. Time allocated for presentation may be 8+2 Min

**Case studies relating to**

1. Drugs and Cosmetics Act and rules along with its amendments, Dangerous Drugs Act, Medicinal and Toilet preparation Act, New Drug Policy, Professional Ethics, Drugs (Price control) Order, Patent and Design Act.
2. Various prescription and non-prescription products.
3. Medical and surgical accessories.
4. Diagnostic aids and appliances available in the market.



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**3.6 PHARMACEUTICAL FORMULATIONS (PRACTICAL)**

Practical : 3 Hrs./Week

**List of Experiments :**

1. **Manufacture of Tablets**
  - a. Ordinary compressed tablet-wet granulation
  - b. Tablets prepared by direct compression.
  - c. Soluble tablet.
  - d. Chewable tablet.
2. **Formulation and filling of hard gelatin capsules**
3. **Manufacture of parenterals**
  - a. Ascorbic acid injection
  - b. Calcium gluconate injection
  - c. Sodium chloride infusion.
  - d. Dextrose and Sodium chloride injection/ infusion.
4. **Evaluation of Pharmaceutical formulations (QC tests)**
  - a. Tablets
  - b. Capsules
  - c. Injections
5. **Formulation of two liquid oral preparations and evaluation by assay**
  - a. Solution: Paracetamol Syrup
  - b. Antacid suspensions- Aluminum hydroxide gel
6. **Formulation of semisolids and evaluation by assay**
  - a. Salicylic acid and benzoic acid ointment
  - b. Gel formulation Diclofenac gel
7. **Cosmetic preparations**
  - a. Lipsticks
  - b. Cold cream and vanishing cream
  - c. Clear liquid shampoo
  - d. Tooth paste and tooth powders.
8. **Tablet coating (demonstration)**

**Scheme of Practical Examination :**

	Sessionals	Annual
Synopsis	05	15
Major Experiment	10	25
Minor Experiment	03	15
Viva	02	15
Max Marks	20	70
Duration	03hrs	04hrs

Note : Total sessional marks is 30 (20 for practical sessional plus 10 marks for regularity, promptness, viva-voce and record maintenance).



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## 4.2 HOSPITAL PHARMACY (THEORY)

Theory : 2 Hrs. /Week

1. **Scope:** In the changing scenario of pharmacy practice in India, for successful practice of Hospital Pharmacy, the students are required to learn various skills like drug distribution, drug dispensing, manufacturing of parenteral preparations, drug information, **patient counselling, and therapeutic drug monitoring for improved patient care.**
2. **Objectives:** Upon completion of the course, the student shall be able to –
  - a. know various drug distribution methods;
  - b. know the professional practice management skills in hospital pharmacies;
  - c. **provide unbiased drug information to the doctors;**
  - d. know the manufacturing practices of various formulations in hospital set up;
  - e. appreciate the practice based research methods; and
  - f. appreciate the stores management and inventory control.

**Text books: (latest editions)**

- a. Hospital pharmacy by William E. Hassan
- b. A text book of Hospital Pharmacy by S.H. Merchant & Dr. J.S. Qadry. Revised by R.K. Goyal & R.K. Parikh

**References:**

- a. WHO consultative group report.
- b. R.P.S. Vol.2. Part -B; Pharmacy Practice section.
- c. Handbook of pharmacy – health care. Edt. Robin J Harman. The Pharmaceutical press.

### 3. Lecture wise programme :

**Topics**

- 1 **Hospital - its Organisation and functions**
- 2 **Hospital pharmacy-Organisation and management**
  - a) Organizational structure-Staff, Infrastructure & work load statistics
  - b) Management of materials and finance
  - c) Roles & responsibilities of hospital pharmacist
- 3 **The Budget – Preparation and implementation**
- 4 **Hospital drug policy**
  - a) Pharmacy and Therapeutic committee (PTC)
  - b) Hospital formulary
  - c) Hospital committees
    - Infection committee
    - Research and ethical committee
  - d) developing therapeutic guidelines
  - e) Hospital pharmacy communication - Newsletter



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**5 Hospital pharmacy services**

- a) Procurement & warehousing of drugs and Pharmaceuticals
- b) Inventory control  
Definition, various methods of Inventory Control  
ABC, VED, EOQ, Lead time, safety stock
- c) Drug distribution in the hospital
  - i) Individual prescription method
  - ii) Floor stock method
  - iii) Unit dose drug distribution method
- d) Distribution of Narcotic and other controlled substances
- e) Central sterile supply services – Role of pharmacist

**6 Manufacture of Pharmaceutical preparations**

- a) Sterile formulations – large and small volume parenterals
- b) Manufacture of Ointments, Liquids, and creams
- c) Manufacturing of Tablets, granules, capsules, and powders
- d) Total parenteral nutrition

**7 Continuing professional development programs**

Education and training

**8 Radio Pharmaceuticals – Handling and packaging**

**9 Professional Relations and practices of hospital pharmacist**

**4.2 HOSPITAL PHARMACY (PRACTICAL)**

**Practical : 3 Hrs./Week**

- 1. Assessment of drug interactions in the given prescriptions
- 2. Manufacture of parenteral formulations, powders.
- 3. Drug information queries.
- 4. Inventory control

**List of Assignments:**

- 1. Design and Management of Hospital pharmacy department for a 300 bedded hospital.
- 2. Pharmacy and Therapeutics committee – Organization, functions, and limitations.
- 3. Development of a hospital formulary for 300 bedded teaching hospital
- 4. Preparation of ABC analysis of drugs sold in one month from the pharmacy.
- 5. Different phases of clinical trials with elements to be evaluated.
- 6. Various sources of drug information and systematic approach to provide unbiased drug information.
- 7. Evaluation of prescriptions generated in hospital for drug interactions and find out the suitable management.



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### 4.3 CLINICAL PHARMACY (THEORY)

Theory : 3 Hrs. /Week

#### 1. Objectives of the Subject :

Upon completion of the subject student shall be able to (Know, do, appreciate) –

- monitor drug therapy of patient through medication chart review and clinical review;
- obtain medication history interview and counsel the patients;
- identify and resolve drug related problems;
- detect, assess and monitor adverse drug reaction;
- interpret selected laboratory results (as monitoring parameters in therapeutics) of specific disease states; and
- retrieve, analyse, interpret and formulate drug or medicine information.

#### Text books (Theory)

- Practice Standards and Definitions - The Society of Hospital Pharmacists of Australia.
- Basic skills in interpreting laboratory data - Scott LT, American Society of Health System Pharmacists Inc.
- Biopharmaceutics and Applied Pharmacokinetics - Leon Shargel, Prentice Hall publication.
- A text book of Clinical Pharmacy Practice; Essential concepts and skills, Dr.G.Parthasarathi et al, Orient Orient Langram Pvt.Ltd. ISBN8125026

#### References

- Australian drug information -Procedure manual. The Society of Hospital Pharmacists of Australia.
- Clinical Pharmacokinetics - Rowland and Tozer, Williams and Wilkins Publication.
- Pharmaceutical statistics. Practical and clinical applications. Sanford Bolton, Marcel Dekker, Inc.

#### 2. Detailed syllabus and lecture wise schedule:

##### Title of the topic

- Definitions, development and scope of clinical pharmacy
- Introduction to daily activities of a clinical pharmacist
  - Drug therapy monitoring (medication chart review, clinical review, pharmacist interventions)
  - Ward round participation
  - Adverse drug reaction management
  - Drug information and poisons information
  - Medication history
  - Patient counseling
  - Drug utilisation evaluation (DUE) and review (DUR)
  - Quality assurance of clinical pharmacy services



  
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3. **Patient data analysis**  
The patient's case history, its structure and use in evaluation of drug therapy & Understanding common medical abbreviations and terminologies used in clinical practices.
4. **Clinical laboratory tests used in the evaluation of disease states, and interpretation of test results**
  - a. Haematological, Liver function, Renal function, thyroid function tests
  - b. Tests associated with cardiac disorders
  - c. Fluid and electrolyte balance
  - d. Microbiological culture sensitivity tests
  - e. Pulmonary Function Tests
5. **Drug & Poison information**
  - a. Introduction to drug information resources available
  - b. Systematic approach in answering DI queries
  - c. Critical evaluation of drug information and literature
  - d. Preparation of written and verbal reports
  - e. Establishing a Drug Information Centre
  - f. Poisons information- organization & information resources
6. **Pharmacovigilance**
  - a. Scope, definition and aims of pharmacovigilance
  - b. Adverse drug reactions - Classification, mechanism, predisposing factors, causality assessment [different scales used]
  - c. Reporting, evaluation, monitoring, preventing & management of ADRs
  - d. Role of pharmacist in management of ADR.
7. **Communication skills, including patient counselling techniques, medication history interview, presentation of cases.**
8. Pharmaceutical care concepts
9. Critical evaluation of biomedical literature
10. Medication errors

#### 4.3 CLINICAL PHARMACY (PRACTICAL)

**Practical : 3 Hrs./Week**

Students are expected to perform 15 practicals in the following areas covering the topics dealt in theory class.

- a. Answering drug information questions (4 Nos)
- b. Patient medication counselling (4 Nos)
- c. Case studies related to laboratory investigations (4 Nos)
- d. Patient medication history interview (3 Nos)



  
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### Fifth year

#### 5.1 CLINICAL RESEARCH (THEORY)

Theory : 3 Hrs. /Week

1. Drug development process:

Introduction

Various Approaches to drug discovery

1. Pharmacological
2. Toxicological
3. IND Application
4. Drug characterization
5. Dosage form

2. Clinical development of drug:



1. Introduction to Clinical trials
2. Various phases of clinical trial.
3. Methods of post marketing surveillance
4. Abbreviated New Drug Application submission.
5. Good Clinical Practice – ICH, GCP, Central drug standard control organisation (CDSCO) guidelines
6. Challenges in the implementation of guidelines
7. Ethical guidelines in Clinical Research
8. Composition, responsibilities, procedures of IRB / IEC
9. Overview of regulatory environment in USA, Europe and India.
10. Role and responsibilities of clinical trial personnel as per ICH GCP
  - a. Sponsor
  - b. Investigators
  - c. Clinical research associate
  - d. Auditors
  - e. Contract research coordinators
  - f. Regulatory authority
11. Designing of clinical study documents (protocol, CRF, ICF, PIC with assignment)
12. Informed consent Process
13. Data management and its components
14. Safety monitoring in clinical trials.



  
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## Curricular Content - Gender

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<p>Approved by All India Council for Technical Education, New Delhi, Pharmacy Council of India, New Delhi, Directorate of Technical Education, Mumbai (MS), Permanently affiliated to Savitribai Phule Pune University, Pune &amp; Approved under Section (2 (f) &amp; 12 (B) of UGC Act, 1956</p>		
<p>Sector No. 21, Yamunanagar, Nigdi, Pune - 411 044. (M.S.) Tel. : 020-27661314 / 15 E-mail : mcpnigdi44@gmail.com Website : www.mcop.org.in</p>		
<p>Prof. Dr. P. D. Chaudhari M.Pharm., Ph.D. Principal</p>		<p>Prof. Dr. Gajanan R. Ekbote M.S., M.N.A.M.S. Chairman, Business Council P.E.Society, Pune</p>
Ref :		Date :
<div style="border: 1px solid black; border-radius: 15px; padding: 20px; background: linear-gradient(to bottom, #f9a825, #fff); display: inline-block;"><h1>Gender</h1></div>		
<p>STRIVING TOWARDS EXCELLENCE FOREVER</p>		

1



BP 201T. HUMAN ANATOMY AND PHYSIOLOGY-II (Theory) 45 Hours

**Scope:** This subject is designed to impart fundamental knowledge on the structure and functions of the various systems of the human body. It also helps in understanding both homeostatic mechanisms. The subject provides the basic knowledge required to understand the various disciplines of pharmacy.

**Objectives:** Upon completion of this course the student should be able to:

1. Explain the gross morphology, structure and functions of various organs of the human body.
2. Describe the various homeostatic mechanisms and their imbalances.
3. Identify the various tissues and organs of different systems of human body.
4. Perform the hematological tests like blood cell counts, haemoglobin estimation, bleeding/clotting time etc. and also record blood pressure, heart rate, pulse and respiratory volume.
5. Appreciate coordinated working pattern of different organs of each system
6. Appreciate the interlinked mechanisms in the maintenance of normal functioning (homeostasis) of human body.

**Course Content:**

<b>Unit-I</b>	<b>Nervous system</b>	<b>10 hours</b>
	Organization of nervous system, neuron, neuroglia, classification and properties of nerve fiber, electrophysiology, action potential, nerve impulse, receptors, synapse, neurotransmitters. Central nervous system: Meninges, ventricles of brain and cerebrospinal fluid. structure and functions of brain (cerebrum, brain stem, cerebellum), spinal cord (gross structure, functions of afferent and efferent nerve tracts, reflex activity)	
<b>Unit -II</b>	<b>Digestive system</b>	<b>08hours</b>
	Anatomy of GI Tract with special reference to anatomy and functions of stomach, ( Acid production in the stomach, regulation of acid production through parasympathetic nervous system, pepsin role in protein digestion) small intestine and large intestine, anatomy and functions of salivary glands, pancreas and liver, movements of GIT, digestion and absorption of nutrients and disorders of GIT.	
	<b>Energetics:</b> Formation and role of ATP, Creatinine Phosphate and BMR.	
<b>Unit-III</b>	<b>Respiratory system</b>	<b>10 hours</b>
	Anatomy of respiratory system with special reference to anatomy of lungs, mechanism of respiration, regulation of respiration Lung Volumes	<b>6 hours</b>



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and capacities transport of respiratory gases, artificial respiration, and resuscitation methods.

**Urinary system**

4 hours

Anatomy of urinary tract with special reference to anatomy of kidney and nephrons, functions of kidney and urinary tract, physiology of urine formation, micturition reflex and role of kidneys in acid base balance, role of RAS in kidney and disorders of kidney.

**Unit-IV**

08 hours

**Endocrine system**

Classification of hormones, mechanism of hormone action, structure and functions of pituitary gland, thyroid gland, parathyroid gland, adrenal gland, pancreas, pineal gland, thymus and their disorders.

**Unit-V**

09 hours

**Reproductive system**

07 Hours

Anatomy of male and female reproductive system, Functions of male and female reproductive system, sex hormones, physiology of menstruation, fertilization, spermatogenesis, oogenesis, pregnancy and parturition

**Introduction to genetics**

02 hours

Chromosomes, genes and DNA, protein synthesis, genetic pattern of inheritance

**Recommended Books**

1. Essentials of Medical Physiology by K. Sembulingam and P. Sembulingam, Jaypee brothers medical publishers, New Delhi.
2. Anatomy and Physiology in Health and Illness by Kathleen J.W. Wilson, Churchill Livingstone, New York
3. Physiological basis of Medical Practice-Best and Taylor. Williams & Wilkins Co, Riverview, MI USA
4. Text book of Medical Physiology- Arthur C. Guyton and John E. Hall. Miamisburg, OH, U.S.A.
5. Principles of Anatomy and Physiology by Tortora Grabowski. Palmetto, GA, U.S.A.
6. Textbook of Human Histology by Inderbir Singh, Jaypee brothers medical publishers, New Delhi.
7. Textbook of Practical Physiology by C.L. Ghai, Jaypee brothers medical publishers, New Delhi.
8. Practical workbook of Human Physiology by K. Srinageswari and Rajeev Sharma, Jaypee brother's medical publishers, New Delhi.



  
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**BP 204T. PATHOPHYSIOLOGY (THEORY)**

**45Hours**

**Scope:** Pathophysiology is the study of causes of diseases and reactions of the body to such disease producing causes. This course is designed to impart a thorough knowledge of the relevant aspects of pathology of various conditions with reference to its pharmacological applications, and understanding of basic pathophysiological mechanisms. Hence it will not only help to study the syllabus of pathology, but also to get baseline knowledge required to **practice medicine safely, confidently, rationally and effectively**. Pharmacotherapy of drugs is particularly not to be considered as a part of this subject from examination point of view as the subject deals with pathophysiological aspects of the diseases.

**Objectives:** Upon completion of the subject, student shall be able to –

1. Describe the etiology and pathogenesis of the selected diseases/states;
2. Name the signs and symptoms of the diseases

<b>Unit-I</b>	<b>Basic principles of Cell injury and Adaptation</b> Introduction & definitions Causes of cellular injury, Pathogenesis (Cell membrane damage, Mitochondrial damage, Ribosome damage, Nuclear damage), Morphology of cell injury – Adaptive changes (Atrophy, Hypertrophy, Hyperplasia, Metaplasia, Dysplasia), Cell swelling, Intracellular accumulation, Calcification, Enzyme leakage and cell death, acidosis and alkalosis, Electrolyte imbalance <b>Basic mechanism involved in the process of inflammation and repair</b> Introduction, Clinical signs of inflammation, Different types of Inflammation, Mechanism of Inflammation – Alteration in vascular permeability and blood flow, migration of WBC's, Mediators of inflammation, Basic principles of wound healing in the skin	<b>10 Hrs</b>
<b>Unit -II.</b>	<b>Cardiovascular System:</b> Hypertension, Congestive heart failure, Ischemic heart diseases (angina, myocardial infarction, atherosclerosis and arteriosclerosis) <b>Respiratory system:</b> Asthma, Chronic obstructive airways diseases <b>Renal system:</b> Acute and chronic renal failure	<b>10 Hrs</b>
<b>Unit-III</b>	<b>Haematological Diseases:</b> Iron deficiency anaemia, Megaloblastic anaemia (Vit B12 and folic acid), Sickle cell anemia, Thalassemia, Hereditary acquired anemia, Hemophilia <b>Endocrine system:</b> Diabetes, Thyroid diseases (Hypothyroidism, hyperthyroidism, Goitre) Disorders of sex hormones (Amenorrhoea, polycystic ovarian syndrome, hypogonadism) <b>Nervous system:</b>	<b>12 Hrs</b>

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	Epilepsy, Parkinson's disease, Stroke, Psychiatric disorders: Depression, Schizophrenia and Alzheimer's disease	
	<b>Gastrointestinal system:</b>	
	Peptic Ulcer, Inflammatory Bowel Diseases, Jaundice, Hepatitis (A,B,C,D,E,F), Alcoholic liver disease	
<b>Unit-IV</b>	<b>Diseases of bones and joints</b>	<b>06 Hrs</b>
	Rheumatoid Arthritis, Osteoporosis, Gout	
	<b>Cancer:</b> Classification, etiology and pathogenesis of cancer	
<b>Unit-V</b>	<b>Infectious diseases</b>	<b>07 Hrs</b>
	Tuberculosis, Leprosy, Malaria, Dengue, Meningitis, Typhoid, Urinary tract infections	
	<b>Sexually transmitted diseases</b>	
	AIDS, Syphilis, Gonorrhea	

#### REFERENCES:

1. Vinay Kumar, Abul K. Abas, Jon C. Aster; Robbins & Cotran Pathologic Basis of Disease; South Asia edition; India; Elsevier; 2014.
2. Harsh Mohan; Text book of Pathology; 6<sup>th</sup> edition; India; Jaypee Publications; 2010.
3. Laurence B, Bruce C, Bjorn K. ; Goodman Gilman's The Pharmacological Basis of Therapeutics; 12<sup>th</sup> edition; New York; McGraw-Hill; 2011.
4. Best, Charles Herbert 1899-1978; Taylor, Norman Burke 1885-1972; West, John B (John Burnard); Best and Taylor's Physiological basis of medical practice; 12<sup>th</sup> ed; united states.
5. William and Wilkins, Baltimore; 1991 [1990 printing].
6. Nicki R. Colledge, Brian R. Walker, Stuart H. Ralston; Davidson's Principles and Practice of Medicine; 21<sup>st</sup> edition; London; ELBS/Churchill Livingstone; 2010.
7. Guyton A, John E Hall; Textbook of Medical Physiology; 12<sup>th</sup> edition; WB Saunders Company; 2010.
8. Joseph DiPiro, Robert L. Talbert, Gary Yee, Barbara Wells, L. Michael Posey; Pharmacotherapy: A Pathophysiological Approach; 9<sup>th</sup> edition; London; McGraw-Hill Medical; 2014.
9. V. Kumar, R. S. Cotran and S. L. Robbins; Basic Pathology; 6<sup>th</sup> edition; Philadelphia; WB Saunders Company; 1997.
10. Roger Walker, Clive Edwards; Clinical Pharmacy and Therapeutics; 3<sup>rd</sup> edition; London; Churchill Livingstone publication; 2003.



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9. Physiological basis of Medical Practice-Best and Tailor, Williams & Wilkins Co, Riverview, MI USA
10. Text book of Medical Physiology- Arthur C, Guyton and John. E. Hall. Miamisburg, OH, U.S.A.
11. Human Physiology (vol 1 and 2) by Dr. C.C. Chatterje ,Academic Publishers Kolkata

**BP 207 P. HUMAN ANATOMY AND PHYSIOLOGY (Practical)**

**4 Hours/week**

Practical physiology is complimentary to the theoretical discussions in physiology. Practicals allow the verification of physiological processes discussed in theory classes through experiments on living tissue, intact animals or normal human beings. This is helpful for developing an insight on the subject.

1. To study the integumentary and special senses using specimen, models, etc.,
2. To determine the Platelet count.
3. To perform the differential leukocyte count (DLC).
4. To determine the Arneth index.
5. Determination of osmotic fragility of RBCs.
6. To study the nervous system using specimen, models, etc.,
7. To study the endocrine system using specimen, models, etc
8. To demonstrate the general neurological examination
9. To demonstrate the function of olfactory nerve
10. To examine the different types of taste.
11. To demonstrate the visual acuity
12. To demonstrate the reflex activity
13. Recording of body temperature
14. To demonstrate positive and negative feedback mechanism.
15. Determination of tidal volume and vital capacity.
16. Study of Digestive, respiratory, cardiovascular systems, urinary and reproductive systems with the help of models, charts and specimens.
17. Recording of basal mass index.
18. Study of family planning devices and pregnancy diagnosis test.

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19. Demonstration of total blood count by cell analyzer.

20. Permanent slides of vital organs and gonads.

21. Visit to Hospital/ Pathology Laboratory.

**Recommended Books:**

1. Godkar P.B and Godkar D.P., Textbook of Medical Laboratory Technology. Bhalani Publishing House, Mumbai.
2. Joshi V.D. Practical Physiology. Vora Medical Publications, Mumbai.
3. DiFiore-Mariano S.H., Atlas of Human Histology. Lea and Febiger, Philadelphia.
4. Mukherjee, K.L., Medical Laboratory Technology. Tata McGraw Hill Publishing Company Ltd. New Delhi.
5. Beck, W.S., Human Design: Molecular, Cellular and Systemic Physiology. Harcourt Brace Jovanovich Inc. New York.
6. Chatterjee, C.C., Human Physiology. Medical Allied Agency, Kolkata.
7. Ganong, W.F., Review of Medical Physiology. Prentice-Hall International, London.
8. Guyton, A.C., Textbook of Medical Physiology. W. B. Saunders Co., Philadelphia, USA.
9. Tortora, G.J. and Grabowski, S.R., 2005.
10. Principles of Anatomy and Physiology. Harper Collins College Publishers, New York.
11. Vander, A.J., Sherman, J.H. and Luciano, D.S., Human Physiology. McGraw-Hill Publishing Co., USA.
12. Garg K., Bahel I. and Kaul M., A Textbook of Histology. CBS Publishers and Distributors, New Delhi.
13. Practical workbook of Human Physiology by K. Srinageswari and Rajeev Sharma, Jaypee Brother's medical publishers, New Delhi.



  
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T.Y.B.PHARM SEMESTER – V

BP501T. MEDICINAL CHEMISTRY – II (Theory)

45 Hours

**Scope:**

This subject is designed to impart fundamental knowledge on the structure, chemistry and therapeutic value of drugs. The subject emphasizes on structure activity relationships of drugs, importance of physicochemical properties and metabolism of drugs. The syllabus also emphasizes on chemical synthesis of important drugs under each class.

**Objectives:** Upon completion of the course the student shall be able to

1. Understand the chemistry of drugs with respect to their pharmacological activity
2. Understand the drug metabolic pathways, adverse effect and therapeutic value of drugs
3. Know the Structural Activity Relationship of different class of drugs
4. Study the chemical synthesis of selected drugs

**Course Content:**

Study of the development of the following classes of drugs, Classification, mechanism of action, uses of drugs mentioned in the course, Structure activity relationship of selective class of drugs as specified in the course and synthesis of drugs mentioned in bracket [ ] only to be covered.


**UNIT- I**

10 Hours

**Antihistaminic agents and autacoids**

- a) **Antihistaminic agents:** Histamine, receptors and their distribution in the human body
- b) **H<sub>1</sub>-antagonists:** Diphenhydramine hydrochloride, Dimenhydrinate, Doxylamine succinate, Clemastine fumarate, Tripelenamine hydrochloride, Chlorcyclizine hydrochloride, Meflazone hydrochloride, Buclizine hydrochloride, Chlorpheniramine maleate, Triprolidine hydrochloride, Phenindamine tartrate, Promethazine hydrochloride, Trimeprazine tartrate, Fexofenadine, Astemizole, Loratadine, Cetirizine, Cromolyn sodium
- c) **H<sub>2</sub>-antagonists:** Cimetidine, Famotidine, Ranitidine
- d) **Gastric Proton pump inhibitors:** Omeprazole, Lansoprazole, Rabeprazole, Pantoprazole



  
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e) **Autacoids:** Prostaglandins, Prostanoids, Leucotriene antagonists

[Diphenhydramine hydrochloride, Cetirizine, Promethazine hydrochloride, Ranitidine]

**UNIT – II**

**10 Hours**

**Drugs acting on Cardiovascular system**

a) **Anti-anginals:**

**Vasodilators:** Amyl nitrite, Nitroglycerin, Pentaerythritol tetranitrate, Isosorbide dinitrate, Dipyridamole.

**Calcium channel blockers:** Verapamil, Bepridil hydrochloride, Diltiazem hydrochloride, Nifedipine, Amlodipine, Felodipine, Nicardipine, Nimodipine.

b) **Diuretics:**

**Carbonic anhydrase inhibitors:** Acetazolamide, Methazolamide, Dichlorphenamide.

**Thiazides:** Chlorthiazide, Hydrochlorothiazide, Hydroflumethiazide, Cyclothiazide

**Loop diuretics:** Furosemide, Bumetanide, Ethacrynic acid.

**Potassium sparing Diuretics:** Spironolactone, Triamterene, Amiloride.

**Osmotic Diuretics:** Mannitol

c) **Anti-hypertensive Agents:**

**$\alpha$  blockers-** Prazosin, Terazosin

**$\beta$  blockers-** Propranolol, Timolol, Atenolol

**ACE inhibitors-** Captopril, Lisinopril, Enalapril, Quinapril hydrochloride

**Angiotensin II receptor antagonists-** Losartan, Telmisartan, Valsartan

**Misc.class-** Methyldopate hydrochloride, Clonidine hydrochloride, Guanethidine monosulphate, Reserpine, Hydralazine hydrochloride.

[Isosorbide dinitrate, Nifedipine, Chlorthiazide, Furosemide, Lisinopril, Atenolol]



  
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**UNIT-III**

**10 Hours**

**Drugs acting on cardiovascular system (Continued)**

- a) **Anti-arrhythmic Drugs:** Quinidine sulphate, Procainamide hydrochloride, Disopyramide phosphate, Phenytoin sodium, Lidocaine hydrochloride, Tocainide hydrochloride, Mexiletine hydrochloride, Lorcainide hydrochloride, Amiodarone, Sotalol.
- b) **Anti-hyperlipidemic agents**  
**HMG Co-A reductase inhibitors:** Lovastatin, Simvastatin, Atorvastatin  
**Misc. class-Ezetimibe, Clofibrate**
- c) **Coagulant & Anticoagulants:** Menadione, Warfarin, Clopidogrel
- d) **Drugs used in Congestive Heart Failure:** Digoxin, Digitoxin, Nesiritide, Bosentan  
[Amiodarone, Atorvastatin]

**UNIT-IV**

**08 Hours**

**Drugs acting on Endocrine system**

- a) **Chemistry, Nomenclature, Stereochemistry and metabolism of steroids**
- b) **Sex hormones:** Testosterone, Nandrolone, Progestones, Oestrinol, Oestradiol, Oestrione, Diethyl stilbestrol.
- c) **Drugs for erectile dysfunction:** Sildenafil, Tadalafil.
- d) **Oral contraceptives:** Mifepristone, Norgestrel, Levonorgestrol
- e) **Corticosteroids:** Cortisone, Hydrocortisone, Prednisolone, Betamethasone, Dexamethasone
- f) **Thyroid and antithyroid drugs:** L-Thyroxine, L-Thyronine, Propylthiouracil, Methimazole.

**UNIT – V**

**07 Hours**

**Antidiabetic agents and Local anaesthetics**

- a) **Antidiabetic agents:**

**Insulin and its preparations**

**Sulfonyl ureas:** Tolbutamide, Chlorpropamide, Glipizide, Glimepiride.

**Biguanides:** Metformin.

**Meglitinides:** Repaglinide, Nateglinide.



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**Glucosidase inhibitors:** Acarbose, Voglibose.

**DPP IV inhibitors** - Sitagliptin, Teneligliptin

**SGLT2 inhibitors** – Empagliflozin, Canagliflozin

**b) Local Anesthetics: SAR of Local anesthetics**

**Benzoic Acid derivatives:** Mepylcaine, Cyclomethycaine, Piperocaine.

**Amino Benzoic acid derivatives:** Benzocaine, Procaine, Butacaine, Propoxycaine, Tetracaine.

**Lidocaine/Anilide derivatives:** Lignocaine, Mepivacaine, Prilocaine, Etidocaine.

**Miscellaneous:** Phenacaine

**[Tolbutamide, Benzocaine]**

**Recommended Books (Latest Editions)**

1. Wilson and Giswold's Organic medicinal and Pharmaceutical Chemistry.
2. Foye's Principles of Medicinal Chemistry.
3. Graham L. Patrick's An Introduction to Medicinal Chemistry
4. Burger's Medicinal Chemistry, Vol I to IV.
5. Introduction to principles of drug design- Smith and Williams.
6. Remington's Pharmaceutical Sciences.
7. Martindale's extra pharmacopoeia.
8. Organic Chemistry by I.L. Finar, Vol. II.
9. The Organic Chemistry of Drug Synthesis by Lednicher, Vol. 1 to 5.
10. Indian Pharmacopoeia.
11. Text book of practical organic chemistry-A.I.Vogel.

**BP 502 T. Industrial Pharmacy I (Theory)**

**45 Hours**

**Scope:**

Course enables the student to understand and appreciate the influence of pharmaceutical additives and various pharmaceutical dosage forms on the performance of the drug product.



  
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**Recommended Books: (Latest Editions)**

1. Pharmaceutical dosage forms - Tablets, volume 1 -3 by H.A. Liberman, Leon Lachman & J.B. Schwartz
2. Pharmaceutical dosage form - Parenteral medication vol- 1&2 by Liberman & Lachman
3. Pharmaceutical dosage form disperse system VOL-1 by Liberman & Lachman
4. Modern Pharmaceutics by Gilbert S. Banker & C.T. Rhodes, 3rd Edition
5. Remington: The Science and Practice of Pharmacy, 20th edition Pharmaceutical Science (RPS)
6. Theory and Practice of Industrial Pharmacy by Liberman & Lachman
7. Pharmaceutics- The science of dosage form design by M.E. Aulton, Churchill livingstone, Latest edition
8. Introduction to Pharmaceutical Dosage Forms by H. C. Ansel, Lea & Febiger, Philadelphia, 5th edition, 2005
9. Drug stability - Principles and practice by Cartensen & C.J. Rhodes, 3rd Edition, Marcel Dekker Series, Vol 107.

**BP503.T. PHARMACOLOGY-II (Theory)**

**45 Hours**

**Scope:**

This subject is intended to impart the fundamental knowledge on various aspects (classification, mechanism of action, therapeutic effects, clinical uses, side effects and contraindications) of drugs acting on different systems of body and in addition, emphasis on the basic concepts of bioassay.

**Objectives:** Upon completion of this course the student should be able to

1. Understand the mechanism of drug action and its relevance in the treatment of different diseases



  
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2. Demonstrate isolation of different organs/tissues from the laboratory animals by simulated experiments

3. Demonstrate the various receptor actions using isolated tissue preparation.

4. Appreciate correlation of pharmacology with related medical sciences

**Course Content:**

**UNIT-I**

10hr

**Pharmacology of drugs acting on cardiovascular system**

- a. Introduction to hemodynamic and electrophysiology of heart.
- b. Drugs used in congestive heart failure
- c. Anti-hypertensive drugs.
- d. Anti-anginal drugs.
- e. Anti-arrhythmic drugs.
- f. Anti-hyperlipidemic drugs.

**UNIT-II**

**Pharmacology of drugs acting on cardiovascular system**

10hr

- a. Drug used in the therapy of shock.
- b. Hematinics, coagulants and anticoagulants.
- c. Fibrinolytics and anti-platelet drugs
- d. Plasma volume expanders

**Pharmacology of drugs acting on urinary system**

- a. Diuretics
- b. Anti-diuretics.


**UNIT-III**

**Autocoids and related drugs**

10hr

- a. Introduction to autacoids and classification
- b. Histamine, 5-HT and their antagonists.
- c. Prostaglandins, Thromboxanes and Leucotrienes
- d. Angiotensin, Bradykinin and Substance P.
- e. Non-steroidal anti-inflammatory agents
- f. Anti-gout drugs
- g. Antirheumatic drugs



  
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**UNIT-IV**

**Pharmacology of drugs acting on endocrine system**

08hr

- a. Basic concepts in endocrine pharmacology.
- b. Anterior Pituitary hormones- analogues and their inhibitors.
- c. Thyroid hormones- analogues and their inhibitors.
- d. Hormones regulating plasma calcium level- Parathormone, Calcitonin and Vitamin-D.
- d. Insulin, Oral Hypoglycemic agents and glucagon.
- e. ACTH and corticosteroids.

**UNIT-V**

**Pharmacology of drugs acting on endocrine system**

07hr

- a. Androgens and Anabolic steroids.
- b. Estrogens, progesterone and oral contraceptives.
- c. Drugs acting on the uterus.

**Bioassay**

- a. Principles, applications and types of bioassay.
- b. Bioassay of insulin, oxytocin, vasopressin, ACTH, d-tubocurarine, digitalis, histamine and 5-HT

**Recommended Books (Latest Editions)**

1. Rang H. P., Dale M. M., Ritter J. M., Flower R. J., Rang and Dale's Pharmacology, Churchill Livingstone Elsevier
2. Katzung B. G., Masters S. B., Trevor A. J., Basic and clinical pharmacology, Tata McGraw-Hill
3. Goodman and Gilman's, The Pharmacological Basis of Therapeutics
4. Marry Anne K. K., Lloyd Yee Y., Brian K. A., Robbin L.C., Joseph G. B., Wayne A.K., Bradley R.W., Applied Therapeutics, The Clinical use of Drugs. The Point Lippincott Williams & Wilkins
5. Mycek M.J, Gelnet S.B and Perper M.M. Lippincott's Illustrated Reviews-Pharmacology
6. K. D. Tripathi. Essentials of Medical Pharmacology, JAYPEE Brothers Medical Publishers (P) Ltd, New Delhi.
7. Sharma H. L., Sharma K. K., Principles of Pharmacology, Paras medical publisher



  
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**Volatile oils:** Mentha, Clove, Cinnamon, Fennel, Coriander,

**Tannins:** Catechu, Pterocarpus

**Resins:** Benzoin, Guggul, Ginger, Asafoetida, Myrrh, Colophony

**Glycosides:** Senna, Aloes, Bitter Almond

**Iridoids, Other terpenoids & Naphthaquinones:** Gentian, Artemisia, taxus, carotenoids

### UNIT-III

06 Hours

#### Isolation, Identification and Analysis of Phytoconstituents

a) Terpenoids: Menthol, Citral, Artemisin

b) Glycosides: Glycyrrhetic acid & Rutin

c) Alkaloids: Atropine, Quinine, Reserpine, Caffeine

d) Resins: Podophyllotoxin, Curcumin

### UNIT-IV

06 Hours

Industrial production, estimation and utilization of the following phytoconstituents:

Forskolin, Sennoside, Artemisinin, Diosgenin, Digoxin, Atropine, Podophyllotoxin, Caffeine,

Taxol, Vincristine and Vinblastine

### UNIT V

12 Hours

#### Basics of Phytochemistry

Methods of extraction (Soxhlet, Maceration, Percolation, Supercritical fluid extraction,

Microwave assisted extraction, Ultrasound assisted extraction, Solid Phase Extraction)

Application of latest techniques like Spectroscopy, Chromatography and electrophoresis in the isolation, purification and identification of crude drugs

**Non-chromatographic separation techniques:** Fractional distillation, fractional liberation, sublimation, chemical derivatization, fractional crystallization, centrifugation, Froth floatation technique.

### BP 505 T. PHARMACEUTICAL JURISPRUDENCE (Theory)

45 Hours

#### Scope:

This course is designed to impart basic knowledge on important legislations related to the profession of pharmacy in India.



  
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**Objectives:** Upon completion of the course, the student shall be able to understand:

1. The Pharmaceutical legislations and their implications in the development and marketing of pharmaceuticals.
2. Various Indian pharmaceutical Acts and Laws
3. The regulatory authorities and agencies governing the manufacture and sale of pharmaceuticals
4. The code of ethics during the pharmaceutical practice

**Course Content:**

**UNIT-I**

**10 Hours**

**Drugs and Cosmetics Act, 1940 and its rules 1945:**

Objectives, Definitions, Legal definitions of schedules to the Act and Rules Import of drugs – Classes of drugs and cosmetics prohibited from import, Import under license or permit. Offences and penalties. Manufacture of drugs – Prohibition of manufacture and sale of certain drugs,

Conditions for grant of license and conditions of license for manufacture of drugs, Manufacture of drugs for test, examination and analysis, manufacture of new drug, loan license and repacking license.

**UNIT-II**

**10 Hours**

**Drugs and Cosmetics Act, 1940 and its rules 1945.**

Detailed study of Schedule G, H, M, N, P, T, U, V, X, Y, Part XII B, Sch F & DMR (OA) Sale of Drugs – Wholesale, Retail sale and restricted license. Offences and penalties Labeling & packing of drugs- General labeling requirements and specimen labels for drugs and cosmetics, List of permitted colors. Offences and penalties.

Administration of the Act and Rules – Drugs Technical Advisory Board, Central drugs Laboratory, Drugs Consultative Committee, Government drug analysts, Licensing authorities, controlling authorities, Drugs Inspectors



  
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**UNIT-III**

**10 Hours**

**Pharmacy Act –1948:** Objectives, Definitions, Pharmacy Council of India; its constitution and functions, Education Regulations, State and Joint state pharmacy councils; constitution and functions, Registration of Pharmacists, Offences and 122 Penalties

**Medicinal and Toilet Preparation Act –1955:** Objectives, Definitions, Licensing, Manufacture In bond and Outside bond, Export of alcoholic preparations, Manufacture of Ayurvedic, Homeopathic, Patent & Proprietary Preparations. Offences and Penalties.

**Narcotic Drugs and Psychotropic substances Act-1985 and Rules:** Objectives, Definitions, Authorities and Officers, Constitution and Functions of narcotic & Psychotropic Consultative Committee, National Fund for Controlling the Drug Abuse, Prohibition, Control and Regulation, opium poppy cultivation and production of poppy straw, manufacture, sale and export of opium, Offences and Penalties

**UNIT-IV**

**08 Hours**

**Study of Salient Features of Drugs and Magic Remedies Act and its rules:** Objectives, Definitions, Prohibition of certain advertisements, Classes of Exempted advertisements, Offences and Penalties

**Prevention of Cruelty to animals Act-1960:** Objectives, Definitions, Institutional Animal Ethics Committee, CPCSEA guidelines for Breeding and Stocking of Animals, Performance of Experiments, Transfer and acquisition of animals for experiment, Records, Power to suspend or revoke registration, Offences and Penalties

**National Pharmaceutical Pricing Authority:** Drugs Price Control Order (DPCO)- 2013. Objectives, Definitions, Sale prices of bulk drugs, Retail price of formulations, Retail price and ceiling price of scheduled formulations, National List of Essential Medicines (NLEM)



  
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**UNIT-V**

**07 Hours**

**Pharmaceutical Legislations** – A brief review, Introduction, Study of drugs enquiry committee, Health survey and development committee, Hathi committee and Mudaliar committee

**Code of Pharmaceutical ethics** Definition, Pharmacist in relation to his job, trade, medical profession and his profession, Pharmacist's oath

**Medical Termination of Pregnancy Act**

**Right to Information Act**

**Introduction to Intellectual Property Rights (IPR)**

**Recommended books: (Latest Edition)**

1. Forensic Pharmacy by B. Suresh
2. Text book of Forensic Pharmacy by B.M. Mithal
3. Hand book of drug law-by M.L. Mehra
4. A text book of Forensic Pharmacy by N.K. Jain
5. Drugs and Cosmetics Act/Rules by Govt. of India publications.
6. Medicinal and Toilet preparations act 1955 by Govt. of India publications.
7. Narcotic drugs and psychotropic substances act by Govt. of India publications
8. Drugs and Magic Remedies act by Govt. of India publication
9. Bare Acts of the said laws published by Government. Reference books (Theory) 124

**BP 506 P. Industrial PharmacyI (Practical)**

**4 Hours/week**

1. Preformulation studies on paracetamol/asparin/or any other drug
2. Preparation and evaluation of Paracetamol tablets
3. Preparation and evaluation of Aspirin tablets
4. Coating of tablets- film coating of tables/granules
5. Preparation and evaluation of Tetracycline capsules



  
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**Bp802T SOCIAL AND PREVENTIVE PHARMACY (Theory)**

**45 Hours**

**Scope:**

The purpose of this course is to introduce to students a number of health issues and their challenges. This course also introduced a number of national health programmes. The roles of the pharmacist in these contexts are also discussed.

**Objectives:**

After the successful completion of this course, the student shall be able to:

1. Acquire high consciousness/realization of current issues related to health and pharmaceutical problems within the country and worldwide.
2. Develop a critical way of thinking based on current healthcare development.
3. Evaluate alternative ways of solving problems related to health and pharmaceutical issues.

**Course Content:**

**UNIT-I**

**10 Hours**

**Concept of health and disease:**

Definition, concepts and evaluation of public health.

Understanding the concept of prevention and control of disease, social causes of diseases and social problems of the sick.

**Sociology and health**

Socio cultural factors related to health and disease, Impact of urbanization on health and disease, Poverty and health

**Hygiene and health**

Personal hygiene and health care; avoidable habits.

**UNIT-II**

**10 Hours**

**Preventive medicine**

General principles of prevention and control of diseases such as cholera, SARS, Ebola virus, influenza, acute respiratory infections, malaria, chicken guinea, dengue, lymphatic filariasis, pneumonia, hypertension, diabetes mellitus, cancer, drug addiction-drug substance abuse

**UNIT-III**

**10 Hours**

**National health programs, its objectives, functioning and outcome of the following:**

HIV AND AIDS control programme, TB, Integrated disease surveillance program (IDSP), National leprosy control programme, National mental health program, National programme for prevention and control of deafness, Universal immunization programme, National programme for control of blindness, Pulse polio programme.



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**UNIT-IV**

**08 Hours**

National health intervention programme for mother and child, National family welfare programme, National tobacco control programme, National Malaria Prevention Program, National programme for the health care for the elderly, Social health programme; role of WHO in Indian national program

**UNIT-V**

**07 Hours**

Community services in rural, urban and school health; Functions of PHC, Improvement in rural sanitation, national urban health mission, Health promotion and education in school.

**Recommended Books (Latest edition):**

1. Short Textbook of Preventive and Social Medicine, Prabhakara GN, 2<sup>nd</sup> Edition, 2010, ISBN: 9789380704104, JAYPEE Publications
2. Textbook of Preventive and Social Medicine (Mahajan and Gupta), Edited by Roy Rabindra Nath, Saha Indranil, 4<sup>th</sup> Edition, 2013, ISBN: 9789350901878, JAYPEE Publications
3. Review of Preventive and Social Medicine (Including Biostatistics), Jain Vivek, 6<sup>th</sup> Edition, 2014, ISBN: 9789351522331, JAYPEE Publications
4. Essentials of Community Medicine: A Practical Approach, Hiremath Lalita D, Hiremath Dhananjaya A, 2<sup>nd</sup> Edition, 2012, ISBN: 9789350250440, JAYPEE Publications
5. Park Textbook of Preventive and Social Medicine, K Park, 21<sup>st</sup> Edition, 2011, ISBN-14: 9788190128285, BANARSIDAS BHANOT PUBLISHERS.
6. Community Pharmacy Practice, Ramesh Adepu, BSP publishers, Hyderabad

**Recommended Journals:**

1. Research in Social and Administrative Pharmacy, Elsevier, Ireland



  
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**BP812ET DIETARY SUPPLEMENTS AND NUTRACEUTICALS (Theory)**

**45 Hours**

**Scope:**

This subject covers foundational topic that are important for understanding the need and requirements of dietary supplements among different groups in the population.

**Objective:**

This module aims to provide an understanding of the concepts behind the theoretical applications of dietary supplements. By the end of the course, students should be able to:

1. Understand the need of supplements by the different group of people to maintain healthy life.
2. Understand the outcome of deficiencies in dietary supplements.
3. Recognize the components in dietary supplements and the application.
4. Acquaint with the regulatory and commercial aspects of dietary supplements including health claims.

**Course content:**

**UNIT-I**

**07 Hours**

Definitions of Functional foods, Nutraceuticals and Dietary supplements. Classification of Nutraceuticals, Health problems and diseases that can be prevented or cured by Nutraceuticals i.e. weight control, diabetes, cancer, heart disease, stress, osteoarthritis, hypertension etc.

Public health nutrition, maternal and child nutrition, nutrition and ageing, nutrition education in community.

Source, Name of marker compounds and their chemical nature, Medicinal uses and health benefits of following used as nutraceuticals/functional foods: Spirulina, Soyabean, Ginseng, Garlic, Broccoli, Gingko, Flaxseeds

**UNIT-II**

**15 Hours**

**Phytochemicals as nutraceuticals:** Occurrence and characteristic features (chemical nature medicinal benefits) of following

**Carotenoids-**  $\alpha$  and  $\beta$ -Carotene, Lycopene, Xanthophylls, lutein

**Sulfides:** Diallyl sulfides, Allyl trisulfide.

**Polyphenolics:** Resveratrol

**Flavonoids-** Rutin, Naringin, Quercetin, Anthocyanidins, catechins, Flavones

**Prebiotics / Probiotics:** Fructo oligosaccharides, Lacto bacillum

**Phyto estrogens :** Isoflavones, daidzein, Geobustins, lignans

**Tocopherols**

Proteins, vitamins, minerals, cereal, vegetables and beverages as functional foods: oats,



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Wheat bran, rice bran, sea foods, coffee, tea and the like.

#### UNIT-III

07 Hours

**Introduction to free radicals:** Free radicals, reactive oxygen species, production of free radicals in cells, damaging reactions of free radicals on lipids, proteins, Carbohydrates, nucleic acids.

Dietary fibres and complex carbohydrates as functional food ingredients.

#### UNIT-IV

10 Hours

**Free radicals** in Diabetes mellitus, Inflammation, Ischemic reperfusion injury, Cancer, Atherosclerosis, Free radicals in brain metabolism and pathology, kidney damage, muscle damage. Free radicals involvement in other disorders. Free radicals theory of ageing.

**Antioxidants:** Endogenous antioxidants – enzymatic and nonenzymatic antioxidant defense, Superoxide dismutase, catalase, Glutathione peroxidase, Glutathione Vitamin C, Vitamin E,  $\alpha$ - Lipoic acid, melatonin Synthetic antioxidants: Butylated hydroxy Toluene, Butylated hydroxy Anisole.

Functional foods for chronic disease prevention.

#### UNIT-IV

06 Hours

Effect of processing, storage and interactions of various environmental factors on the potential of nutraceuticals.

**Regulatory Aspects; FSSAI, FDA, FPO, MPO, AGMARK, HACCP and GMPs on Food Safety. Adulteration of foods.**

**Pharmacopoeial Specifications for dietary supplements and nutraceuticals.**

#### References:

1. Dietetics by Sri Lakshmi
2. Role of dietary fibres and nutraceuticals in preventing diseases by K.T Agusti and P.Faizal: BS Publication.
3. Advanced Nutritional Therapies by Cooper. K.A., (1996).
4. The Food Pharmacy by Jean Carper, Simon & Schuster, UK Ltd., (1988).
5. Prescription for Nutritional Healing by James F.Balch and Phyllis A.Balch 2<sup>nd</sup>Edn., Avery Publishing Group, NY (1997).
6. G. Gibson and C.Williams Editors 2000 *Functional foods* Woodhead Publ. Co.London.
7. Goldberg, I. *Functional Foods*. 1994. Chapman and Hall, New York.
8. Labuza, T.P. 2000 Functional Foods and Dietary Supplements: Safety, Good Manufacturing Practice (GMPs) and Shelf Life Testing in *Essentials of Functional Foods* M.K. Sachmidl and T.P. Labuza eds. Aspen Press.
9. Handbook of Nutraceuticals and Functional Foods, Third Edition (Modern Nutrition)
10. Shils, ME, Olson, JA, Shike, M. 1994 *Modern Nutrition in Health and Disease*. Eighth edition. Lea and Febiger



  
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**BP813PW PROJECT WORK**

All the students shall undertake a project under the supervision of a teacher and submit a report. The area of the project shall directly relate any one of the elective subject opted by the student in semester VIII. The project shall be carried out in group not exceeding 5 in number. The project report shall be submitted in triplicate (typed & bound copy not less than 25 pages).

The internal and external examiner appointed for evaluation of the project shall be approved teachers of SPPU /Industrial Experts appointed by Principal of the respective institute.

Students shall be evaluated in groups for four hours (i.e., about half an hour for a group of five students). The projects shall be evaluated as per the criteria given below

***Evaluation of Dissertation Book***

Objective(s) of the work done	15 Marks
Methodology adopted	20 Marks
Results and Discussions	20 Marks
Conclusions and Outcomes	20 Marks
<b>Total</b>	<b>75 Marks</b>

***Evaluation of Presentation:***

Presentation of work	25 Marks
Communication skills	20 Marks
Question and answer skills	30 Marks
<b>Total</b>	<b>75 Marks</b>

**Explanation:**

The 75 marks assigned to the dissertation book shall be same for all the students in a group. However, the 75 marks assigned for presentation shall be awarded based on the performance of individual students in the given criteria.



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## PRINCIPLES OF QUALITY USE OF MEDICINES (MPP 201T)

### SCOPE:

This course is designed to impart basic knowledge and skills that are required to practice quality use of medicines (QUM) in different healthcare settings and also to promote quality use of medicines, in clinical practice, through evidence-based medicine approach.

### OBJECTIVES:

Upon completion of this course it is expected that students shall be able to:

- Understand the principles of quality use of medicines
- Know the benefits and risks associated with use of medicines
- Understand regulatory aspects of quality use of medicines
- Identify and resolve medication related problems
- Promote quality use of medicines
- Practice evidence-based medicines

### THEORY

60 Hrs

1. Introduction to Quality use of medicines (QUM): Definition and Principles of QUM, Key partners and responsibilities of the partners, Building blocks in QMC, Evaluation process in QMC, Communication in QUM, Cost effective prescribing. 12 Hrs
2. Concepts in QUM  
Evidence based medicine: Definition, concept of evidence based medicine, Approach and practice of evidence based medicine in clinical settings  
Essential drugs: Definition, need, concept of essential drug, National essential drug policy and list  
Rational drug use: Definition, concept and need for rational drug use, Rational drug prescribing, Role of pharmacist in rational drug use. 12 Hrs
3. QUM in various settings: Hospital settings, Ambulatory care / Residential care, Role of health care professionals in promoting the QUM, Strategies to promote the QUM, Impact of QUM on E-health, integrative medicine and multidisciplinary care. QUM in special population: Pediatric prescribing, Geriatric prescribing, prescribing in pregnancy and lactation, prescribing in immune compromised and organ failure patients. 12 Hrs
4. Regulatory aspects of QUM in India: Regulation including scheduling, Regulation of complementary medicines, Regulation of OTC medicines, Professional responsibility of pharmacist, Role of industry in QUM in medicine development. 12 Hrs
5. Medication errors: Definition, categorization and causes of medication errors, Detection and prevention of medication errors, Role of pharmacist in monitoring and management of medication errors  
Pharmacovigilance: Definition, aims and need for pharmacovigilance, Types, predisposing factors and mechanism of adverse drug reactions (ADRs), Detection,



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reporting and monitoring of ADRs, Causality assessment of ADRs, Management of ADRs, Role of pharmacist in pharmacovigilance. 12 Hrs

**REFERENCES:**

1. A Textbook of Clinical Pharmacy Practice - Essential concepts and skills - Parthasarathi G, Karin Nyfort-Hansen and Milap Nahata
2. Andrews EB, Moore N. Mann's Pharmacovigilance
3. Dipiro JT, Talbert RL, Yee GC. Pharmacotherapy: A Pathophysiologic Approach
4. Straus SE, Richardson WS, Glasziou P, Haynes RB. Evidence-Based Medicine: How to practice and teach it
5. Cohen MR. Medication Errors
6. Online:
  - [http://medicinesaustralia.com.au/files/2012/05/MA\\_QUM\\_External\\_Reduced.pdf](http://medicinesaustralia.com.au/files/2012/05/MA_QUM_External_Reduced.pdf)
  - <http://curriculum.racgp.org.au/statements/quality-use-of-medicines/>
  - [http://www.rug.nl/research/portal/files/14051541/Chapter\\_2.pdf](http://www.rug.nl/research/portal/files/14051541/Chapter_2.pdf)
7. Relevant review articles from recent medical and pharmaceutical literature.



  
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**PHARMACOLOGICAL AND TOXICOLOGICAL SCREENING METHODS-II  
(MPL202T)**

**SCOPE**

This subject imparts knowledge on the preclinical safety and toxicological evaluation of drug and new chemical entity. This knowledge will make the student competent in regulatory toxicological evaluation.

**OBJECTIVES**

Upon completion of the course the student shall be able to:

- Explain the various types of toxicity studies.
- Appreciate the importance of ethical and regulatory requirements for toxicity studies.
- Demonstrate the practical skills require conducting the preclinical toxicity studies.

**THEORY**

60 Hrs

- |                 |  |        |
|-----------------|--|--------|
| <b>Unit-I</b>   | Basic definition and types of toxicology ( general, mechanistic, regulatory and descriptive )<br>Regulatory guidelines for conducting toxicity studies OECD, ICH, EPA and Schedule Y<br>OECD principles of Good laboratory practice.<br>History, concept and its importance in drug development  | 12 Hrs |
| <b>Unit -II</b> | Acute, Sub-acute and chronic-oral, dermal and inhalational studies as per OECD guidelines.<br>Acute eye irritation, skin sensitization, dermal irritation & dermal toxicity studies.<br>Test item characterization- importance and methods in regulatory toxicity studies.   | 12 Hrs |
| <b>Unit-III</b> | Reproductive toxicity studies, Male reproductive toxicity studies, Female reproductive studies (segment I and III), teratogenicity studies (segment II)<br>Genotoxicity studies ( Ames Test, <i>in vitro</i> and <i>in vivo</i> Micronucleus and Chromosomal aberrations studies)<br>In vivo carcinogenicity studies                           | 12 Hrs |
| <b>Unit-IV</b>  | IND enabling studies (IND studies): Definition of IND, importance of IND, industry perspective, list of studies needed for IND submission.<br>Safety pharmacology studies: origin, concepts and importance of safety pharmacology<br>Tier 1- CVS, CNS and respiratory safety pharmacology, HERG assay.<br>Tier 2- GI, renal and other studies. | 12 Hrs |
| <b>Unit-V</b>   | Toxicokinetics ~ Toxicokinetic evaluation in preclinical studies, saturation kinetics.<br>Importance and applications of toxicokinetic studies.<br>Alternative methods to animal toxicity testing.   | 12 Hrs |



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#### REFERENCES

1. Hand book on GLP, Quality practices for regulated non-clinical research and development (<http://www.who.int/tdr/publications/documents/glp-handbook.pdf>).
2. Schedule Y Guideline: drugs and cosmetics (second amendment) rules, 2005, ministry of health and family welfare (department of health) New Delhi.
3. Drugs from discovery to approval by Rick NG.
4. Animal Models in Toxicology, 3rd Edition, Lower and Bryan.
5. OECD test guidelines.
6. Principles of toxicology by Karen E. Stine, Thomas M. Brown.
7. Guidance for Industry M3(R2) Nonclinical Safety Studies for the Conduct of Human Clinical Trials and Marketing Authorization for Pharmaceuticals  
(<http://www.fda.gov/downloads/drugs/guidancecomplianceregulatoryinformation/guidances/ucm073246.pdf>)



  
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## Curricular Content – Human Value



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Approved by All India Council for Technical Education, New Delhi, Pharmacy Council of India, New Delhi,  
Directorate of Technical Education, Mumbai (MS), Permanently affiliated to  
Savitribai Phule Pune University, Pune & Approved under Section (2 (f) & 12 (B) of UGC Act, 1956

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Chairman, Business Council  
P.E.Society, Pune

Ref :

Date :

## Human Values

STRIVING TOWARDS EXCELLENCE FOREVER



**BP103T. PHARMACEUTICS- I (Theory)**

**45 Hours**

**Scope:** This course is designed to impart a fundamental knowledge on the preparatory pharmacy with arts and science of preparing the different conventional dosage forms.

**Objectives:** Upon completion of this course the student should be able to:

- Know the history of profession of pharmacy
- Understand the basics of different dosage forms, pharmaceutical incompatibilities and pharmaceutical calculations
- Understand the professional way of handling the prescription
- Preparation of various conventional dosage forms

**Course Content:**

**UNIT – I**

**10 Hours**

- **Historical background and development of profession of pharmacy:** History of profession of Pharmacy in India in relation to pharmacy education, industry and organization, Pharmacy as a career.
- **Dosage forms:** Introduction to dosage forms, classification and definitions
- **Prescription:** Definition, Parts of prescription, handling of Prescription and Errors in prescription.
- **Posology:** Definition, Factors affecting posology. Pediatric dose calculations based on age, body weight and body surface area.

**UNIT – II**

**10 Hours**

- **Pharmaceutical calculations:** Weights and measures – Imperial & Metric system, Calculations involving percentage solutions, alligation, proof spirit and isotonic solutions based on freezing point and molecular weight.
- **Powders:** Definition, classification, advantages and disadvantages, Simple & compound powders – official preparations, dusting powders, effervescent, efflorescent and hygroscopic powders, eutectic mixtures. Geometric dilutions.
- **Liquid dosage forms:** Advantages and disadvantages of liquid dosage forms, Excipients used in formulation of liquid dosage forms. Solubility enhancement techniques



  
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UNIT – III

10 Hours

- **Monophasic liquids:** Definitions and preparations of Gargles, Mouthwashes, Throat Paint, Eardrops, Nasal drops, Enemas, Syrups, Elixirs, Liniments and Lotions.
- **Biphasic liquids:**  
**Suspensions:** Definition, advantages and disadvantages, classifications, Preparation of suspensions; Flocculated and Deflocculated suspension & stability problems and methods to overcome.  
**Emulsions:** Definition, classification, emulsifying agent, test for the identification of type of Emulsion, Methods of preparation & stability problems and methods to overcome.

UNIT – IV

08 Hours

- **Suppositories:** Definition, types, advantages and disadvantages, types of bases, methods of preparations. Displacement value & its calculations, evaluation of suppositories.
- **Pharmaceutical incompatibilities:** Definition, classification, physical, chemical and therapeutic incompatibilities with examples.

UNIT – V

07 Hours

- **Semisolid dosage forms:** Definitions, classification, mechanisms and factors influencing dermal penetration of drugs. Preparation of ointments, pastes, creams and gels. Excipients used in semi solid dosage forms. Evaluation of semi solid dosage forms



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BP105T.COMMUNICATION SKILLS (Theory)

30hours

**Scope:** This course will prepare the young pharmacy student to interact effectively with doctors, nurses, dentists, physiotherapists and other health workers. At the end of this course the student will get the soft skills set to work cohesively with the team as a team player and will add value to the pharmaceutical business.

**Objectives:**

Upon completion of the course the student shall be able to

1. Understand the behavioral needs for a Pharmacist to function effectively in the areas of pharmaceutical operation
2. Communicate effectively (Verbal and Non Verbal)
3. Effectively manage the team as a team player
4. Develop interview skills
5. Develop Leadership qualities and essentials

**COURSE CONTENT**

**UNIT – I**

- **Communication Skills:** Introduction, Definition, The Importance of Communication, The Communication Process – Source, Message, Encoding, Channel, Decoding, Receiver, Feedback, Context
- **Barriers to communication:** Physiological Barriers, Physical Barriers, Cultural Barriers, Language Barriers, Gender Barriers, Interpersonal Barriers, Psychological Barriers, Emotional barriers

07 Hours

- **Perspectives in Communication:** Introduction, Visual Perception, Language, Other factors affecting our perspective - Past Experiences, Prejudices, Feelings, Environment

**UNIT – II**

- **Elements of Communication:** Introduction, Face to Face Communication - Tone of Voice, Body Language (Non-verbal communication), Verbal Communication, Physical Communication
- **Communication Styles:** Introduction, The Communication Styles Matrix with example for each - Direct Communication Style, Spirited Communication Style, Systematic e) Communication Style, Considerate Communication Style

07 Hours

**UNIT – III**

- **Basic Listening Skills:** Introduction, Self-Awareness, Active Listening, Becoming an Active Listener, Listening in Difficult Situations
- **Effective Written Communication:** Introduction, When and When Not to Use

07 Hours

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Written

Communication - Complexity of the Topic, Amount of Discussion' Required, Shades of

Meaning, **Formal Communication**

• **Writing Effectively:** Subject Lines, Put the Main Point First, Know Your Audience,

d) Organization of the Message

**UNIT – IV**

• **Interview Skills:** Purpose of an interview, Do's and Dont's of an interview

• **Giving Presentations:** Dealing with Fears, Planning your Presentation, Structuring Your

**05 Hours**

iv. Presentation, Delivering Your Presentation, Techniques of Delivery

**UNIT – V**

• **Group Discussion:** Introduction, Communication skills in group discussion, Do's and

**04 Hours**

c) Dont's of group discussion.



  
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**BP703T PHARMACY PRACTICE (Theory)**

**45 Hours**

**Scope:**

In the changing scenario of pharmacy practice in India, for successful practice of Hospital Pharmacy, the students are required to learn various skills like drug distribution, drug information, and therapeutic drug monitoring for improved patient care. In community pharmacy, students will be learning various skills such as dispensing of drugs, responding to minor ailments by providing suitable safe medication, patient counseling for improved patient care in the community set up.

**Objectives:**

Upon completion of the course, the student shall be able to:

1. Know various drug distribution methods in a hospital
2. Appreciate the pharmacy stores management and inventory control
3. Monitor drug therapy of patient through medication chart review and clinical review.
4. Obtain medication history interview and counsel the patients
5. Identify drug related problems
6. Detect and assess adverse drug reactions
7. Interpret selected laboratory results (as monitoring parameters in therapeutics) of specific disease states
8. Know pharmaceutical care services
9. Do patient counseling in community pharmacy;
10. Appreciate the concept of rational drug therapy.

**Course Content:**

**UNIT-I**

**10 Hours**

**Hospital and its organization**

Definition, Classification of hospital- Primary, Secondary and Tertiary hospitals, Classification based on clinical and non-clinical basis, Organization Structure of a Hospital, and Medical staffs involved in the hospital and their functions.

**Hospital pharmacy and its organization**

Definition, functions of hospital pharmacy, Organization structure, Location, Layout and staff requirements, and Responsibilities and functions of hospital pharmacists.

**Adverse drug reaction**

Classifications - Excessive pharmacological effects, secondary pharmacological effects, idiosyncrasy, allergic drug reactions, genetically determined toxicity, toxicity following sudden withdrawal of drugs, Drug interaction- beneficial interactions, adverse interactions, and pharmacokinetic drug interactions, Methods for detecting drug interactions, spontaneous case reports and record linkage studies, and Adverse drug reaction reporting and management.



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### Community Pharmacy

Organization and structure of retail and wholesale drug store, types and design, Legal requirements for establishment and maintenance of a drug store, Dispensing of proprietary products, maintenance of records of retail and wholesale drug store.

### UNIT-II

10 Hours

#### Drug distribution system in a hospital

Dispensing of drugs to inpatients, types of drug distribution systems, charging policy and labelling, dispensing of drugs to ambulatory patients, and Dispensing of controlled drugs.

#### Hospital formulary

Definition, contents of hospital formulary, Differentiation of hospital formulary and Drug list, preparation and revision, and addition and deletion of drug from hospital formulary.

#### Therapeutic drug monitoring

Need for Therapeutic Drug Monitoring, Factors to be considered during the Therapeutic Drug Monitoring, and Indian scenario for Therapeutic Drug Monitoring.

#### Medication adherence

Causes of medication non-adherence, pharmacist role in the medication adherence, and monitoring of patient medication adherence.

#### Patient medication history interview

Need for the patient medication history interview, medication interview forms.

#### Community pharmacy management

Financial, materials, staff, and infrastructure requirements.

### UNIT-III

10 Hours

#### Pharmacy and therapeutic committee

Organization, functions, Policies of the pharmacy and therapeutic committee in including drugs into formulary, inpatient and outpatient prescription, automatic stop order, and emergency drug list preparation.

#### Drug information services

Drug and Poison information centre, Sources of drug information, Computerized services, and storage and retrieval of information.

#### Patient counseling

Definition of patient counseling, steps involved in patient counseling, and Special cases that require the pharmacist

#### Education and training program in the hospital

Role of pharmacist in the education and training program, Internal and external training program, Services to the nursing homes/clinics, Code of ethics for community pharmacy, and Role of pharmacist in the interdepartmental communication and community health education.

#### Prescribed medication order and communication skills

Prescribed medication order- interpretation and legal requirements, and Communication skills- communication with prescribers and patients.



  
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**BPS02T SOCIAL AND PREVENTIVE PHARMACY (Theory)**

**45 Hours**

**Scope:**

The purpose of this course is to introduce to students a number of health issues and their challenges. This course also introduced a number of national health programmes. The roles of the pharmacist in these contexts are also discussed.

**Objectives:**

After the successful completion of this course, the student shall be able to:

1. Acquire high consciousness/realization of current issues related to health and pharmaceutical problems within the country and worldwide.
2. Develop a critical way of thinking based on current healthcare development.
3. Evaluate alternative ways of solving problems related to health and pharmaceutical issues.

**Course Content:**

**UNIT-I**

**10 Hours**

**Concept of health and disease:**

Definition, concepts and evaluation of public health.

Understanding the concept of prevention and control of disease, social causes of diseases and social problems of the sick.

**Sociology and health**

Socio cultural factors related to health and disease, Impact of urbanization on health and disease, Poverty and health

**Hygiene and health**

Personal hygiene and health care; avoidable habits.

**UNIT-II**

**10 Hours**

**Preventive medicine**

General principles of prevention and control of diseases such as cholera, SARS, Ebola virus, influenza, acute respiratory infections, malaria, chicken guinea, dengue, lymphatic filariasis, pneumonia, hypertension, diabetes mellitus, cancer, drug addiction-drug substance abuse

**UNIT-III**

**10 Hours**

**National health programs, its objectives, functioning and outcome of the following:**

HIV AND AIDS control programme, TB, Integrated disease surveillance program (IDSP), National leprosy control programme, National mental health program, National programme for prevention and control of deafness, Universal immunization programme, National programme for control of blindness, Pulse polio programme.



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**UNIT-IV**

**08 Hours**

National health intervention programme for mother and child, National family welfare programme, National tobacco control programme, National Malaria Prevention Program, National programme for the health care for the elderly, Social health programme; role of WHO in Indian national program

**UNIT-V**

**07 Hours**

Community services in rural, urban and school health; Functions of PHC, Improvement in rural sanitation, national urban health mission, Health promotion and education in school.

**Recommended Books (Latest edition):**

1. Short Textbook of Preventive and Social Medicine, Prabhakara GN, 2<sup>nd</sup> Edition, 2010, ISBN: 9789380704104, JAYPEE Publications
2. Textbook of Preventive and Social Medicine (Mahajan and Gupta), Edited by Roy Rabindra Nath, Saha Indranil, 4<sup>th</sup> Edition, 2013, ISBN: 9789350901878, JAYPEE Publications
3. Review of Preventive and Social Medicine (Including Biostatistics), Jain Vivek, 6<sup>th</sup> Edition, 2014, ISBN: 9789351522331, JAYPEE Publications
4. Essentials of Community Medicine: A Practical Approach, Hiremath Lalita D, Hiremath Dhananjaya A, 2<sup>nd</sup> Edition, 2012, ISBN: 9789350250440, JAYPEE Publications
5. Park Textbook of Preventive and Social Medicine, K Park, 21<sup>st</sup> Edition, 2011, ISBN-14: 9788190128285, BANARSIDAS BHANOT PUBLISHERS.
6. Community Pharmacy Practice, Ramesh Adepu, BSP publishers, Hyderabad

**Recommended Journals:**

1. Research in Social and Administrative Pharmacy, Elsevier, Ireland



  
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**BPS04ET PHARMACEUTICAL REGULATORY SCIENCE (Theory)**

**45 Hours**

**Scope:**

This course is designed to impart the fundamental knowledge on the regulatory requirements for approval of new drugs, and drug products in regulated markets of India & other countries like US, EU, Japan, Australia, UK etc. It prepares the students to learn in detail on the regulatory requirements, documentation requirements, and registration procedures for marketing the drug products.

**Objectives:**

Upon completion of the subject student shall be able to;

1. Know about the process of drug discovery and development
2. Know the regulatory authorities and agencies governing the manufacture and sale of pharmaceuticals
3. Know the regulatory approval process and their registration in Indian and international markets.

**Course content:**

**UNIT-I**

**10 Hours**

**New Drug Discovery and development**

Stages of drug discovery, Drug development process, pre-clinical studies, non-clinical activities, clinical studies, Innovator and generics, Concept of generics, Generic drug product development.

**UNIT-II**

**10 Hours**

**Regulatory Approval Process**

Approval processes and timelines involved in Investigational New Drug (IND), New Drug Application (NDA), Abbreviated New Drug Application (ANDA). Changes to an approved NDA / ANDA.

**Regulatory authorities and agencies**

Overview of regulatory authorities of India, United States, European Union, Australia, Japan, Canada (Organization structure and types of applications)

**UNIT-III**

**10 Hours**

**Registration of Indian drug product in overseas market**

Procedure for export of pharmaceutical products, Technical documentation, Drug Master Files (DMF), Common Technical Document (CTD), electronic Common Technical Document (eCTD), ASEAN Common Technical Document (ACTD) research.



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**UNIT-IV**

**08 Hours**

**Clinical trials**

Developing clinical trial protocols, Institutional Review Board / Independent Ethics committee - formation and working procedures, Informed consent process and procedures, GCP obligations of Investigators, sponsors & Monitors, Managing and Monitoring clinical trials, Pharmacovigilance – safety monitoring in clinical trials

**UNIT-V**

**07 Hours**

**Regulatory Concepts**

Basic terminology, guidance, guidelines, regulations, Laws and Acts, Orange book, Federal Register, Code of Federal Regulatory, Purple book

**Recommended books (Latest edition):**

1. Drug Regulatory Affairs by Sachin Itkar, Dr. N.S. Vyawahare, Nirali Prakashan.
2. The Pharmaceutical Regulatory Process, Second Edition Edited by Ira R. Berry and Robert P. Martin, Drugs and the Pharmaceutical Sciences, Vol.185. Informa Health care publishers.
3. New Drug Approval Process: Accelerating Global Registrations By Richard A Guarino, MD, 5<sup>th</sup> edition, Drugs and the Pharmaceutical Sciences, Vol.190.
4. Guidebook for drug regulatory submissions / Sandy Weinberg. By John Wiley & Sons, Inc.
5. FDA Regulatory Affairs: a guide for prescription drugs, medical devices, and biologics /edited by Douglas J. Pisano, David Mantus.
6. Generic Drug Product Development, Solid Oral Dosage forms, Leon Shargel and Isader Kaufer, Marcel Dekker series, Vol.143
7. Clinical Trials and Human Research: A Practical Guide to Regulatory Compliance By Fay A. Rozovsky and Rodney K. Adams
8. Principles and Practices of Clinical Research, Second Edition Edited by John I. Gallin and Frederick P. Ognibene
9. Drugs: From Discovery to Approval, Second Edition By Rick Ng



  
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**BP805ET PHARMACOVIGILANCE (Theory)**

**45 Hours**

**Scope:**

This paper will provide an opportunity for the student to learn about development of pharmacovigilance as a science, basic terminologies used in pharmacovigilance, global scenario of Pharmacovigilance, train students on establishing pharmacovigilance programme in an organization, various methods that can be used to generate safety data and signal detection. This paper also develops the skills of classifying drugs, diseases and adverse drug reactions

**Objectives:**

At completion of this paper it is expected that students will be able to (know, do, and appreciate):

1. Understand importance of drug safety monitoring.
2. Explain History, development, National and international scenario of pharmacovigilance & comprehend dictionaries, coding and terminologies used in pharmacovigilance
3. Understand detection and assessment of new adverse drug reactions, Adverse drug reaction reporting systems and communication in pharmacovigilance, Pharmacovigilance Program of India (PvPI) requirement for ADR reporting in India ICH guidelines for ICSR, PSUR, expedited reporting, pharmacovigilance planning, CIOMS requirements for ADR reporting
4. Comprehend methods of safety data during pre-clinical, clinical and post approval phases of drugs' life cycle.
5. Write case narratives of adverse events and their quality.

**Course Content:**

**UNIT-I**

**10 Hours**

**Introduction to Pharmacovigilance**

History and development of Pharmacovigilance, Importance of safety monitoring of Medicine, WHO international drug monitoring programme, Pharmacovigilance Program of India (PvPI)

**Introduction to adverse drug reactions**

Definitions and classification of ADRs, Detection and reporting, Methods in Causality assessment, Severity and seriousness assessment, Predictability and preventability assessment, Management of adverse drug reactions

**Basic terminologies used in pharmacovigilance**

Terminologies of adverse medication related events, Regulatory terminologies



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<b>UNIT-II</b> <b>Drug and disease classification</b> Anatomical, therapeutic and chemical classification of drugs, International classification of diseases, Daily defined doses, International Nonproprietary Names for drugs <b>Drug dictionaries and coding in pharmacovigilance</b> WHO adverse reaction terminologies, MedDRA and Standardized MedDRA queries, WHO drug dictionary, Eudravigilance medicinal product dictionary <b>Information resources in pharmacovigilance</b> Basic drug information resources, Specialized resources for ADRs <b>Establishing pharmacovigilance programme</b> Establishing in a hospital, Establishment & operation of drug safety department in industry, Contract Research Organizations (CROs), Establishing a national programme.	<b>10 Hours</b>
<b>UNIT-III</b> <b>Vaccine safety surveillance</b> Vaccine Pharmacovigilance, Vaccination failure, Adverse events following immunization <b>Pharmacovigilance methods</b> Passive surveillance – Spontaneous reports and case series, Stimulated reporting, Active surveillance – Sentinel sites, drug event monitoring and registries, Comparative observational studies – Cross sectional study, case control study and cohort study, Targeted clinical investigations <b>Communication in pharmacovigilance</b> Effective communication in Pharmacovigilance, Communication in Drug Safety Crisis management, Communicating with Regulatory Agencies, Business Partners, Healthcare facilities & Media	<b>10 Hours</b>
<b>UNIT-IV</b> <b>Safety data generation</b> Pre-clinical phase, Clinical phase, Post approval phase (PMS) <b>ICH Guidelines for Pharmacovigilance</b> Organization and objectives of ICH, Expedited reporting, Individual case safety reports, Periodic safety update reports, Post approval expedited reporting, Pharmacovigilance planning, Good clinical practice in pharmacovigilance studies	<b>08 Hours</b>
<b>UNIT-V</b> <b>Pharmacogenomics of adverse drug reaction</b> Genetics related ADR with example focusing PK parameters, <b>CIOMS</b> CIOMS Working Groups, CIOMS Form <b>CDSCO (India) and Pharmacovigilance</b> D&C Act and Schedule Y Differences in Indian and global pharmacovigilance requirements	<b>07 Hours</b>



  
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**BP812ET DIETARY SUPPLEMENTS AND NUTRACEUTICALS (Theory)**

**45 Hours**

**Scope:**

This subject covers foundational topics that are important for understanding the need and requirements of dietary supplements among different groups in the population.

**Objective:**

This module aims to provide an understanding of the concepts behind the theoretical applications of dietary supplements. By the end of the course, students should be able to:

1. Understand the need of supplements by the different group of people to maintain healthy life.
2. Understand the outcome of deficiencies in dietary supplements.
3. Recognize the components in dietary supplements and the application.
4. Acquaint with the regulatory and commercial aspects of dietary supplements including health claims.

**Course content:**

**UNIT-I**

**07 Hours**

Definitions of Functional foods, Nutraceuticals and Dietary supplements. Classification of Nutraceuticals, Health problems and diseases that can be prevented or cured by Nutraceuticals i.e. weight control, diabetes, cancer, heart disease, stress, osteoarthritis, hypertension etc.

Public health nutrition, maternal and child nutrition, nutrition and ageing, nutrition education in community.

Source, Name of marker compounds and their chemical nature, Medicinal uses and health benefits of following used as nutraceuticals/functional foods: Spirulina, Soyabean, Ginseng, Garlic, Broccoli, Ginkgo, Flaxseeds

**UNIT-II**

**15 Hours**

**Phytochemicals as nutraceuticals:** Occurrence and characteristic features (chemical nature medicinal benefits) of following

**Carotenoids-**  $\alpha$  and  $\beta$ -Carotene, Lycopene, Xanthophylls, lutein

**Sulfides:** Diallyl sulfides, Allyl trisulfide.

**Polyphenolics:** Resveratrol

**Flavonoids-** Rutin, Naringin, Quercetin, Anthocyanidins, catechins, Flavones

**Prebiotics / Probiotics:** Fructo oligosaccharides, Lacto bacillum

**Phyto estrogens :** Isoflavones, daidzein, Genistein, lignans

**Tocopherols**

Proteins, vitamins, minerals, cereal, vegetables and beverages as functional foods: oats,



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Wheat bran, rice bran, sea foods, coffee, tea and the like.

### UNIT-III

07 Hours

**Introduction to free radicals:** Free radicals, reactive oxygen species, production of free radicals in cells, damaging reactions of free radicals on lipids, proteins, Carbohydrates, nucleic acids.

Dietary fibres and complex carbohydrates as functional food ingredients.

### UNIT-IV

10 Hours

**Free radicals** in Diabetes mellitus, Inflammation, Ischemic reperfusion injury, Cancer, Atherosclerosis, Free radicals in brain metabolism and pathology, kidney damage, muscle damage. Free radicals involvement in other disorders. Free radicals theory of ageing.

**Antioxidants:** Endogenous antioxidants – enzymatic and nonenzymatic antioxidant defense, Superoxide dismutase, catalase, Glutathione peroxidase, Glutathione Vitamin C, Vitamin E,  $\alpha$ - Lipoic acid, melatonin Synthetic antioxidants: Butylated hydroxy Toluene, Butylated hydroxy Anisole.

Functional foods for chronic disease prevention.

### UNIT-IV

06 Hours

Effect of processing, storage and interactions of various environmental factors on the potential of nutraceuticals.

**Regulatory Aspects; FSSAI, FDA, FPO, MPO, AGMARK, HACCP and GMPs on Food Safety. Adulteration of foods.**

**Pharmacopoeial Specifications for dietary supplements and nutraceuticals.**

### References:

1. Dietetics by Sri Lakshmi
2. Role of dietary fibres and nutraceuticals in preventing diseases by K.T Agusti and P.Faizal: BS Publication.
3. Advanced Nutritional Therapies by Cooper. K.A., (1996).
4. The Food Pharmacy by Jean Carper, Simon & Schuster, UK Ltd., (1988).
5. Prescription for Nutritional Healing by James F.Balch and Phyllis A.Balch 2<sup>nd</sup> Edn., Avery Publishing Group, NY (1997).
6. G. Gibson and C.Williams Editors 2000 *Functional foods* Woodhead Publ. Co.London.
7. Goldberg, I. *Functional Foods*. 1994. Chapman and Hall, New York.
8. Labuza, T.P. 2000 Functional Foods and Dietary Supplements: Safety, Good Manufacturing Practice (GMPs) and Shelf Life Testing in *Essentials of Functional Foods* M.K. Sachmidl and T.P. Labuza eds. Aspen Press.
9. Handbook of Nutraceuticals and Functional Foods, Third Edition (Modern Nutrition)
10. Shils, ME, Olson, JA, Shike, M. 1994 *Modern Nutrition in Health and Disease*. Eighth edition, Lea and Febiger



  
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**BP813PW PROJECT WORK**

All the students shall undertake a project under the supervision of a teacher and submit a report. The area of the project shall directly relate any one of the elective subject opted by the student in semester VIII. The project shall be carried out in group not exceeding 5 in number. The project report shall be submitted in triplicate (typed & bound copy not less than 25 pages).

The internal and external examiner appointed for evaluation of the project shall be approved teachers of SPPU /Industrial Experts appointed by Principal of the respective Institute.

Students shall be evaluated in groups for four hours (i.e., about half an hour for a group of five students). The projects shall be evaluated as per the criteria given below

***Evaluation of Dissertation Book***

Objective(s) of the work done	15 Marks
Methodology adopted	20 Marks
Results and Discussions	20 Marks
Conclusions and Outcomes	20 Marks
<b>Total</b>	<b>75 Marks</b>

***Evaluation of Presentation:***

Presentation of work	25 Marks
Communication skills	20 Marks
Question and answer skills	30 Marks
<b>Total</b>	<b>75 Marks</b>

**Explanation:**

The 75 marks assigned to the dissertation book shall be same for all the students in a group. However, the 75 marks assigned for presentation shall be awarded based on the performance of individual students in the given criteria.



  
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HAZARDS AND SAFETY MANAGEMENT (MQA 201T)	
	60 Hrs
<b>Scope</b> This course is designed to convey the knowledge necessary to understand issues related to different kinds of hazard and their management. Basic theoretical and practical discussions integrate the proficiency to handle the emergency situation in the pharmaceutical product development process and provides the principle based approach to solve the complex tribulations.	
<b>Objectives</b> At completion of this course it is expected that students will be able to <ul style="list-style-type: none"><li>• Understand about environmental problems among learners.</li><li>• Impart basic knowledge about the environment and its allied problems.</li><li>• Develop an attitude of concern for the industry environment.</li><li>• Ensure safety standards in pharmaceutical industry</li><li>• Provide comprehensive knowledge on the safety management</li><li>• Empower an ideas to clear mechanism and management in different kinds of hazard management system</li><li>• Teach the method of Hazard assessment, procedure, methodology for provide safe industrial atmosphere.</li></ul>	
<b>UNIT-I</b> <ul style="list-style-type: none"><li>• Multidisciplinary nature of environmental studies: Natural Resources and associated problems, Renewable and non-renewable resources, a) Forest resources; b) Water resources; c) Mineral resources; d) Energy resources; e) Land resources</li><li>• Ecosystems: Concept of an ecosystem, Structure and function of an ecosystem. Environmental hazards: Hazards based on Air, Water, Soil and Radioisotopes.</li></ul>	12 Hrs
<b>UNIT-II</b> <ul style="list-style-type: none"><li>• Air based hazards Sources, Types of Hazards, Air circulation, Air handling system, HVAC system, air maintenance in industry for sterile area and non sterile area.</li></ul>	12 Hrs
<b>UNIT-III</b> <ul style="list-style-type: none"><li>• Chemical based hazards: Sources of chemical hazards, Hazards of Organic synthesis, sulphonating hazard, Organic solvent hazard. Control measures for chemical hazards. Management of combustible gases, Toxic gases and Oxygen displacing gases management, Regulations for chemical hazard, MSDS, Labelling guidelines, Management of over-exposure to chemicals and TLV concept, Disposal of hazardous material.</li></ul>	12 Hrs
<b>UNIT-IV</b> <ul style="list-style-type: none"><li>• Fire and Explosion: Introduction, Industrial processes and hazards potential, Mechanical, electrical, thermal and process hazards, mechanical and chemical explosion, multiphase reactions. Safety and hazards regulations</li><li>• Fire protection system: Fire prevention, types of fire extinguishers and critical Hazard management system, Preventive and protective management from fires and explosion- electricity passivation, ventilation, and sprinkling, proofing, fire walls, bunds, relief systems - relief valves, flares, scrubbers.</li></ul>	12 Hrs



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**PHARMACY PRACTICE (MPP)**  
**CLINICAL PHARMACY PRACTICE**  
**(MPP 101T)**

**SCOPE**

This course is designed to impart the basic knowledge and skills that are required to practice pharmacy including the provision of pharmaceutical care services to both healthcare professionals and patients in clinical settings.

**OBJECTIVES**

Upon completion of this course it is expected that students shall be able to :

- Understand the elements of pharmaceutical care and provide comprehensive patient care services
- Interpret the laboratory results to aid the clinical diagnosis of various disorders
- Provide integrated, critically analyzed medicine and poison information to enable healthcare professionals in the efficient patient management

**THEORY**

**60 Hrs**

1. Introduction to Clinical Pharmacy: Definition, evolution and scope of clinical pharmacy, International and national scenario of clinical pharmacy practice, Pharmaceutical care  
**Clinical Pharmacy Services:** Ward round participation, Drug therapy review (Drug therapy monitoring including medication order review, chart endorsement, clinical review and pharmacist interventions)  
**12 Hrs**
2. Clinical Pharmacy Services: Patient medication history interview, Basic concept of medicine and poison information services, Basic concept of pharmacovigilance, Hemovigilance, Materiovigilance and AEFI, Patient medication counselling, Drug utilisation evaluation, Documentation of clinical pharmacy services, Quality assurance of clinical pharmacy services.  
**12 Hrs**
3. Patient Data Analysis: Patient Data & Practice Skills: Patient's case history – its structure and significances in drug therapy management, Common medical abbreviations and terminologies used in clinical practice, Communication skills: verbal and non-verbal communications, its applications in patient care services.  
**Lab Data Interpretation :** Hematological tests, Renal function tests, Liver function tests.  
**12 Hrs**
4. Lab Data Interpretation: Tests associated with cardiac disorders, pulmonary function tests, Thyroid function tests, Fluid and electrolyte balance, Microbiological culture sensitivity tests.  
**12 Hrs**
5. Medicines & Poison Information Services : Medicine Information Service: Definition and need for medicine information service, Medicine information resources, Systematic approach in answering medicine information queries, Preparation of verbal and written response, Establishing a drug information centre.



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Poison Information Service: Definition, need, organization and functions of poison information centre.

**12 Hrs**

**REFERENCES**

1. A Textbook of Clinical Pharmacy Practice - Essential concepts and skills - Parthasarathi G, Karin Nyfort-Hansen and Milap Nahata
2. Practice Standards and Definitions - The Society of Hospital Pharmacists of Australia
3. Basic skills in interpreting laboratory data - Scott LT, American Society of Health System Pharmacists Inc
4. Relevant review articles from recent medical and pharmaceutical literature.



  
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## CLINICAL RESEARCH (MPP 104T)

### SCOPE

This course aims to provide the students an opportunity to learn drug development process especially the phases of clinical trials and also the ethical issues involved in the conduct of clinical research. Also, it aims to impart knowledge and develop skills on conceptualizing, designing, conducting and managing clinical trials.

### OBJECTIVES

Upon completion of this course it is expected that students shall be able to:

- Know the new drug development process.
- Understand the regulatory and ethical requirements.
- Appreciate and conduct the clinical trials activities
- Know safety monitoring and reporting in clinical trials
- Manage the trial coordination process

### THEORY

60 Hrs

1. Drug development process: Introduction, various approaches to drug discovery, Investigational new drug application submission Ethics in Biomedical Research: Ethical Issues in Biomedical Research - Principles of ethics in biomedical research, Ethical committee [institutional review board] – its constitution and functions, Challenges in implementation of ethical guidelines, ICH GCP guidelines and ICMR guidelines in conduct of Clinical trials, Drug Safety Reporting. 12 Hrs

2. Types and Designs used in Clinical Research: Planning and execution of clinical trials, Various Phases of clinical trials, Bioavailability and Bioequivalence studies, Randomization techniques (Simple randomization, restricted randomization, blocking method and stratification), Types of research designs based on Controlling Method (Experimental, Quasi experimental, and Observational methods) Time Sequences (Prospective and Retrospective), Sampling methods (Cohort study, case Control study and cross sectional study), Health outcome measures (Clinical & Physiological, Humanistic and economic)

Clinical Trial Study team: Roles and responsibilities of: Investigator, Study Coordinator, Sponsor, Monitor, and Contract Research Organization. 12 Hrs

3. Clinical trial Documents: Guidelines to the preparation of following documents: Protocols, Investigator's Brochure, Informed Consent Form, Case report forms, Contracts and agreements, Dairy Cards

Clinical Trial Start up activities: Site Feasibility Studies, Site/Investigator selection, Pre-study visit, Investigator meeting, Clinical trial agreement execution, Ethics committee document preparation and submission 12 Hrs

4. Investigational Product: Procurement and Storage of investigation product

Filing procedures: Essential documents for clinical trial, Trial Master File preparation and maintenance, Investigator Site File, Pharmacy File, Site initiation visit, Conduct, Report and Follow up

Clinical Trial Monitoring and Close out:



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Preparation and conduct of monitoring visit: Review of source documents, CRF, ICF, IP storage, accountability and reconciliation, Study Procedure, EC communications, Safety reporting, Monitoring visit reporting and follow-up

Close-Out visit: Study related documents collection, Archival requirement, Investigational Product reconciliation and destruction, Close-Out visit report.

12 Hrs

5. Quality Assurance and Quality Control in Clinical Trials: Types of audits, Audit criteria, Audit process, Responsibilities of stakeholders in audit process, Audit follow-up and documentation, Audit resolution and Preparing for FDA inspections, Fraud and misconduct management. Data Management

Infrastructure and System Requirement for Data Management: Electronic data capture systems, Selection and implementation of new systems, System validation and test procedures, Coding dictionaries, Data migration and archival

Clinical Trial Data Management: Standard Operating Procedures, Data management plan, CRF & Data base design considerations, Study set-up, Data entry, CRF tracking and corrections, Data cleaning, Managing laboratory and ADR data,


Data transfer and database lock, Quality Control and Quality Assurance in CDM, Data mining and warehousing.

12 Hrs

#### REFERENCES

1. Principles and practice of pharmaceutical medicine, Second edition. Authors: Lionel D. Edward, Andrew J. Flether Anthony W Fos, Peter D Sloaier Publisher: Wiley;
2. Handbook of clinical research. Julia Lloyd and Ann Raven Ed. Churchill Livingstone
3. Principles of Clinical Research edited by Giovanna di Ignazio, Di Giovanna and Haynes.
4. Central Drugs Standard Control Organization. Good Clinical Practices- Guidelines for Clinical Trials on Pharmaceutical Products in India. New Delhi: Ministry of Health.
5. International Conference on Harmonisation of Technical requirements for registration of Pharmaceuticals for human use. ICH Harmonised Tripartite Guideline. Guideline for Good Clinical Practice. E6; May 1996.
6. Ethical Guidelines for Biomedical Research on Human Subjects. Indian Council of Medical Research, New Delhi.
7. Textbook of Clinical Trials edited by David Machin, Simon Day and Sylvan Green, John Wiley and Sons.
8. Clinical Data Management edited by R K Rondels, S A Varley, C F Webbs. Second Edition, Jan 2000, Wiley Publications.
9. Goodman & Gilman: JG Hardman, LE Limbard, McGraw Hill Publications.
10. Relevant review articles from recent medical and pharmaceutical literature.



  
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## PRINCIPLES OF QUALITY USE OF MEDICINES (MPP 201T)

### SCOPE:

This course is designed to impart basic knowledge and skills that are required to practice quality use of medicines (QUM) in different healthcare settings and also to promote quality use of medicines, in clinical practice, through evidence-based medicine approach.

### OBJECTIVES:

Upon completion of this course it is expected that students shall be able to:

- Understand the principles of quality use of medicines
- Know the benefits and risks associated with use of medicines
- Understand regulatory aspects of quality use of medicines
- Identify and resolve medication related problems
- Promote quality use of medicines
- Practice evidence-based medicines

### THEORY

60 Hrs

1. Introduction to Quality use of medicines (QUM): Definition and Principles of QUM, Key partners and responsibilities of the partners, Building blocks in QMC, Evaluation process in QMC, Communication in QUM, Cost effective prescribing. 12 Hrs
2. Concepts in QUM  
Evidence based medicine: Definition, concept of evidence based medicine, Approach and practice of evidence based medicine in clinical settings  
Essential drugs: Definition, need, concept of essential drug, National essential drug policy and list  
Rational drug use: Definition, concept and need for rational drug use, Rational drug prescribing, Role of pharmacist in rational drug use. 12 Hrs
3. QUM in various settings: Hospital settings, Ambulatory care / Residential care, Role of health care professionals in promoting the QUM, Strategies to promote the QUM, Impact of QUM on E-health, integrative medicine and multidisciplinary care. QUM in special population: Pediatric prescribing, Geriatric prescribing, prescribing in pregnancy and lactation, prescribing in immune compromised and organ failure patients. 12 Hrs
4. Regulatory aspects of QUM in India: Regulation including scheduling, Regulation of complementary medicines, Regulation of OTC medicines, Professional responsibility of pharmacist, Role of industry in QUM in medicine development. 12 Hrs
5. Medication errors: Definition, categorization and causes of medication errors, Detection and prevention of medication errors, Role of pharmacist in monitoring and management of medication errors  
Pharmacovigilance: Definition, aims and need for pharmacovigilance, Types, predisposing factors and mechanism of adverse drug reactions (ADRs), Detection,



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reporting and monitoring of ADRs, Causality assessment of ADRs, Management of ADRs, Role of pharmacist in pharmacovigilance. **12 Hrs**

**REFERENCES:**

1. A Textbook of Clinical Pharmacy Practice - Essential concepts and skills - Parthasarathi G, Karin Nyfort-Hansen and Milap Nahata
2. Andrews EB, Moore N. Mann's Pharmacovigilance
3. Dipiro JT, Talbert RL, Yee GC. Pharmacotherapy: A Pathophysiologic Approach
4. Straus SE, Richardson WS, Glasziou P, Haynes RB. Evidence-Based Medicine: How to practice and teach it
5. Cohen MR. Medication Errors
6. Online:
  - [http://medicinesaustralia.com.au/files/2012/05/MA\\_QUM\\_External\\_Reduced.pdf](http://medicinesaustralia.com.au/files/2012/05/MA_QUM_External_Reduced.pdf)
  - <http://curriculum.racgp.org.au/statements/quality-use-of-medicines/>
  - [http://www.rug.nl/research/portal/files/14051541/Chapter\\_2.pdf](http://www.rug.nl/research/portal/files/14051541/Chapter_2.pdf)
7. Relevant review articles from recent medical and pharmaceutical literature.



  
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## 2.5 COMMUNITY PHARMACY (THEORY)

Theory : 2 Hrs. /Week

1. **Scope:** In the changing scenario of pharmacy practice in India, Community Pharmacists are expected to offer various pharmaceutical care services. In order to meet this demand, students will be learning various skills such as dispensing of drugs, responding to minor ailments by providing suitable safe medication, patient counselling, health screening services for improved patient care in the community set up.
2. **Objectives:** Upon completion of the course, the student shall be able to –
  - a. know pharmaceutical care services;
  - b. know the business and professional practice management skills in community pharmacies;
  - c. do patient counselling & provide health screening services to public in community pharmacy;
  - d. respond to minor ailments and provide appropriate medication;
  - e. show empathy and sympathy to patients; and
  - f. appreciate the concept of Rational drug therapy.

### Text Books:

- a. Health Education and Community Pharmacy by N.S.Parmar.
- b. WHO consultative group report.
- c. Drug store & Business management by Mohammed Ali & Jyoti.

### Reference books:

- a. Handbook of pharmacy – health care, Edt. Robin J Harman. The Pharmaceutical press.
- b. Comprehensive Pharmacy Review – Edt. Leon Shargel, Lippincott Williams & Wilkins.

### Special requirements:

1. Either the college is having model community pharmacy (meeting the schedule N requirement) or sign MoU with at least 4-5 community pharmacies nearby to the college for training the students on dispensing and counselling activities.
2. Special equipments like B.P apparatus, Glucometer, Peak flow meter, and apparatus for cholesterol estimation.

### 3. Scheme of evaluation (80 Marks)

- |  |    |
|--|----|
| 1. Synopsis  | 10 |
| 2. Major Experiment  | 30 |
| (Counselling of patients with specific diseases – emphasis should be given on Counselling introduction, content, process and conclusion) |    |
| 3. Minor Experiment (Ability to measure B.P/ CBG / Lung function)  | 15 |
| 4. Prescription Analysis (Analyzing the prescriptions for probable drug interaction and ability to tell the management)                  | 15 |
| 5. Viva – Voce   | 10 |



  
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4. Lecture wise programme :

Topics

- 1 **Definition, scope, of community pharmacy**  
Roles and responsibilities of Community pharmacist
- 2 **Community Pharmacy Management**
  - a) Selection of site, Space layout, and design
  - b) Staff, Materials- coding, stocking
  - c) Legal requirements
  - d) Maintenance of various registers
  - e) Use of Computers: Business and health care soft wares
- 3 **Prescriptions – parts of prescription, legality & identification of medication related problems like drug interactions.**
- 4 **Inventory control in community pharmacy**  
Definition, various methods of Inventory Control  
ABC, VED, EOQ, Lead time, safety stock
- 5 **Pharmaceutical care**  
Definition and Principles of Pharmaceutical care.
- 6 **Patient counselling**  
Definition, outcomes, various stages, barriers, Strategies to overcome barriers  
Patient information leaflets- content, design, & layouts, advisory labels
- 7 **Patient medication adherence**  
Definition, Factors affecting medication adherence, role of pharmacist in improving the adherence.
- 8 **Health screening services**  
Definition, importance, methods for screening  
Blood pressure/ blood sugar/ lung function  
and Cholesterol testing
- 9 **OTC Medication- Definition, OTC medication list & Counselling**
- 10 **Health Education**  
WHO Definition of health, and health promotion, care for children, pregnant & breast feeding women, and geriatric patients.  
Commonly occurring Communicable Diseases, causative agents,  
Clinical presentations and prevention of communicable diseases – Tuberculosis, Hepatitis, Typhoid, Amoebiasis, Malaria, Leprosy, Syphilis, Gonorrhea and AIDS  
Balance diet, and treatment & prevention of deficiency disorders  
Family planning – role of pharmacist
- 11 **Responding to symptoms of minor ailments**  
Relevant pathophysiology, common drug therapy to,  
Pain, GI disturbances (Nausea, Vomiting, Dyspepsia, diarrhea, constipation), Pyrexia, Ophthalmic symptoms, worms infestations.
- 12 **Essential Drugs concept and Rational Drug Therapy**  
Role of community pharmacist
- 13 **Code of ethics for community pharmacists**



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## 4.2 HOSPITAL PHARMACY (THEORY)

Theory : 2 Hrs. /Week

1. **Scope:** In the changing scenario of pharmacy practice in India, for successful practice of Hospital Pharmacy, the students are required to learn various skills like drug distribution, drug dispensing, manufacturing of parenteral preparations, drug information, **patient counselling, and therapeutic drug monitoring for improved patient care.**
2. **Objectives:** Upon completion of the course, the student shall be able to –
  - a. know various drug distribution methods;
  - b. know the professional practice management skills in hospital pharmacies;
  - c. **provide unbiased drug information to the doctors;**
  - d. know the manufacturing practices of various formulations in hospital set up;
  - e. appreciate the practice based research methods; and
  - f. appreciate the stores management and inventory control.

**Text books: (latest editions)**

- a. Hospital pharmacy by William E. Hassan
- b. A text book of Hospital Pharmacy by S.H. Merchant & Dr. J.S. Qadry. Revised by R.K. Goyal & R.K. Parikh

**References:**

- a. WHO consultative group report.
- b. R.P.S. Vol.2. Part –B; Pharmacy Practice section.
- c. Handbook of pharmacy – health care. Edt. Robin J Harman. The Pharmaceutical press.

### 3. Lecture wise programme :

**Topics**

- 1 **Hospital - its Organisation and functions**
- 2 **Hospital pharmacy-Organisation and management**
  - a) Organizational structure-Staff, Infrastructure & work load statistics
  - b) Management of materials and finance
  - c) Roles & responsibilities of hospital pharmacist
- 3 **The Budget – Preparation and implementation**
- 4 **Hospital drug policy**
  - a) Pharmacy and Therapeutic committee (PTC)
  - b) Hospital formulary
  - c) Hospital committees
    - Infection committee
    - Research and ethical committee
  - d) developing therapeutic guidelines
  - e) Hospital pharmacy communication - Newsletter



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**5 Hospital pharmacy services**

- a) Procurement & warehousing of drugs and Pharmaceuticals
- b) Inventory control
  - Definition, various methods of Inventory Control
  - ABC, VED, EOQ, Lead time, safety stock
- c) Drug distribution in the hospital
  - i) Individual prescription method
  - ii) Floor stock method
  - iii) Unit dose drug distribution method
- d) Distribution of Narcotic and other controlled substances
- e) Central sterile supply services – Role of pharmacist

**6 Manufacture of Pharmaceutical preparations**

- a) Sterile formulations – large and small volume parenterals
- b) Manufacture of Ointments, Liquids, and creams
- c) Manufacturing of Tablets, granules, capsules, and powders
- d) Total parenteral nutrition

**7 Continuing professional development programs**

Education and training

**8 Radio Pharmaceuticals – Handling and packaging**

**9 Professional Relations and practices of hospital pharmacist**

**4.2 HOSPITAL PHARMACY (PRACTICAL)**

Practical : 3 Hrs./Week

- 1. Assessment of drug interactions in the given prescriptions
- 2. Manufacture of parenteral formulations, powders.
- 3. Drug information queries.
- 4. Inventory control

**List of Assignments:**

- 1. Design and Management of Hospital pharmacy department for a 300 bedded hospital.
- 2. Pharmacy and Therapeutics committee – Organization, functions, and limitations.
- 3. Development of a hospital formulary for 300 bedded teaching hospital
- 4. Preparation of ABC analysis of drugs sold in one month from the pharmacy.
- 5. Different phases of clinical trials with elements to be evaluated.
- 6. Various sources of drug information and systematic approach to provide unbiased drug information.
- 7. Evaluation of prescriptions generated in hospital for drug interactions and find out the suitable management.



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## Curricular Content – Environment and Sustainability



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Directorate of Technical Education, Mumbai (MS), Permanently affiliated to  
Savitribai Phule Pune University, Pune & Approved under Section (2 (f) & 12 (B) of UGC Act, 1956

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Prof. Dr. P. D. Chaudhari  
M.Pharm., Ph.D.  
Principal

Prof. Dr. Gajanan R. Ekbote  
M.S., M.N.A.M.S.  
Chairman, Business Council  
P.E.Society, Pune

Ref :

Date :

## Environment and Sustainability

STRIVING TOWARDS EXCELLENCE FOREVER





**BP112RBP.REMEDIAL BIOLOGY (Practical)**  
**2 Hours/week**

1. Introduction to experiments in biology
  - a) Study of Microscope
  - b) Section cutting techniques
  - c) Mounting and staining
  - d) Permanent slide preparation
2. Study of cell and its inclusions
3. Study of Stem, Root, Leaf, seed, fruit, flower and their modifications
4. Detailed study of frog by using computer models
5. Microscopic study and identification of tissues pertinent to Stem, Root, Leaf, seed, fruit and flower
6. Identification of bones
7. Determination of blood group
8. Determination of blood pressure
9. Determination of tidal volume

**Reference Books**

1. Practical human anatomy and physiology. by S.R.Kale and R.R.Kale.
2. A Manual of pharmaceutical biology practical by S.B.Gokhale, C.K.Kokate and S.P.Shriwastava.
3. Biology practical manual according to National core curriculum .Biology forum of Karnataka. Prof .M.J.H.Shafi



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**BP 206 T. ENVIRONMENTAL SCIENCES (Theory)**

**30 hours**

**Scope:** Environmental Sciences is the scientific study of the environmental system and the status of its inherent or induced changes on organisms. It includes not only the study of physical and biological characters of the environment but also the social and cultural factors and the impact of man on environment.

**Objectives:** Upon completion of the course the student shall be able to:

1. Create the awareness about environmental problems among learners.
2. Impart basic knowledge about the environment and its allied problems.
3. Develop an attitude of concern for the environment.
4. Motivate learner to participate in environment protection and environment improvement.
5. Acquire skills to help the concerned individuals in identifying and solving environmental problems.
6. Strive to attain harmony with Nature.

**COURSE CONTENT**

**Unit-I**

The Multidisciplinary nature of environmental studies Natural Resources Renewable and non-renewable resources:

**10hours**

Natural resources and associated problems

- a) Forest resources; b) Water resources; c) Mineral resources; d) Food resources; e) Energy resources; f) Land resources: Role of an individual in conservation of natural resources

**Unit-II**

Ecosystems

- Concept of an ecosystem.
- Structure and function of an ecosystem.
- Introduction, types, characteristic features, structure and function of the ecosystems: Forest ecosystem; Grassland ecosystem; Desert ecosystem; Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)

**10hours**

**Unit- III**

**Environmental Pollution: Air pollution; Water pollution; Soil pollution**

**10 hours**

**Recommended Books:**

1. Y.K. Sing, Environmental Science, New Age International Pvt, Publishers, Bangalore
2. Agarwal, K.C. 2001 Environmental Biology, Nidi Publ. Ltd. Bikaner.
3. Bharucha Erach, The Biodiversity of India, Mapin Publishing Pvt. Ltd., Ahmedabad – 380 013, India,
4. Brunner R.C., 1989, Hazardous Waste Incineration, McGraw Hill Inc. 480p
5. Clark R.S., Marine Pollution, Clanderson Press Oxford
6. Cunningham, W.P. Cooper, T.H. Gorhani, E & Hepworth, M.T. 2001, Environmental Encyclopedia, Jaico Publ. House, Mumbai, 1196p
7. De A.K., Environmental Chemistry, Wiley Eastern Ltd.
8. Down of Earth, Centre for Science and Environment



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7. Cooper and Gunn's: Tutorial Pharmacy, CBS Publisher and Distribution.
8. Pepler: Microbial Technology.
9. I.P., B.P., U.S.P.- latest editions.
10. Ananthnarayan : Text Book of Microbiology, Orient-Longman, Chennai
11. Edward: Fundamentals of Microbiology.
12. N.K.Jain: Pharmaceutical Microbiology, Vallabh Prakashan, Delhi
13. Bergeys manual of systematic bacteriology, Williams and Wilkins- A Waverly company
14. "Nutrition Probiotics and prebiotics" by Pamela Mason; The Pharmaceutical Journal Vol 266 No 7132 p118-121.
15. Alfonso R. Gennaro Remington. The Science and Practice of Pharmacy, Lippincott Williams, New Delhi.

**BP 304 T. PHARMACEUTICAL ENGINEERING (Theory)**

**45 Hours**

**Scope:**


This course is designed to impart a fundamental knowledge on the art and science of various unit operations used in pharmaceutical industry.

**Objectives:**

Upon completion of the course student shall be able:

1. To know various unit operations used in Pharmaceutical industries.
2. To understand the material handling techniques.
3. To perform various processes involved in pharmaceutical manufacturing process.
4. To carry out various test to prevent environmental pollution.
5. To appreciate and comprehend significance of plant lay out design for optimum use of resources.
6. To appreciate the various preventive methods used for corrosion control in Pharmaceutical industries.



  
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Course content:

UNIT-I

10 Hours

- Flow of fluids: Types of manometers, Reynolds number and its significance, Bernoulli's theorem and its applications, Energy losses, Orifice meter, Venturimeter, Pitot tube and Rotometer.
- Size Reduction: Objectives, Mechanisms & Laws governing size reduction, factors affecting size reduction, principles, construction, working, uses, merits and demerits of Hammer mill, ball mill, fluid energy mill, Edge runner mill & end runner mill.
- Size Separation: Objectives, applications & mechanism of size separation, official standards of powders, sieves, size separation Principles, construction, working, uses, merits and demerits of Sieve shaker, cyclone separator, Air separator, Bag filter & elutriation tank.

UNIT-II

10 Hours

- Heat Transfer: Objectives, applications & Heat transfer mechanisms. Fourier's law, Heat transfer by conduction, convection & radiation. Heat interchangers & heat exchangers.
- Evaporation: Objectives, applications and factors influencing evaporation, differences between evaporation and other heat process. principles, construction, working, uses, merits and demerits of Steam jacketed kettle, horizontal tube evaporator, climbing film evaporator, forced circulation evaporator, multiple effect evaporator & Economy of multiple effect evaporator.
- Distillation: Basic Principles and methodology of simple distillation, flash distillation, fractional distillation, distillation under reduced pressure, steam distillation & molecular distillation

UNIT- III

08 Hours

- Drying: Objectives, applications & mechanism of drying process, measurements & applications of Equilibrium Moisture content, rate of drying curve. principles,



  
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construction, working, uses, merits and demerits of Tray dryer, drum dryer spray dryer, fluidized bed dryer, vacuum dryer, freeze dryer.

- Mixing: Objectives, applications & factors affecting mixing, Difference between solid and liquid mixing, mechanism of solid mixing, liquids mixing and semisolids mixing. Principles, Construction, Working, uses, Merits and Demerits of Double cone blender, twin shell blender, ribbon blender, Sigma blade mixer, planetary mixers, Propellers, Turbines, Paddles & Silverson Emulsifier,

#### UNIT-IV

08 Hours

- Filtration: Objectives, applications, Theories & Factors influencing filtration, filter aids, filter medias. Principle, Construction, Working, Uses, Merits and demerits of plate & frame filter, filter leaf, rotary drum filter, Meta filter & Cartridge filter, membrane filters and Seidtz filter.
- Centrifugation: Objectives, principle & applications of Centrifugation, principles, construction, working, uses, merits and demerits of Perforated basket centrifuge, Non-perforated basket centrifuge, semi continuous centrifuge & super centrifuge.

#### UNIT- V

07 Hours

- Materials of pharmaceutical plant construction, Corrosion and its prevention: Factors affecting during materials selected for Pharmaceutical plant construction, Theories of corrosion, types of corrosion and there prevention. Ferrous and nonferrous metals, inorganic and organic non metals, basic of material handling systems.

#### Recommended Books:

1. Paradkar A. Introduction to Pharmaceutical Engineering. Eleventh Edition, Nirali Prakashan, Pune. 2007.
2. Badger WL, Banchero JT. Introduction to Chemical Engineering. International Edition, McGraw Hill Book Company. 1955.
3. Subrahmanyam CVS, Thimma Setty J, Sarasija Suresh, Kusum Devi V. Pharmaceutical Engineering Unit Operations-II. Second Edition, Vallabh Prakashan, Delhi. 2011.



  
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10. Determination of stability constant and donor acceptor ratio of PABA-Caffeine complex by solubility method
11. Determination of stability constant and donor acceptor ratio of Cupric-Glycine complex by pH titration method.
12. Determination of Refractive index of given sample.
13. Determination of thermodynamic parameters using solubility studies.

**Recommended Books:**


1. Physical Pharmacy by Alfred Martin
2. Experimental Pharmaceutics by Eugene, Parott.
3. Tutorial Pharmacy by Cooper and Gunn.
4. Stocklosam J. Pharmaceutical Calculations, Lea &Febiger, Philadelphia.
5. Liberman H.A, Lachman C., Pharmaceutical Dosage forms, Tablets, Volume-1 to 3, MarcelDekkar Inc.
6. Liberman H.A, Lachman C, Pharmaceutical Dosage forms. Disperse systems, volume 1, 2, 3. Marcel Dekkar Inc.
7. Physical Pharmaceutics by Ramasamy C and ManavalanR.
8. LaboratoryManual of Physical Pharmaceutics, C.V.S. Subramanyam, J.Thimma settee
9. Physical Pharmaceutics by C.V.S. Subramanyam
10. Text book of Physical Pharmacy, by Gaurav Jain & Roop K. Khar

**BP 307P.PHARMACEUTICAL MICROBIOLOGY (Practical)**

**4 Hours/week**

1. Introduction and study of different equipments and processing, e.g., B.O.D. incubator, laminar flow or aseptic hood, autoclave, hot air sterilizer, deep freezer, refrigerator, microscopes used in experimental microbiology.
2. Sterilization of glassware, preparation and sterilization of media.
3. Sub culturing of bacteria and fungus. Nutrient stabs and slants preparations.



  
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4. Staining methods- Simple, Grams staining and acid fast staining (Demonstration with practical).
5. Isolation of pure culture of micro-organisms by multiple streak plate technique and other techniques.
6. Microbiological assay of antibiotics by cup plate method and other methods
7. Motility determination by Hanging drop method.
8. Sterility testing of pharmaceuticals (Any two samples).
9. Bacteriological analysis of water
10. Biochemical test of any one microorganism.

**Recommended Books**

1. W.B. Hugo and A.D. Russel: Pharmaceutical Microbiology, Blackwell Scientific publications, Oxford London.
2. Prescott and Dunn., Industrial Microbiology, 4th edition, CBS Publishers & Distributors, Delhi.
3. Pelczar, Chan Kreig, Microbiology, Tata McGraw Hill edn.
4. Malcolm Harris, Balliere Tindall and Cox: Pharmaceutical Microbiology.
5. Rose: Industrial Microbiology.
6. Probiher, Himsdill et al: Fundamentals of Microbiology, 9th ed. Japan
7. Cooper and Gunn's: Tutorial Pharmacy, CBS Publisher and Distribution.
8. Peppler: Microbial Technology.
9. I.P., B.P., U.S.P.- latest editions.
10. Ananthnarayan : Text Book of Microbiology, Orient-Longman, Chennai
11. Edward: Fundamentals of Microbiology.
12. N.K.Jain: Pharmaceutical Microbiology, Vallabh Prakashan, Delhi
13. Bergeys manual of systematic bacteriology, Williams and Wilkins- A Waverly company
14. "Nutrition Probiotics and prebiotics" by Pamela Mason; The Pharmaceutical Journal Vol 266 No 7132 p118-121.
15. Alfonso R. Gemaro Remington. The Science and Practice of Pharmacy, Lippincott



  
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**BP 405 T.PHARMACOGNOSY AND PHYTOCHEMISTRY I (Theory) - 45 Hours**

**Scope:** The subject involves the fundamentals of Pharmacognosy like scope, classification of crude drugs, their identification and evaluation, phytochemicals present in them and their medicinal properties.

**Objectives:** Upon completion of the course, the student shall be able

1. to know the techniques in the cultivation and production of crude drugs
2. to know the crude drugs, their uses and chemical nature
3. know the evaluation techniques for the herbal drugs
4. to carry out the microscopic and morphological evaluation of crude drugs

**Course Content:**

**UNIT-I**

**10 Hours**

**Introduction to Pharmacognosy:**

- (a) Definition, history, scope and development of Pharmacognosy
- (b) Sources of Drugs – Plants, Animals, Marine & Tissue culture
- (c) Organized drugs, unorganized drugs (dried latex, dried juices, dried extracts, gums and mucilages, oleoresins and oleo- gum -resins).

**Classification of drugs:**

Alphabetical, morphological, taxonomical, chemical, pharmacological, chemo and sero taxonomical classification of drugs

**Quality control of Drugs of Natural Origin:**

- Adulteration of drugs of natural origin. Evaluation by organoleptic, microscopic, physical, chemical and biological methods and properties.
- Quantitative microscopy of crude drugs including lycopodium spore method, leaf constants, camera lucida and diagrams of microscopic objects to scale with camera lucida.



  
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**UNIT-II**

**10 Hours**

**Cultivation, Collection, Processing and storage of drugs of natural origin:**

- Cultivation and Collection of drugs of natural origin
- Factors influencing cultivation of medicinal plants.
- Plant hormones and their applications.
- Polyploidy, mutation and hybridization with reference to medicinal plants

**Conservation of medicinal plants**

**UNIT-III**

**07 Hours**

**Plant tissue culture:**

- Historical development of plant tissue culture, types of cultures, Nutritional requirements, growth and their maintenance.
- Applications of plant tissue culture in pharmacognosy.
- Edible vaccines

**UNIT-IV**

**10 Hours**

**Plant description, morphology and anatomy:**

Leaves, Roots, Barks, Wood, Flowers, Fruits, Seeds, subterranean organs

**Introduction to secondary metabolites:**

Definition, classification, properties and test for identification of Alkaloids, Glycosides, Flavonoids, Tannins, Volatile oil and Resins

**UNIT-V**

**08 Hours**

Study of biological source, chemical nature and uses of drugs of natural origin containing following drugs

**Plant Products:**

- Fibers - Cotton, Jute, Hemp
- Hallucinogens, Teratogens, Natural allergens



  
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common reactions like hydrolysis & oxidation. Accelerated stability testing in expiration dating of pharmaceutical dosage forms. Photolytic degradation and its prevention.

**Recommended Books:**

1. Physical Pharmacy by Alfred Martin, Sixth edition
2. Experimental pharmaceutics by Eugene, Parott.
3. Tutorial pharmacy by Cooper and Gunn.
4. Stocklosam J. Pharmaceutical calculations, Lea & Febiger, Philadelphia.
5. Liberman H.A, Lachman C., Pharmaceutical Dosage forms, Tablets, Volume-1 to 3, Marcel Dekkar Inc.
6. Liberman H.A, Lachman C, Pharmaceutical dosage forms. Disperse systems, volume 1 2, 3. Marcel Dekkar Inc.
7. Physical Pharmaceutics by Ramasamy C, and Manavalan R.

**BP 404 T. PHARMACOLOGY-I (Theory)**

**45Hours**

**Scope:**

The main purpose of the subject is to understand what drugs do to the living organisms and how their effects can be applied to therapeutics. The subject covers the information about the drugs, mechanism of action, physiological and biochemical effects (Pharmacodynamics) as well as absorption, distribution, metabolism and excretion (pharmacokinetics) along with the adverse effects, clinical uses, interactions, doses, contraindications and route of administration of different classes of drugs.

**Objectives:** Upon completion of the subject, student shall be able to –

1. Understand the pharmacological actions of different categories of drugs.
2. Explain the mechanism of action at organ system/sub cellular/macromolecular levels.
3. Apply the basic pharmacological knowledge in the prevention and treatment of various diseases.
4. Observe the effects of drugs on animal by simulated experiments.



  
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5. Appreciate correlation of pharmacology with other bio medical sciences.

**Course Content:**

**Unit-I**

**General Pharmacology:** 06 Hrs

**Introduction to Pharmacology** 03 Hrs

Definition, Historical landmarks and scope of pharmacology, Nature and source of drugs, Essential drugs concept and Routes of drug administration.

Dose response relationship, Therapeutic index, Agonists, Antagonists (competitive and non-competitive), Combined effects of drugs.

Factors modifying drug action.

**Pharmacokinetics** 03 Hrs

Membrane transport, Absorption, Distribution, Metabolism and Excretion of drugs. Enzyme induction, Enzyme inhibition, Introduction to kinetics of elimination.

**Unit-II**

**General Pharmacology** 12 Hrs

**Pharmacodynamics:** 07

Principles and mechanisms of drug action.

Receptor theories and classification of receptors, regulation of receptors. Drug receptors interactions, Signal transduction mechanisms, G-protein-coupled receptors, Ion channel receptors

Introduction to transmembrane enzyme linked receptors, JAK-STAT binding receptors and receptors that regulate transcription factors, Spare receptors.

**Adverse drug reactions:** 02

Addiction, Tolerance, Dependence, Tachyphylaxis, Idiosyncrasy, Allergy (explain with suitable examples).

**Drug interactions:** 03

Pharmacokinetic and pharmacodynamic drug interactions.



  
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**Drug discovery and clinical evaluation of new drugs:**

Introduction to drug discovery, Preclinical evaluation and Clinical trials.

Introduction to Pharmacovigilance

**Unit III**

**Pharmacology of drugs acting on Peripheral Nervous System** 08 Hrs

Introduction to Autonomic Nervous System, Parasympathomimetics, 01

Parasympatholytics, Sympathomimetics and Sympatholytics.

Neuromuscular blocking agents and skeletal muscle relaxants (peripheral). 02

Local anaesthetic agents. 03

Drugs used in myasthenia gravis and glaucoma 02

**Unit-IV**

**Pharmacology of drugs acting on central nervous system** 10Hrs

Neurohumoral transmission in the C.N.S.- 01

Special emphasis to be given on importance of various neurotransmitters like with GABA, Glutamate, Glycine, Serotonin, Dopamine.

General anaesthetics and pre-anaesthetics 02

Sedatives, Hypnotics and Centrally acting muscle relaxants 03

Anti-epileptics 02

Alcohol and Disulfiram 02

**Unit-V**

**Pharmacology of drugs acting on Central Nervous System** 09Hrs

Psychopharmacological agents: Antipsychotics, Antidepressants, Anti-anxiety agents, anti-manics and Hallucinogens 03

Drugs used in Parkinson's disease and Alzheimer's disease 02

CNS stimulants and Nootropics 02

Opioid analgesics and antagonists (including addiction, abuse, tolerance and dependence) 02



  
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REFERENCES:

1. Rang H. P., Dale M. M., Ritter J. M., Flower R. J., Rang and Dale's Pharmacology, Churchill Livingstone Elsevier.
2. Katzung B. G., Masters S. B., Trevor A. J., Basic and clinical pharmacology, Tata Mc Graw-Hill
3. Goodman and Gilman's, The Pharmacological Basis of Therapeutics
4. Marry Anne K. K., Lloyd Yee Y., Brian K. A., Robbin L.C., Joseph G. B., Wayne A. K., Bradley R.W., Applied Therapeutics, The Clinical use of Drugs, The Point Lippincott Williams &Wilkins
5. Mycek M.J, Gelnet S.B and Perper M.M. Lippincott's Illustrated Reviews-Pharmacology
6. K.D.Tripathi. Essentials of Medical Pharmacology, JAYPEE Brothers Medical Publishers (P) Ltd, New Delhi.
7. Sharma H. L., Sharma K. K., Principles of Pharmacology, Paras medical publisher
8. Modern Pharmacology with clinical Applications, by Charles R. Craig & Robert,
9. Barar, F.S.K., Essentials of Pharmacotherapeutics; S. Chand and Company, New Delhi.
10. Das, M. M. and Dutta S. K. : R. Ghosh, s Modern Concepts on pharmacology and Therapeutics, ( HILTON and Co. Calcutta )
11. Satoskar , R.S. and Bhandarkar S.D. Pharmacology and Pharmacotherapeutics (PopularPrakashan, Bombay).
12. Harrison's Principle and Practice of Medicine, 18th Edition, Churchill, Livingston, London.
13. Roger and Walker, Clinical Pharmacy and Therapeutics, Churchill, Livingston, London.
14. Dipiro Joseph L. A pathphysiological Approach, Elsevier.
15. Davidson's Principle of Internal Medicine, McGraw-Hill companies.
16. Chatterjee, C.C., Human Physiology. Medical Allied Agency, Kolkata.
17. Ganong, W.F., Review of Medical Physiology. Prentice-Hall International, London.



  
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**Recommended Books: (Latest Editions)**

1. Pharmaceutical dosage forms - Tablets, volume 1 -3 by H.A. Liberman, Leon Lachman & J.B. Schwartz
2. Pharmaceutical dosage form - Parenteral medication vol- 1&2 by Liberman & Lachman
3. Pharmaceutical dosage form disperse system VOL-1 by Liberman & Lachman
4. Modern Pharmaceutics by Gilbert S. Banker & C.T. Rhodes, 3rd Edition
5. Remington: The Science and Practice of Pharmacy, 20th edition Pharmaceutical Science (RPS)
6. Theory and Practice of Industrial Pharmacy by Liberman & Lachman
7. Pharmaceutics- The science of dosage form design by M.E. Aulton, Churchill livingstone, Latest edition
8. Introduction to Pharmaceutical Dosage Forms by H. C. Ansel, Lea & Febiger, Philadelphia, 5th edition, 2005
9. Drug stability - Principles and practice by Cartensen & C.J. Rhodes, 3rd Edition, Marcel Dekker Series, Vol 107.

**BP503.T. PHARMACOLOGY-II (Theory)**

**45 Hours**

**Scope:**

This subject is intended to impart the fundamental knowledge on various aspects (classification, mechanism of action, therapeutic effects, clinical uses, side effects and contraindications) of drugs acting on different systems of body and in addition, emphasis on the basic concepts of bioassay.

**Objectives:** Upon completion of this course the student should be able to

1. Understand the mechanism of drug action and its relevance in the treatment of different diseases



  
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2. Demonstrate isolation of different organs/tissues from the laboratory animals by simulated experiments
3. Demonstrate the various receptor actions using isolated tissue preparation
4. Appreciate correlation of pharmacology with related medical sciences

**Course Content:**

**UNIT-I**

10hr

**Pharmacology of drugs acting on cardiovascular system**

- a. Introduction to hemodynamic and electrophysiology of heart.
- b. Drugs used in congestive heart failure
- c. Anti-hypertensive drugs.
- d. Anti-anginal drugs.
- e. Anti-arrhythmic drugs.
- f. Anti-hyperlipidemic drugs.

**UNIT-II**

**Pharmacology of drugs acting on cardiovascular system**

10hr

- a. Drug used in the therapy of shock.
- b. Hematinics, coagulants and anticoagulants.
- c. Fibrinolytics and anti-platelet drugs
- d. Plasma volume expanders

**Pharmacology of drugs acting on urinary system**

- a. Diuretics
- b. Anti-diuretics,

**UNIT-III**

**Autocoids and related drugs**

10hr

- a. Introduction to autocoids and classification
- b. Histamine, 5-HT and their antagonists.
- c. Prostaglandins, Thromboxanes and Leucotrienes
- d. Angiotensin, Bradykinin and Substance P.
- e. Non-steroidal anti-inflammatory agents
- f. Anti-gout drugs
- g. Antirheumatic drugs



  
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**UNIT-IV**

**Pharmacology of drugs acting on endocrine system**

08hr

- a. Basic concepts in endocrine pharmacology.
- b. Anterior Pituitary hormones- analogues and their inhibitors.
- c. Thyroid hormones- analogues and their inhibitors.
- d. Hormones regulating plasma calcium level- Parathormone, Calcitonin and Vitamin-D.
- d. Insulin, Oral Hypoglycemic agents and glucagon.
- e. ACTH and corticosteroids.

**UNIT-V**

**Pharmacology of drugs acting on endocrine system**

07hr

- a. Androgens and Anabolic steroids.
- b. Estrogens, progesterone and oral contraceptives.
- c. Drugs acting on the uterus.


**Bioassay**

- a. Principles, applications and types of bioassay.
- b. Bioassay of insulin, oxytocin, vasopressin, ACTH, d-tubocurarine, digitalis, histamine and 5-HT

**Recommended Books (Latest Editions)**

1. Rang H. P., Dale M. M., Ritter J. M., Flower R. J., Rang and Dale's Pharmacology, Churchill Livingstone Elsevier
2. Katzung B. G., Masters S. B., Trevor A. J., Basic and clinical pharmacology, Tata McGraw-Hill
3. Goodman and Gilman's, The Pharmacological Basis of Therapeutics
4. Marry Anne K. K., Lloyd Yee Y., Brian K. A., Robbin L.C., Joseph G. B., Wayne A.K., Bradley R.W., Applied Therapeutics, The Clinical use of Drugs. The Point Lippincott Williams & Wilkins
5. Mycek M.J., Gelnet S.B and Perper M.M. Lippincott's Illustrated Reviews-Pharmacology
6. K. D. Tripathi. Essentials of Medical Pharmacology, JAYPEE Brothers Medical Publishers (P) Ltd, New Delhi.
7. Sharma H. L., Sharma K. K., Principles of Pharmacology, Paras medical publisher



  
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**Volatile oils:** Mentha, Clove, Cinnamon, Fennel, Coriander,

**Tannins:** Catechu, Pterocarpus

**Resins:** Benzoin, Guggul, Ginger, Asafoetida, Myrrh, Colophony

**Glycosides:** Senna, Aloes, Bitter Almond

**Iridoids, Other terpenoids & Naphthaquinones:** Gentian, Artemisia, taxus, carotenoids

**UNIT-III**

**06 Hours**

**Isolation, Identification and Analysis of Phytoconstituents**

a) Terpenoids: Menthol, Citral, Artemisin

b) Glycosides: Glycyrrhetic acid & Rutin

c) Alkaloids: Atropine, Quinine, Reserpine, Caffeine

d) Resins: Podophyllotoxin, Curcumin

**UNIT-IV**

**06 Hours**

**Industrial production, estimation and utilization of the following phytoconstituents:**

Forskolin, Sennoside, Artemisinin, Diosgenin, Digoxin, Atropine, Podophyllotoxin, Caffeine,

Taxol, Vincristine and Vinblastine

**UNIT V**

**12 Hours**

**Basics of Phytochemistry**

Methods of extraction (Soxhlet, Maceration, Percolation, Supercritical fluid extraction,

Microwave assisted extraction, Ultrasound assisted extraction, Solid Phase Extraction)

Application of latest techniques like Spectroscopy, Chromatography and electrophoresis in the isolation, purification and identification of crude drugs

**Non-chromatographic separation techniques:** Fractional distillation, fractional liberation, sublimation, chemical derivatization, fractional crystallization, centrifugation, Froth floatation technique.

**BP 505 T. PHARMACEUTICAL JURISPRUDENCE (Theory)**

**45 Hours**

**Scope:**

This course is designed to impart basic knowledge on important legislations related to the profession of pharmacy in India.



  
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**Objectives:** Upon completion of the course, the student shall be able to understand:

1. The Pharmaceutical legislations and their implications in the development and marketing of pharmaceuticals.
2. Various Indian pharmaceutical Acts and Laws
3. The regulatory authorities and agencies governing the manufacture and sale of pharmaceuticals
4. The code of ethics during the pharmaceutical practice

**Course Content:**

**UNIT-I**

**10 Hours**

**Drugs and Cosmetics Act, 1940 and its rules 1945:**

Objectives, Definitions, Legal definitions of schedules to the Act and Rules Import of drugs – Classes of drugs and cosmetics prohibited from import, Import under license or permit. Offences and penalties. Manufacture of drugs – Prohibition of manufacture and sale of certain drugs,

Conditions for grant of license and conditions of license for manufacture of drugs, Manufacture of drugs for test, examination and analysis, manufacture of new drug, loan license and repacking license.

**UNIT-II**

**10 Hours**

**Drugs and Cosmetics Act, 1940 and its rules 1945.**

Detailed study of Schedule G, H, M, N, P, T, U, V, X, Y, Part XII B, Sch F & DMR (OA) Sale of Drugs – Wholesale, Retail sale and restricted license. Offences and penalties Labeling & packing of drugs- General labeling requirements and specimen labels for drugs and cosmetics, List of permitted colors. Offences and penalties.

Administration of the Act and Rules – Drugs Technical Advisory Board, Central drugs Laboratory, Drugs Consultative Committee, Government drug analysts, Licensing authorities, controlling authorities, Drugs Inspectors



  
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**UNIT-III**

**10 Hours**

**Pharmacy Act –1948:** Objectives, Definitions, Pharmacy Council of India; its constitution and functions, Education Regulations, State and Joint state pharmacy councils; constitution and functions, **Registration of Pharmacists, Offences and 122 Penalties**

**Medicinal and Toilet Preparation Act –1955:** Objectives, Definitions, Licensing, Manufacture In bond and Outside bond, Export of alcoholic preparations, Manufacture of Ayurvedic, Homeopathic, Patent & Proprietary Preparations. Offences and Penalties.

**Narcotic Drugs and Psychotropic substances Act-1985 and Rules:** Objectives, Definitions, Authorities and Officers, **Constitution and Functions of narcotic & Psychotropic Consultative Committee**, National Fund for Controlling the Drug Abuse, Prohibition, Control and Regulation, **opium poppy cultivation and production of poppy straw, manufacture, sale and export of opium, Offences and Penalties**

**UNIT-IV**

**08 Hours**

**Study of Salient Features of Drugs and Magic Remedies Act and its rules:** Objectives, Definitions, Prohibition of certain advertisements, Classes of Exempted advertisements, Offences and Penalties

**Prevention of Cruelty to animals Act-1960:** Objectives, Definitions, Institutional Animal Ethics Committee, **CPCSEA guidelines for Breeding and Stocking of Animals**, Performance of Experiments, Transfer and acquisition of animals for experiment, Records, Power to suspend or revoke registration, Offences and Penalties

**National Pharmaceutical Pricing Authority:** Drugs Price Control Order (DPCO)- 2013. Objectives, Definitions, Sale prices of bulk drugs, Retail price of formulations, Retail price and ceiling price of scheduled formulations, National List of Essential Medicines (NLEM)



  
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**UNIT-V**

**07 Hours**

**Pharmaceutical Legislations** – A brief review, Introduction, Study of drugs enquiry committee, Health survey and development committee, Hathi committee and Mudaliar committee

**Code of Pharmaceutical ethics** Definition, Pharmacist in relation to his job, trade, medical profession and his profession, Pharmacist's oath

**Medical Termination of Pregnancy Act**

**Right to Information Act**

**Introduction to Intellectual Property Rights (IPR)**

**Recommended books: (Latest Edition)**

1. Forensic Pharmacy by B. Suresh
2. Text book of Forensic Pharmacy by B.M. Mithal
3. Hand book of drug law-by M.L. Mehra
4. A text book of Forensic Pharmacy by N.K. Jain
5. Drugs and Cosmetics Act/Rules by Govt. of India publications.
6. Medicinal and Toilet preparations act 1955 by Govt. of India publications.
7. Narcotic drugs and psychotropic substances act by Govt. of India publications
8. Drugs and Magic Remedies act by Govt. of India publication
9. Bare Acts of the said laws published by Government. Reference books (Theory) 124

**BP 506 P. Industrial Pharmacy I (Practical)**

**4 Hours/week**

1. Preformulation studies on paracetamol/aspirin/or any other drug
2. Preparation and evaluation of Paracetamol tablets
3. Preparation and evaluation of Aspirin tablets
4. Coating of tablets- film coating of tablets/granules
5. Preparation and evaluation of Tetracycline capsules



  
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2. Katzung B. G., Masters S. B., Trevor A. J., Basic and clinical pharmacology, Tata McGraw-Hill
3. Goodman and Gilman's, The Pharmacological Basis of Therapeutics
4. Marry Anne K. K., Lloyd Yee Y., Brian K. A., Robbin L.C., Joseph G. B., Wayne A.K., Bradley R.W., Applied Therapeutics, The Clinical use of Drugs. The Point Lippincott Williams & Wilkins
5. Mycek M.J, Gelnet S.B and Perper M.M. Lippincott's Illustrated Reviews- Pharmacology
6. K.D.Tripathi, Essentials of Medical Pharmacology, JAYPEE Brothers Medical Publishers (P) Ltd, New Delhi.
7. Sharma H. L., Sharma K. K., Principles of Pharmacology, Paras medical publisher
8. Modern Pharmacology with clinical Applications, by Charles R.Craig & Robert,
9. N.Udupa and P.D. Gupta, Concepts in Chronopharmacology.

#### BP 603 T. HERBAL DRUG TECHNOLOGY (Theory)

**Scope:** This subject gives the student the knowledge of basic understanding of herbal drug industry, the quality of raw material, guidelines for quality of herbal drugs, herbal cosmetics, natural sweeteners, nutraceutical etc. The subject also emphasizes on Good Manufacturing Practices (GMP), patenting and regulatory issues of herbal drugs

**Objectives:** Upon completion of this course the student should be able to:

1. understand raw material as source of herbal drugs from cultivation to herbal drug product
2. know the WHO and ICH guidelines for evaluation of herbal drugs
3. know the herbal cosmetics, natural sweeteners, nutraceuticals
4. appreciate patenting of herbal drugs, GMP.

**Course content:**

#### UNIT-I

11 Hours

Herbs as raw materials



  
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Definition of herb, herbal medicine, herbal medicinal product, herbal drug preparation Source of Herbs Selection, identification and authentication of herbal materials Processing of herbal raw material

#### **Biodynamic Agriculture**

Good agricultural practices in cultivation of medicinal plants including Organic farming.

Pest and Pest management in medicinal plants: Biopesticides/Bioinsecticides.

#### **Indian Systems of Medicine**

- a) Basic principles involved in Ayurveda, Siddha, Unani and Homeopathy
- b) Preparation and standardization of Ayurvedic formulations viz Aristas and Asawas, Ghutika, Churna, Lehya and Bhasma.

#### **Pharmacognosy in various systems of medicine:**

Role of Pharmacognosy in allopathy and traditional systems of medicine namely, Ayurveda, Unani, Siddha, Homeopathy and Chinese systems of medicine.

### **UNIT-II**

**7 Hours**

#### **Nutraceuticals**

General aspects, Market, growth, scope and types of products available in the market. Health benefits and role of Nutraceuticals in ailments like Diabetes, CVS diseases, Cancer, Irritable bowel syndrome and various Gastro intestinal diseases.

Study of following herbs as health food: Alfaalfa, Chicory, Ginger, Fenugreek, Garlic, Honey, Amla, Ginseng, Ashwagandha, Spirulina

**Study of Omega-3-polyunsaturated fatty acids, Dietary fibers, Carotenoids, proanthocyanidins, and Resveratrol**

**Herbal-Drug and Herb-Food Interactions:** General introduction to interaction and classification. Study of following drugs and their possible side effects and interactions: Hypericum, kava-kava, Ginkobiloba, Ginseng, Garlic, Pepper & Ephedra

### **UNIT-III**

**10 Hours**

#### **Herbal Cosmetics**



  
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Market overview, Sources and description of raw materials of herbal origin used via, fixed oils, waxes, gums colours, perfumes, protective agents, bleaching agents, antioxidants in products such as skin care, hair care and oral hygiene products.

**Herbal excipients:**

Market overview, Herbal Excipients – Significance of substances of natural origin as excipients – colorants, sweeteners, binders, diluents, viscosity builders, disintegrants, flavors & perfumes.

**Herbal formulations :**

Market overview, Conventional herbal formulations like syrups, mixtures and tablets and Novel dosage forms like phytosomes

**UNIT- IV**

**12 Hours**

**Evaluation of Drugs** WHO & ICH guidelines for the assessment of herbal drugs Stability testing of herbal drugs.

**Patenting and Regulatory requirements of natural products:**

a) Definition of the terms: Patent, IPR, Farmers right, Breeder's right, Bioprospecting and Biopiracy

b) Patenting aspects of Traditional Knowledge and Natural Products. Case study of Curcuma & Neem.

**Regulatory Issues** - Regulations in India (ASU DTAB, ASU DCC), Regulation of manufacture of ASU drugs - Schedule Z of Drugs & Cosmetics Act for ASU drugs.

**Other issues related to export of natural products** (such as CITES Certificate, DGFT Notification, Negative list of herbs, TRAFFIC)

**UNIT-V**

**05Hours**

**General Introduction to Herbal Industry**

- Herbal drugs industry: Present scope and future prospects.
- A brief account of plant based industries and institutions involved in work on medicinal and aromatic plants in India.

**Schedule T – Good Manufacturing Practice of Indian systems of medicine**



  
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4. Bio pharmaceuticals and Pharmacokinetics-A Treatise, By D. M. Brahmarkar and Sunil B. Jaiswal, Vallabh Prakashan Pitampura, Delhi
5. Pharmacokinetics; By Milo Gibaldi Donald, R. Merceel Dekker Inc.
6. Hand Book of Clinical Pharmacokinetics, By Milo Gibaldi and Laurie Prescott by ADIS Health Science Press.
7. Biopharmaceutics; By Swarbrick
8. Clinical Pharmacokinetics, Concepts and Applications: By Rowland M, Tozer T, Ed 4, WolterKluwers – Lippincott, Williams and Wilkins.
9. Dissolution, Bioavailability and Bioequivalence, By Abdou H.M, Mack, Publishing Company, Pennsylvania 1989.
10. Biopharmaceutics and Clinical Pharmacokinetics-An introduction 4th edition Revised and expanded by Robert F Notari Marcel Dekker Inn, New York and Basel, 1987, Remington's Pharmaceutical Sciences, By Mack Publishing Company, Pennsylvania.

**BP 605 T. PHARMACEUTICAL BIOTECHNOLOGY(Theory) 45 Hours**

- Biotechnology has a long promise to revolutionize the biological sciences and technology.
- Scientific application of biotechnology in the field of genetic engineering, medicine and fermentation technology makes the subject interesting.
- Biotechnology is leading to new biological revolutions in diagnosis, prevention and cure of diseases, new and cheaper pharmaceutical drugs.
- Biotechnology has already produced transgenic crops and animals and the future promises lot more.
- It is basically a research-based subject.

**Objectives:** Upon completion of the subject student shall be able to;

1. Understanding the importance of Immobilized enzymes in Pharmaceutical Industries
2. Genetic engineering applications in relation to production of pharmaceuticals
3. Importance of Monoclonal antibodies in Industries
4. Appreciate the use of microorganisms in fermentation technology



  
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**Unit I**

10 Hours

Brief introduction to Biotechnology with reference to Pharmaceutical Sciences.

Enzyme Biotechnology- Methods of enzyme immobilization and applications.

Biosensors- Working and applications of biosensors in Pharmaceutical Industries.

Brief introduction to Protein Engineering.

Use of microbes in industry. Production of Enzymes- General consideration - Amylase, Catalase, Peroxidase, Lipase, Protease, Penicillinase.

Basic principles of genetic engineering.

**Unit II**

10 Hours

Study of cloning vectors, restriction endonucleases and DNA ligase.

Recombinant DNA technology. Application of genetic engineering in medicine.

Application of r DNA technology and genetic engineering in the production of:

i) Interferon ii) Vaccines- hepatitis- B iii) Hormones- Insulin.

Brief introduction to PCR

**Unit III**

10 Hours

Types of immunity- humoral immunity, cellular immunity

Structure of Immunoglobulins

Structure and Function of MHC

Hypersensitivity reactions, Immune stimulation and Immune suppressions.

General method of the preparation of bacterial vaccines, toxoids, viral vaccine, antitoxins, serum-immune blood derivatives and other products relative to immunity.



  
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Storage conditions and stability of official vaccines

Hybridoma technology- Production, Purification and Applications

**Unit IV**

**08Hours**

Immuno blotting techniques- ELISA, Western blotting, Southern blotting.

Microbial genetics including transformation, transduction, conjugation, plasmids and transposons.

Introduction to Microbial biotransformation and applications.

Mutation: Types of mutation/mutants.

**Unit V**

**07 Hours**

Fermentation methods and general requirements, study of media, equipments, sterilization methods, aeration process, stirring.

Large scale production fermenter design and its various controls.

Study of the production of - penicillins, Vitamin B12, Glutamic acid,

Blood Products: Collection, Processing and Storage of whole human blood, dried human plasma, plasma substitutes.

**Recommended Books (Latest edition):**

1. B.R. Glick and J.J. Pasternak: Molecular Biotechnology: Principles and Applications of Recombinant DNA: ASM Press Washington D.C.
2. RA Goldsby et. al., : Kuby Immunology.
3. J.W. Goding: Monoclonal Antibodies.
4. J.M. Walker and E.B. Gingold: Molecular Biology and Biotechnology by Royal Society of Chemistry.
5. Zaborosky: Immobilized Enzymes, CRC Press, Degraand, Ohio.



  
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\*Experiments are demonstrated by simulated experiments/videos

**Recommended Books (Latest Editions)**

1. Ghosh MN. Fundamentals of Experimental Pharmacology. Hilton & Company, Kolkata.
2. Kulkarni SK. Handbook of experimental pharmacology. Vallabh Prakashan.
3. Goyal RK. Practicals in Pharmacology, BS Shaha Prakashan.
4. Kasture SB. A handbook of experiments in pre-clinical pharmacology, Career Publications.
5. Bikas Medhi, Ajay Prakash. Practical Manual of Experimental and Clinical Pharmacology. Jaypee Publications.

**BP 609 P. HERBAL DRUG TECHNOLOGY (Practical)**

**4 hours/ week**

1. To perform preliminary phytochemical screening of crude drugs.
2. Determination of the alcohol content of Asava and Arista
3. Evaluation of excipients of natural origin
4. Incorporation of prepared and standardized extract in cosmetic formulations like creams, lotions and shampoos and their evaluation.
5. Incorporation of prepared and standardized extract in formulations like syrups, mixtures and tablets and their evaluation as per Pharmacopoeial requirements.
6. Monograph analysis of herbal drugs from recent Pharmacopoeias
7. Determination of Aldehyde content
8. Determination of Phenol content
9. Determination of total alkaloids

**Recommended Books: (Latest Editions)**

1. Textbook of Pharmacognosy by Trease & Evans.
2. Textbook of Pharmacognosy by Tyler, Brady & Robber.
3. Pharmacognosy by Kokate, Purohit and Gokhale
4. Essential of Pharmacognosy by Dr.S.H.Ansari
5. Pharmacognosy & Phytochemistry by V.D.Rangari
6. Pharmacopoeal standards for Ayurvedic Formulation (Council of Research in



  
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**BP809ET COSMETIC SCIENCE (Theory)**

**45 Hours**

**Scope:**

This course is designed to impart fundamental knowledge of cosmetic and cosmeceutical products & their formulation studies.

**Objectives:**

Upon completion of the course, the student shall be able to:

1. Understand the concepts of cosmetics; anatomy of skin v/s hair, general excipients used in cosmetics.
2. Explain the concept of cosmeceuticals, history, difference between cosmetics & cosmeceuticals & cosmeceuticals agents
3. Know different **Laws and Acts that regulate pharmaceutical industry**
4. Understand the **approval process and regulatory requirements for drug products**

**Course contents**

**UNIT-I**

**10 Hours**

Classification of cosmetic and cosmeceutical products, Definition of cosmetics as per Indian and EU regulations, Evolution of cosmeceuticals from cosmetics, cosmetics as quasi and OTC drugs

**Cosmetic excipients:**

Surfactants, rheology modifiers, humectants, emollients, preservatives. Classification and application

**Skin:** Basic structure and function of skin.

**Hair:** Basic structure of hair. Hair growth cycle.

**Oral Cavity:** Common problem associated with teeth and gums.

**UNIT-II**

**10 Hours**

**Principles of formulation and building blocks of skin care products:**

Face wash, Moisturizing cream, Cold Cream, Vanishing cream and their advantages and disadvantages. Application of these products in formulation of cosmeceuticals.

**Antiperspirants & deodorants-** Actives & mechanism of action.

**Principles of formulation and building blocks of Hair care products:**

Conditioning shampoo, Hair conditioner, anti-dandruff shampoo. Hair oils,

Chemistry and formulation of Para-phenylene diamine based hair dye.

Principles of formulation and building blocks of oral care products:

Toothpaste for bleeding gums, sensitive teeth. Teeth whitening, Mouthwash.



  
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**UNIT-III**

10 Hours

Sun protection, Classification of Sunscreens and SPF.

**Role of herbs in cosmetics:**

Skin Care: Aloe and turmeric

Hair care: Henna and amla.

Oral care: Neem and clove

**Analytical cosmetics:**

BIS specification and analytical methods for shampoo, skin cream and toothpaste.

**UNIT-IV**

08 Hours

**Principles of Cosmetic Evaluation:** Principles of sebumeter, corneometer.

Measurement

of TEWL, Skin Color, Hair tensile strength, Hair combing properties, Soaps and syndet bars. Evolution and skin benefits.

**UNIT-IV**

07 Hours

Oily and dry skin, causes leading to dry skin, skin moisturisation. Basic understanding of the terms Comedogenic, dermatitis. Cosmetic problems associated with Hair and scalp: Dandruff, Hair fall causes


Cosmetic problems associated with skin: blemishes, wrinkles, acne, prickly heat and body odor.

Antiperspirants and Deodorants- Actives and mechanism of action

**References**

- 1) Harry's Cosmeticology, Wilkinson, Moore, Seventh Edition, George Godwin.
- 2) Cosmetics – Formulations, Manufacturing and Quality Control, P.P. Sharma, 4th Edition, Vandana Publications Pvt. Ltd., Delhi.
- 3) Text book of cosmeticology by Sanju Nanda & Roop K. Khar, Tata Publishers.



  
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**BP810ET EXPERIMENTAL PHARMACOLOGY (Theory)**

**45 Hours**

**Scope:**

This subject is designed to impart the basic knowledge of preclinical studies in experimental animals including design, conduct and interpretations of results.

**Objectives**

Upon completion of the course the student shall be able to,

1. Understand the applications of various commonly used laboratory animals.
2. Demonstrate the various screening methods used in **preclinical research**.
3. Comprehend and demonstrate the importance of **biostatistics and research methodology**.
4. Design and execute a research hypothesis independently.

**Course contents**

**UNIT-I**

**10 Hours**

**Laboratory Animals:**

**Study of CPCSEA and OECD guidelines for maintenance, breeding and conduct of experiments on laboratory animals.** Common lab animals: Description and applications of different species and strains of animals. Popular transgenic and mutant animals.

Techniques for collection of blood and common routes of drug administration in laboratory animals, Techniques of blood collection and euthanasia.

**UNIT-II**

**10 Hours**

**Preclinical screening models**

- a. Introduction: **Dose selection, calculation and conversions**, preparation of drug solution/suspensions, grouping of animals and importance of sham negative and positive control groups. Rationale for selection of animal species and sex for the study.
- b. **Study of screening animal models** for Diuretics, nootropics, anti-Parkinson's, antiasthmatics, Preclinical screening models: for CNS activity- analgesic, antipyretic, anti-inflammatory, general anaesthetics, sedative and hypnotics, antipsychotic, antidepressant, antiepileptic, antiparkinsonism, alzheimer's disease.

**UNIT-III**

**10 Hours**

**Preclinical screening models:**

for ANS activity, sympathomimetics, sympatholytics, parasympathomimetics, parasympatholytics, skeletal muscle relaxants, drugs acting on eye, local anaesthetics.



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**UNIT-IV**

**08 Hours**

Preclinical screening models:

for CVS activity- antihypertensives, diuretics, antiarrhythmic, antidyslipidemic, anti aggregatory, coagulants, and anticoagulants

Preclinical screening models for other important drugs like antiulcer, antidiabetic, anticancer and antiasthmatics

**UNIT-V**

**07 Hours**


Research methodology and Bio-statistics.

Selection of research topic, review of literature, research hypothesis and study design Pre-clinical data analysis and interpretation using Students't' test and One-way ANOVA. Graphical representation of data

**Recommended Books (latest edition):**

1. Fundamentals of experimental Pharmacology-by M.N.Ghosh
2. Hand book of Experimental Pharmacology-S.K.Kulakarni
3. CPCSEA guidelines for laboratory animal facility.
4. Drug discovery and Evaluation by Vogel H.G.
5. Drug Screening Methods by Suresh Kumar Gupta and S. K. Gupta
6. Introduction to biostatistics and research methods by PSS Sundar Rao and J Richard




  
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**QUALITY ASSURANCE PRACTICAL – II PRACTICALS**  
(MQA 205P)

1. Organic contaminants residue analysis by HPLC
2. Identification of antibiotic residue by TLC
3. Estimation of Chlorine in Work Environment.
4. Sampling and analysis of SO<sub>2</sub> using Colorimetric method
5. Qualification of following Pharma equipment
  - a) Autoclave
  - b) Hot air oven
  - c) Powder Mixer (Dry)
  - d) Tablet Compression Machine
6. Validation of an analytical method for a drug
7. Process validation of any non-sterile or sterile dosage form
8. Validation of a processing area
9. Qualification of at least two analytical instruments
10. Cleaning validation of one equipment
11. Qualification of Pharmaceutical Testing Equipment (Dissolution testing apparatus, riability Apparatus, Disintegration Tester)
12. Check list for Bulk Pharmaceutical Chemicals vendors
13. Check list for tableting production.
14. Check list for sterile production area
15. Check list for Water for injection.
16. Design of plant layout: Sterile and non-sterile
17. Case study on application of QbD
18. Case study on application of PAT



  
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**PHARMACOLOGICAL AND TOXICOLOGICAL SCREENING METHODS - I**  
(MPL 103T)

**SCOPE**

This subject is designed to impart the knowledge on preclinical evaluation of drugs and recent experimental techniques in the drug discovery and development. The subject content helps the student to understand the maintenance of laboratory animals as per the guidelines, basic knowledge of various *in-vitro* and *in-vivo* preclinical evaluation processes

**OBJECTIVES**

Upon completion of the course the student shall be able to,


- Appraise the regulations and ethical requirement for the usage of experimental animals.
- Describe the various animals used in the drug discovery process and good laboratory practices in maintenance and handling of experimental animals
- Describe the various newer screening methods involved in the drug discovery process
- Appreciate and correlate the preclinical data to humans

**THEORY**

60 Hrs

- Unit-I Laboratory Animals** 12 Hrs  
Common Laboratory animals: Description, handling and applications of different species and strains of animals.  
Transgenic animals: Production, maintenance and applications.  
CPCSEA Guidelines for experimental animals.  
Anesthesia and euthanasia of experimental animals.  
Maintenance and breeding of laboratory animals.  
Good laboratory Practice.
- Unit-II Preclinical screening of new substances for the pharmacological activity using *in vivo*, *in vitro* and other possible alternative methods in animals.** 12 Hrs  
CNS Pharmacology:  
General principles of preclinical screening, screening of behavioral and muscle coordination, CNS stimulants and depressants, anxiolytics, anti-psychotics, anti-epileptics, nootropics, Parkinsonism and Alzheimer's.  
Drugs acting on Autonomic nervous system.
- Unit-III Preclinical screening of new substances for the pharmacological activity using *in vivo*, *in vitro* and other possible alternative methods in animals.** 12 Hrs  
Respiratory Pharmacology:  
Anti-asthmatics, drugs for COPD and anti-allergic.  
Reproductive Pharmacology: Aphrodisiacs and ant-fertility agents  
Gastrointestinal drugs:



  
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HAZARDS AND SAFETY MANAGEMENT (MQA 201T)		60 Hrs
<b>Scope</b> This course is designed to convey the knowledge necessary to understand issues related to different kinds of hazard and their management. Basic theoretical and practical discussions integrate the proficiency to handle the emergency situation in the pharmaceutical product development process and provides the principle based approach to solve the complex tribulations.		
<b>Objectives</b> At completion of this course it is expected that students will be able to <ul style="list-style-type: none"><li>• Understand about environmental problems among learners.</li><li>• Impart basic knowledge about the environment and its allied problems.</li><li>• Develop an attitude of concern for the industry environment.</li><li>• Ensure safety standards in pharmaceutical industry</li><li>• Provide comprehensive knowledge on the safety management</li><li>• Empower an ideas to clear mechanism and management in different kinds of hazard management system</li><li>• Teach the method of Hazard assessment, procedure, methodology for provide safe industrial atmosphere.</li></ul>		
<b>UNIT-I</b> <ul style="list-style-type: none"><li>• Multidisciplinary nature of environmental studies: Natural Resources and associated problems, Renewable and non-renewable resources, a) Forest resources; b) Water resources; c) Mineral resources; d) Energy resources; e) Land resources</li><li>• Ecosystems: Concept of an ecosystem, Structure and function of an ecosystem. Environmental hazards: Hazards based on Air, Water, Soil and Radioisotopes.</li></ul>		12 Hrs
<b>UNIT-II</b> <ul style="list-style-type: none"><li>• Air based hazards Sources, Types of Hazards, Air circulation, Air handling system, HVAC system, air maintenance in industry for sterile area and non sterile area.</li></ul>		12 Hrs
<b>UNIT-III</b> <ul style="list-style-type: none"><li>• Chemical based hazards: Sources of chemical hazards, Hazards of Organic synthesis, sulphonating hazard, Organic solvent hazard. Control measures for chemical hazards. Management of combustible gases, Toxic gases and Oxygen displacing gases management, Regulations for chemical hazard, MSDS, Labelling guidelines, Management of over-Exposure to chemicals and TLV concept, Disposal of hazardous material.</li></ul>		12 Hrs
<b>UNIT-IV</b> <ul style="list-style-type: none"><li>• Fire and Explosion: Introduction, Industrial processes and hazards potential, Mechanical, electrical, thermal and process hazards, mechanical and chemical explosion, multiphase reactions. Safety and hazards regulations</li><li>• Fire protection system: Fire prevention, types of fire extinguishers and critical Hazard management system, Preventive and protective management from fires and explosion- electricity passivation, ventilation, and sprinkling, proofing, fire walls, bunds, relief systems - relief valves, flares, scrubbers.</li></ul>		12 Hrs



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**UNIT-V**

- **Hazard and risk management:** Self-protective measures against workplace hazards, Critical training for risk management, Process of hazard management, ICH guidelines on risk assessment and Risk management methods and Tools, Preliminary hazard analysis
- Factory act and rules, fundamentals of accident prevention, elements of safety programme and safety management, Physicochemical measurements of effluents, BOD, COD, Determination of some contaminants, Effluent treatment procedure, Role of emergency services.

12 Hrs

**REFERENCES**

1. Y.K. Sing, Environmental Science, New Age International Pvt, Publishers, Bangalore
2. Quantitative Risk Assessment in Chemical Process Industries, American Institute of Chemical Industries, Centre for Chemical Process safety.
3. T.S.S. Dikshith, Hazardous Chemicals: Safety Management and Global Regulations, CRC press
4. M. N. Vyas, Safety and hazard management in chemical industries, Atlantic Publisher
5. Daniel A. Crowl, Joseph F. Louvar, Chemical Process Safety: Fundamentals with Applications, 3rd Edition, Prentice Hall, 2011
6. H. H. Fawcett and W.S. Wood, Safety and Accident Prevention in Chemical Operations, 2nd E/d, John Wiley & Sons, New York 1982.
7. C.S.Rao, Environmental Pollution Control Engineering, New Age international publisher
8. Phillip Carson, Clive Mumford, Butterworth-Heinemann, Hazardous Chemicals Handbook, Second edition, An imprint of Elsevier Science.



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### 2.3 PHARMACOGNOSY & PHYTOPHARMACEUTICALS (THEORY)

Theory : 3 Hrs. /Week

1. **Scope and objectives:** This subject has been introduced for the pharmacy course in order to make the student aware of medicinal uses of various naturally occurring drugs its history, sources, distribution, method of cultivation, active constituents, medicinal uses, identification tests, preservation methods, substitutes and adulterants.
2. **Upon completion of the course student shall be able to:**
  - a. under stand the **basic principles of cultivation, collection and storage of crude drugs;**
  - b. know the source, active constituents and uses of crude drugs; and
  - c. appreciate the applications of primary and secondary metabolites of the plant.
3. **Course materials:**

**Text books**

  - a. Pharmacognosy by G.E. Trease & W.C.Evans.
  - b. Pharmacognosy by C.K.Kokate,Gokhale & A.C.Purohit.


**Reference books**

  - a. Pharmacognosy by Brady & Tyler.E.
  - b. Pharmacognosy by T.E.Wallis.
  - c. Pharmacognosy by C.S. Shah & Qadery.
  - d. Pharmacognosy by M.A. Iyengar.
4. **Lecture wise programme:**

**Topics**

  - 1 Introduction.
  - 2 Definition, history and scope of Pharmacognosy.
  - 3 Classification of crude drugs.
  - 4 Cultivation, collection, processing and storage of crude drugs.
  - 5 Detailed method of cultivation of crude drugs.
  - 6 Study of cell wall constituents and cell inclusions.
  - 7 Microscopical and powder Microscopical study of crude drugs.
  - 8 Study of natural pesticides.
  - 9 Detailed study of various cell constituents.
  - 10 Carbohydrates and related products.
  - 11 Detailed study carbohydrates containing drugs.(11 drugs)
  - 12 Definition sources, method extraction, chemistry and method of analysis of lipids.
  - 13 Detailed study of oils.
  - 14 Definition, classification, chemistry and method of analysis of protein.
  - 15 Study of plants fibers used in surgical dressings and related products.
  - 16 Different methods of adulteration of crude drugs.



  
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**3.1 PHARMACOLOGY – II (PRACTICAL)****Practical : 3 Hrs./Week****List of Experiments:**

1. Study of laboratory animals and their handling (a. Frogs, b. Mice, c. Rats, d. Guinea pigs, e. Rabbits).
2. Study of physiological salt solutions used in experimental pharmacology.
3. Study of laboratory appliances used in experimental pharmacology.
4. Study of use of anesthetics in laboratory animals.
5. To record the dose response curve of Ach using isolated ileum/rectus abdominis muscle preparation.
6. To carry out bioassay of Ach using isolated ileum/rectus abdominis muscle preparation by interpolation method.
7. To carry out bioassay of Ach using isolated ileum/rectus abdominis muscle preparation by three point method.
8. To record the dose response curve of Histamine using isolated guinea-pig ileum preparation.
9. Study of agonistic and antagonistic effects of drugs using isolated guinea-pig ileum preparation.
10. To carry out bioassay of Histamine using isolated guinea-pig ileum preparation by interpolation method.
11. To carry out bioassay of Histamine using guinea-pig ileum preparation by three point method.
12. To study the routes of administration of drugs in animals (Rats, Mice, Rabbits).
13. Study of theory, principle, procedure involved and interpretation of given results for the following experiments:
  - a) Analgesic property of drug using analgesiometer.
  - b) Antiinflammatory effect of drugs using rat-paw edema method.
  - c) Anticonvulsant activity of drugs using maximal electroshock and pentylene tetrazole methods.
  - d) Antidepressant activity of drugs using pole climbing apparatus and pentobarbitone induced sleeping time methods.
  - e) Locomotor activity evaluation of drugs using actophotometer and rotorod.
  - f) Cardiotonic activity of drugs using isolated frog heart and mammalian heart preparations.

**Scheme of Practical Examination:**

	Sessionals	Annual
Identification	02	10
Synopsis	04	10
Major Experiment (Bioassay)	08	30
Minor Experiment (Interpretation of given Graph or simulated experiment)	04	10
Viva	02	10
Max Marks	20	70
Duration	3hrs	4hrs

Note : Total sessional marks is 30 (20 for practical sessional plus 10 marks for regularity, promptness, viva-voce and record maintenance).



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- **Fluorimetric Analysis:** Theory, luminescence, factors affecting fluorescence, quenching. Instrumentation, Applications, fluorescent indicators, study of pharmaceutically important compounds estimated by fluorimetry.
- b. **Flame Photometry:** Theory, nebulisation, flame and flame temperature, interferences, flame spectrometric techniques and instrumentation and pharmaceutical applications.
- c. **Atomic Absorption Spectrometry:** Introduction, Theory, types of electrodes, instrumentation and applications.
- d. **Atomic Emission Spectroscopy:** Spectroscopic sources, atomic emission spectrometers, photographic and photoelectric detection.
- e. **NMR & ESR (Introduction only):** Introduction, theoretical aspects and applications.
- f. **Mass Spectroscopy: (Introduction only)** – Fragmentation, types of ions produced mass spectrum and applications.
- g. **Polarimetry: (Introduction only)** – Introduction to optical rotatory dispersion, circular dichroism, polarimeter.
- h. **X-RAY Diffraction: (Introduction only)** – Theory, reciprocal lattice concept, diffraction patterns and applications.
- i. **Thermal Analysis:** Introduction, instrumentation, applications, and DSC and DTA.

### 3.2 PHARMACEUTICAL ANALYSIS (PRACTICAL)

Practical : 3 Hrs./Week

#### List of Experiments:

1. Separation and identification of Amino Acids by Paper Chromatography.
2. Separation and identification of Sulpha drugs by TLC technique.
3. Effect of pH and solvent on the UV spectrum of given compound.
4. Comparison of the UV spectrum of a compound with that of its derivatives.
5. Determination of dissociation constant of indicators using UV-Visible spectroscopy.
6. Conductometric titration of mixture of acids with a strong base.
7. Potentiometric titration of an acid with a strong base.
8. Estimation of drugs by Fluorimetric technique.
9. Study of quenching effect in fluorimetry.
10. Colourimetric estimation of Sulpha drugs using BMR reagent.



  
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11. Simultaneous estimation of two drugs present in given formulation.
12. Assay of Salicylic Acid by colourimetry.
13. Determination of Chlorides and Sulphates in Calcium gluconate by Nepheloturbidimetric Method.
14. Determination of Na/K by Flame Photometry.
15. Determination of pKa using pH meter.
16. Determination of specific rotation.
17. Comparison of the IR spectrum of a compound with that of its derivatives.
18. Demonstration of HPLC.
19. Demonstration of HPTLC.
20. Demonstration of GC-MS.
21. Demonstration of DSC.
22. Interpretation of NMR spectra of any one compound.

**Reference Books:**

1. Text Book of Pharm. Analysis by Higuchi, T and Hasen. E. B., New York Inter Science Publishers.
2. Quantitative Pharma. Analysis by Jenkins, The Blakiston division, New York.
3. Quantitative Drug Analysis, by Garrot. D, Chapman & Hall Ltd., London.
4. Undergraduate Instrumental Analysis by James. E., CBS Publishers.
5. Instrumental Analysis by Willard and Merritt, EWP, East West Press Ltd., Delhi/Madras.
6. Pharm Analysis by Skoog and West, Sounders Manipal College Publishing.
7. Text Book of Chemical Analysis, by A.I.Vogel, ELBS with Macmillan press, Hampshire.
8. Textbook of Pharm. Analysis by K.A.Connors, John Wiley & Sons, New York, Brisbane, Singapore.
9. Textbook of Pharm. Analysis (Practical) by Beckett & Stenlake, CBS Publishers, Delhi.
10. Textbook of Drug Analysis by P.D. Sethi., CBS Publishers, Delhi.
11. Spectroscopy by Silverstein, John & Wiley & Sons. Inc., Canada & Singapore.
12. How to practise GMP-A Plan for total quality control by P.P. Sharma, Vandana Publications, Agra.
13. The Science & Practice of Pharmacy by Remington Vol-I & II, Mack Publishing Co. Pennsylvania.
14. TLC by Stahl, Spring Verlay.
15. Text Book of Pharm. Chemistry by Chatten, CBS Publications.
16. Spectroscopy by William Kemp, ELBS with Macmillan Press, Hampshire.
17. I.P.-1996, The Controller of Publications, New Delhi.
18. BPC- Dept. of Health, U.K. for HMSO.
19. USP - Mack Publishing Co., Easton, PA.
20. The Extra Pharmacopoeia - The Pharm. Press, London.



  
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### 3.4 PHARMACEUTICAL JURISPRUDENCE (THEORY)

Theory : 2 Hrs. /Week

1. **Scope of the Subject:** (4-6 lines): This course exposes the student to several important legislations related to the profession of pharmacy in India. The Drugs and Cosmetics Act, along with its amendments are the core of this course. Other acts, which are covered, include the Pharmacy Act, dangerous drugs, medicinal and toilet preparation Act etc. Besides this the new drug policy, professional ethics, DPCO, patent and design Act will be discussed.
2. **Objectives of the Subject:** Upon completion of the subject student shall be able to (Know, do, and appreciate) –
  - a. practice the Professional ethics;
  - b. understand the various concepts of the pharmaceutical legislation in India;
  - c. know the various parameters in the Drug and Cosmetic Act and rules;
  - d. know the Drug policy, DPCO, Patent and design act;
  - e. understand the labeling requirements and packaging guidelines for drugs and cosmetics;
  - f. be able to understand the concepts of Dangerous Drugs Act, Pharmacy Act and Excise duties Act; and
  - g. other laws as prescribed by the Pharmacy Council of India from time to time including International Laws.

#### Text books (Theory)

Mithal, B M. Textbook of Forensic Pharmacy. Calcutta :National; 1988.

#### Reference books (Theory)

- a. Singh, KK, editor. Beotra's the Laws of Drugs, Medicines & cosmetics. Allahabad: Law Book House; 1984.
- b. Jain, NK. A Textbook of forensic pharmacy. Delhi: Vallabh prakashan ; 1995.
- c. Reports of the Pharmaceutical enquiry Committee
- d. I.D.M.A., Mumbai. DPCO 1995
- e. Various reports of Amendments.
- f. Deshapande, S.W. The drugs and magic remedies act 1954 and rules 1955. Mumbai; Susmit Publications; 1998.
- g. Eastern Book Company .The narcotic and psychotropic substances act 1985, Lucknow: Eastern; 1987.

#### 3. Detailed syllabus and lecture wise schedule:

##### Title of the topic

1. **Pharmaceutical Legislations** – A brief review.
2. Principle and Significance of professional ethics. Critical study of the code of pharmaceutical ethics drafted by PCI.
3. **Drugs and Cosmetics Act, 1940, and its rules 1945.**  
Objectives, Legal definition, Study of Schedule's with reference to Schedule B, C&C1, D, E1, F&F1, F2, F3, FF, G, H, J, K, M, N, P, R, V, W, X, Y.  
Sales, Import, labeling and packaging of Drugs And Cosmetics  
Provisions Relating to Indigenous Systems.  
Constitution and Functions of DTAB, DCC, CDL.  
Qualification and duties –Govt. analyst and Drugs-Inspector.



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4. **Pharmacy Act –1948.**  
Objectives Legal Definitions, General Study, Constitution and Functions of State & Central Council, Registration & Procedure, ER.
  5. **Medicinal and Toilet Preparation Act –1955.**  
Objectives, Legal Definitions, Licensing, Bonded and Non Bonded Laboratory, Ware Housing, Manufacture of Ayurvedic, Homeopathic, Patent & Proprietary Preparations.
  6. **Narcotic Drugs and Psychotropic substances Act-1985 and Rules.** Objectives, Legal Definitions, General Study, Constitution and Functions of narcotic & Psychotropic Consultative Committee, National Fund for Controlling the Drug Abuse, Prohibition, Control and regulations, Schedules to the Act.
  7. **Study of Salient Features of Drugs and magic remedies Act and its rules.**
  8. **Study of essential Commodities Act Relevant to drugs price control Order.**
  9. **Drug Price control Order & National Drug Policy (Current).**
  10. **Prevention Of Cruelty to animals Act-1960.**
  11. **Patents & design Act-1970.**
  12. **Brief study of prescription and Non-prescription Products.**
4. Assignments:
- Format of the assignment**
1. Minimum & Maximum number of pages
  2. It shall be a computer draft copy
  3. Reference(s) shall be included at the end.
  4. Name and signature of the student
  5. Assignment can be a combined presentation at the end of the academic year.
  6. Time allocated for presentation may be 8+2 Min
- Case studies relating to**
1. Drugs and Cosmetics Act and rules along with its amendments, Dangerous Drugs Act, Medicinal and Toilet preparation Act, New Drug Policy, Professional Ethics, Drugs (Price control) Order, Patent and Design Act.
  2. Various prescription and non-prescription products.
  3. Medical and surgical accessories.
  4. Diagnostic aids and appliances available in the market.



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## Co-curricular & Extracurricular Activity- Professional Ethics

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<small>Approved by All India Council for Technical Education, New Delhi, Pharmacy Council of India, New Delhi, Directorate of Technical Education, Mumbai (MS), Permanently affiliated to Savitribai Phule Pune University, Pune &amp; Approved under Section (2 (f) &amp; 12 (B) of UGC Act, 1956</small>	
<small>Sector No. 21, Yamunanagar, Nigdi, Pune - 411 044. (M.S.) Tel. : 020-27661314 / 15 E-mail : mcpnigdi44@gmail.com Website : www.mcop.org.in</small>	
<small>Prof. Dr. P. D. Chaudhari M.Pharm., Ph.D. Principal</small>	<small>Prof. Dr. Gajanan R. Ekbote M.S., M.N.A.M.S. Chairman, Business Council P.E.Society, Pune</small>
Ref :	Date :

### 1.3.1 Institution integrates crosscutting issues relevant to Professional Ethics.

**STRIVING TOWARDS EXCELLENCE FOREVER**



## 1.3.1 Institution integrates crosscutting issues relevant to Professional Ethics.

Academic Year	Activities Related To Professional Ethics
2022-23	Pharmacist oath
	Research monitoring committee
	Code of conduct
	NSS Day Celebration
	Constitution day celebration
	Health camp under the Mata Surakshit tar Ghar Surakshit and Ayushman
	Bharat Abhiyan
	Hemoglobin checkup and ABHA card - DRIVE
	Blood Donation Camp
	Health check up camp
2021-22	International Yoga Day celebration
	Health checkup campaign
	Covid-19 RT-PCR Testing Camp
	COVID-19 Vaccination Drive
	AIDS Day Awareness
	Sun Salutation (Surya Namaskar)
	Pulse polio vaccination campaign
	NSS Special Camp- Seven days residential camp at Jambawade village
	Constitution Day celebration
	Oath
	Research committee
	Code of conduct
	IAEC meeting
2020-21	NSS Day celebration
	Central Vigilance Commission week celebration
	Election literacy club establishment for making awareness of election and voter literacy
	AIDS awareness by taking selfie with slogan
	Pharmacist oath
	Research monitoring committee



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	Code of conduct
	IAEC meeting
2019-20	Pharmacy related Model competition "World Pharmacist DAY"
	Indian Constitution Day by Reading the preamble of Indian Constitution
	Elocution competition voter awareness and pro-people governance
	COVID-19 awareness campaign
	NSS Special Camp
	Pharmacist Oath
	Research committee
	Code of conduct
2018-19	IAEC meeting
	State Level Program Officer Workshop-2019 Shiv Chatrapati kridanagari balewadi stadium
	Health check up camp at NSS
	One day health camp
	Medicine donation
	Street play competition voter awareness
	Pharmacist oath
	Research monitoring committee
	Code of conduct
	IAEC meeting







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<b>NSS REGULAR ACTIVITY REPORT 2022-2023</b>		
1.	Name of activity	Constitution Day Celebration
2.	Date of activity	26.11.2022
3.	Time	12 PM-5PM
4.	Total no students participate	75
5.	Occasion of activity	National Law Day / Constitution Day Celebration
6.	Inauguration by	Mr. Prashant Pawar Mr. Shivraj Mane. Ms. Mayuri Khaparede.
7.	Place of activity	Yamuna Nagar Nigdi Pune Maharashtra 411044
8.	Objectives of activity	To aware students regarding Democratic Republic and a welfare state committed to secure justice, liberty and equality for the people and for promoting fraternity, dignity of the individual and unity and integrity of the nation. To take pledge of our constitution day. Students should participate in debate competition.
9.	Outcome of activity	All the students were taken the pledge. All the students understood their rights being as Indian citizen. Many students were participated on different topics of debate on constitution day.
10.	Activity co-coordinator	Mr. R.M.Gurav. Ms. P.V.Bagade



  
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Photos of activity



  
Ms. P.V. Bagade  
NSS Program officer

  
Mr. R.M. Gurav  
NSS Program officer



  
Dr. P. D. Chaudhari  
Principal  
Principal  
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**Progressive Education Society's  
Modern College of Pharmacy, Nigdi, Pune-44**

**NSS Special Activity Report-2022-2023**

**Unit code A-SF-032**

1.	Name of activity	Health camp under the Mata Surakshit tar Ghar Surakshit and Ayushman Bharat Abhiyan
2.	Date of activity	15.11.2022
3.	Time of activity	9.00 am to 11.00 am
4.	Total no of student participants	120
5.	Inauguration by	Dr.P.D. Chaudhari, Principle, Modern College of Pharmacy, Nigdi, Pune-44
6.	Place of activity	PES's Modern College Of Pharmacy, Nigdi, Pune-44
7.	Objectives of activity	<ul style="list-style-type: none"> <li>Hb check-up and medicine distribution for girls.</li> <li>ABHA card generation for all the students</li> </ul>
8.	Outcome of activity	<ul style="list-style-type: none"> <li>Hb check-up and medicine distribution to girls who has Hb less than 8 gm/dL was successfully done.</li> <li>ABHA card was generated for 100 students.</li> </ul>
9.	Activity co-ordinator	Dr. Rajani B. Mali



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PHOTOS OF ACTIVITY :



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Dr. P. D. Chaudhari  
Principal




Dr. P. D. Chaudhari  
Principal  
Modern College of Pharmacy  
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Dr. R. B. Mali

Program officer



  		
<b>P. E. Society's Modern College of Pharmacy, Nigdi, Pune-44</b>		
<b>NSS REGULAR ACTIVITY REPORT 2022-2023</b>		
1.	Name of activity	Hemoglobin checkup and ABHA card - DRIVE
2.	Date of activity	09.11.2022
3.	Time	10AM -4 PM
4.	Total no students participate	100
5.	Occasion of activity	Hemoglobin checkup of Girls and women faculty members.
6.	Inauguration by	Ms. Priyanka Bagade
7.	Place of activity	Yamuna Nagar Nigdi Pune Maharashtra 411044
8.	Objectives of activity	To check the Hemoglobin of all the girls and ladies faculty in the college. Distribution of Vit B12 and Iron tablets to anemic students and faculty. To get ABHA card to every student in the college for gating the benefits of ayushman bharat yojana.
9.	Outcome of activity	All the girls hemoglobin testing is completed and the girls students who are having less than 10 Hemoglobin, for that girls Iron tablets has been distributed by PCMC hospital. Many students got ABHA card to take advantage of Ayushman Bharat Yojana.
10.	Activity co-coordinator	Mr. R.M.Gurav. Ms. P.V.Bagade.



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Photos of activity



  
Ms. P.V. Bagade  
NSS Program officer

  
Mr. R.M. Gurav  
NSS Program officer

  
Dr. P.D. Chaudhari  
Principal  
P.E.S. Modern College of Pharmacy  
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**P. E. Society's  
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**NSS REGULAR ACTIVITY REPORT 2022-2023**

1.	Name of activity	Blood Donation Camp
2.	Date of activity	03.09.2022
3.	Time	10AM - 4PM
4.	Total no students participate	50
5.	Occasion of activity	Ganpati Festival
6.	Inauguration by	Dr. Atul Phatak
7.	Place of activity	Yamuna Nagar Nigdi Pune Maharashtra 411044
8.	Objectives of activity	To aware students regarding social activity like blood donation camp. To save the lives of people who are in need of blood. To support governments schemes for blood donation camp.
9.	Outcome of activity	Students understood the value of blood donation to society. Many people's life may be save due to blood donation activity. Students getting different experience being as blood donor.
10.	Activity co-coordinator	Mr. R.M.Gurav. Ms. P.V.Bagade.

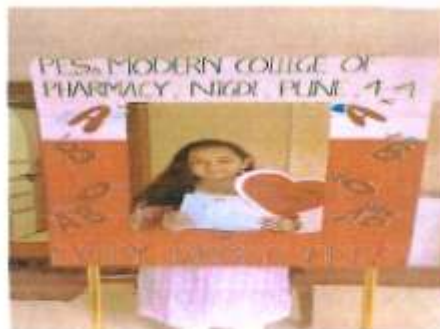


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Photos of activity







  
Ms. P.V. Bagade  
NSS Program officer

  
Mr. R.M. Gurav  
NSS Program officer

  
Dr. P. D. Chaudhari  
Principal  
Principal  
P.E.S. Modern College of Pharmacy  
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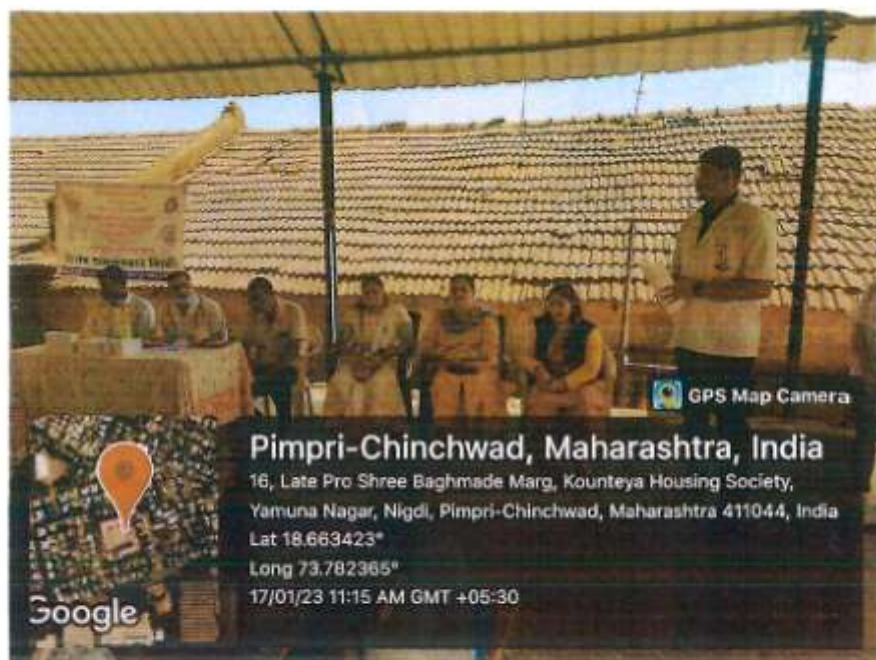




  		
<p align="center"><b>P. E. Society's Modern College of Pharmacy, Nigdi, Pune-44</b></p>		
<p align="center"><b>NSS WINTER CAMP ACTIVITY REPORT 2022-2023</b></p>		
1.	Name of activity	Health Checkup Camp
2.	Date of activity	17.01.2023
3.	Time	11.00 am to 3.00 pm
4.	Total no students participate	30
5.	Occasion of activity	NSS Residential Camp
6.	Inauguration by	Sarpanch
7.	Place of activity	Mahadev Mandir , Tal. Jambhavad
8.	Objectives of activity	To perform basic health checkup of the local villagers. It included anthropometric measurements i.e. Height, Weight, and BMI, Blood Pressure and Pulse rate, SPO2 level checking, Blood Group detection and Random Blood Sugar check, Medicine Distribution and Patient Counseling in accordance with all the above information.
9.	Outcome of activity	100 villagers underwent the health checkup and individual patient counseling session where they were provided with an idea about their overall health, and also advised with some non-pharmacological remedies for their complaints.
10.	Activity co-coordinator	Dr. R. B. Mali, P.V.Dagade, R.M.Gurav
 <b>Principal</b> P. E. S. Modern College of Pharmacy Sector No.21, Yamunanagar, Nigdi, Pune - 411 044.		



Photos of activity



P. E. S. Modern College of Pharmacy  
Sector No.21, Yamunanagar, Nigdi,  
Pune - 411 044.









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Sector No.21, Yamunanagar, Nigdi,  
Pune - 411 044.



  
Dr. R. B. Mali  
R.M.Gurav  
P.V.Bagade  
Program officer's



  
Dr. P. D. Chaudhari  
Principal

Principal

P. E. S. Modern College of Pharmacy  
Sector No. 21, Yashwantrao, Nigdi,  
Pune - 411 044.





*Pharmacist's Oath*

I swear by the code of Ethics of Pharmacy Council of India in relation to the community and shall act as an integral part of health care team.

I shall uphold the laws and standards governing my profession.

I shall strive to perfect and enlarge my knowledge to contribute to the advancement of pharmacy and public health.

I shall follow the system, which I consider best for pharmaceutical care and counseling of patients.

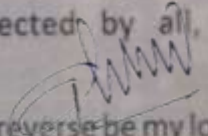
I shall endeavor to discover and manufacture drugs of quality to alleviate sufferings of humanity.


I shall hold in confidence the knowledge gained about the patients in connection with professional practice and never divulge unless compelled to do so by the law.

I shall associate with organizations having their objectives for betterment of the profession of Pharmacy and make contribution to carry out the work of those organizations.

While I continue to keep this Oath unviolated, may it be granted to me to enjoy life and the practice of pharmacy respected by all, at all times!

Should I trespass and violate this oath may the reverse be my lot!

  
Principal  
P. E. S. Modern College of Pharmacy  
Sector No.21, Yamunanagar, Nigdi,  
Pune - 411 044.







P.E Society's Modern College of Pharmacy,  
Nigdi, Pune-44.

Circular No: 01/RMC/2013-14

Date: 29/10/13

All the faculty and students are hereby informed that the constitution of the Research Monitoring Committee (RMC) has been revised. Following are the members of the RMC.

Sr. No.	Name of the member	Designation
1.	Dr. P D Chaudhari Principal	Chairman
2.	Dr. Ms. S B Jadhav Head, Department of Pharmaceutical Chemistry	Member
3.	Mr. A A Phatak Head, Department of Pharmaceutics	Member
4.	Dr. Ms. D D Bandawane Head, Department of Pharmacology	Member
5.	Mr. U C Galgatte	Member
6.	Dr. Ms. S S Pimple	Member
7.	Dr. Ms. K S Shaikh Head, Department of Quality Assurance Techniques	Member
8.	Mr. B P Pimple Head, Department of Pharmacognosy	Member

This committee shall work with the previous set objectives with immediate effect from 29/10/2013 till further notification.

All applications, activities, publications, training, consultancy, collaborations or any other information pertaining to research shall be communicated to the RMC at [researchatmcp@gmail.com](mailto:researchatmcp@gmail.com).

  
Dr. P D Chaudhari,  
Principal





Progressive Education Society's

## MODERN COLLEGE OF PHARMACY



Approved by All India Council for Technical Education, New Delhi (F.No. 740-88-397 (P)ET/08,  
Pharmacy Council of India, (32-236/2002-PC-2001-62), Directorate of Technical Education, Mumbai (2/NQPT100/1347),  
Permanently affiliated to University of Pune & Approved under Section ( 2 (f) & 12 (B) of UGC Act, 1956).

Sector No. 21, Yashwanagar, Nigdi, Pune - 411 044 (M.S.) Tel. : 020-27661313 Fax : 020-27661314  
E-mail : mcp-pharm@pnpnail.com Website : www.mcp.org.in

Prof. Dr. P. D. Chaudhari  
M.Pharm., Ph.D.  
Principal

Prof. Dr. Gajanan R. Ekure  
M.S. M.N.A.M.S.  
Chairman, Supervisory Council  
P.E. Society, Pune

Ref.: MCP/Gen/2011-12/208

Date: 15/07/2011

### Research Monitoring Committee Policy

In view of the academic proliferation of the college, paradigm shift and ever evolving landscape of pharmacy education it is imperative to establish a Research Monitoring Committee (RMC) in the college. The principal of this college ponders to carry out frontline research in pharmaceuticals exploring newer vistas on industry-focussed research. Hence a RMC has been constituted in the college.

The RMC of the college envisions the following objectives:

1. To provide conducive ambience and nurture research culture in the college.
2. To lay stress on multidisciplinary research of societal relevance.
3. To inspire and motivate researchers and faculty to submit research projects to various funding agencies like DST, CSIR, AICTE, BCUD etc. in order to augment research funds and upgrade and update the academic infrastructure.
4. To give better emphasis on technology oriented and industry-driven research with relevance to the dynamic corporate needs.
5. To tie-up with institutes of higher learning and industries to carry out collaborative research.
6. To organise seminars to bring greater interaction among researchers of diverse disciplines.
7. To conduct guest lectures of senior academia of national and international repute to share domain expertise and broaden the research perspective.
8. To motivate faculty for participation in quality improvement programmes such as seminars, workshops, conferences and faculty development programmes by bearing the registration charges and travelling allowance.
9. To encourage researchers and faculty to publish their research work in reputed national and international peer reviewed journals of high impact value.
10. To motivate researchers and faculty to carry out patentable research
11. To make consistent and concerted efforts to intensify industry-institute interactions by inviting industrial experts to bridge the industry-institute gap.



*(Signature)*  
Principal

P.E. Society's  
Modern College of Pharmacy  
Sector No. 21,  
Nigdi, Pune - 411 044

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P. E. Society's,  
Modern College of Pharmacy, Nigdi, Pune-411044

### CODE OF CONDUCT

#### INTRODUCTION:

P.E.S. Modern College of Pharmacy is mandated by law and by the community it serves to provide an educational environment that demonstrates professionalism and academic currency, values diversity, and respects the learning process.

The purpose of this code of conduct is to make the Students, Teachers, College Departments/Cells/Committees familiar about the rules and regulations of the College and to progress towards the achievement of the mission and vision of the College.

### CODE OF CONDUCT FOR TEACHING STAFF

#### PROFESSIONAL CONDUCT AND DUTIES:

- Every teacher shall, at all times, maintain absolute integrity and devotion to duty. He/She shall be strictly honest and impartial in his official dealings
- A teacher shall furnish correct information to the best of his/her knowledge regarding his/her qualification, experience, age etc. in respect to his/her appointment/promotion
- Teachers must report in time for duty as per the working hours prescribed and should be available in the campus unless they are assigned duties elsewhere.
- Teachers must always wear their identity badge during working hours.
- No teachers shall be absent from duty without prior permission or grant of leave except for valid reasons or unforeseen contingencies.
- Every teacher shall engage classes regularly, punctually and impart lessons so as to maintain and strengthen standards of academic excellence.
- His academic duties shall include guidance and instruction to students in the form of Tutorial/Seminars/Practicals and



**Principal**  
P. E. S. Modern College of Pharmacy  
Sector No.21, Yamunanagar, Nigdi,  
Pune - 411 044.



assessment/ examination/valuation work assigned to him by the College authorities.

- Every teacher shall participate fully and enthusiastically in every college activity including curricular and extra-curricular work.
- Teacher shall be committed to the best interests of students and promote their holistic development by his/her treatment of students in the classroom as well as with such interactions elsewhere.
- Teachers shall make use of all ICT infrastructure built in the institution as per topic/concept/subject of discussion. Teacher shall help, guide, encourage and assist students to ensure that the learning experience is effective and successful.
- Teachers are encouraged to write subject reference books. Also, they are encouraged to publish their original research findings in reputed Journals and present papers in conferences/symposiums/seminars. Staff members are encouraged to take up Research projects provided they refrain from plagiarism.
- Make him/ herself available to the students even beyond their class hours and help and guide them without any remuneration or reward.
- Teachers should complete the syllabus in time and shall produce good results in the subjects handled by them and are accountable for the same.
- Teachers should be good counselors and facilitators. They should help, guide, encourage and assist the students to ensure that the Teaching-Learning Process is effective and successful. Value based education must be their motto.
- Be responsible and interact positively with parents and other stakeholders in educating the students.
- Faculty should maintain academic record on Institutional LMS (VM Edulife) for each subject offered during semester/year.
- It shall have details of syllabus, lecture plan, date and time of lectures.

**DUTIES & RESPONSIBILITIES OF PRINCIPAL:**

- The Principal of an Institution should always be honest, fair, supportive, protective and law abiding.



**Principal**

P. E. S. Modern College of Pharmacy  
Sector No.21, Yamunanagar, Nigdi,  
Pune - 411 044.





- The Principal has the responsibility to deliver leadership, direction and co-ordination within the College.
- The Principal has to implement the new ideas and plan to execute the vision and mission.
- The Principal should ensure that the development plans of the College, both long-term and short-term, with respect to the academic programmes are duly processed and implemented through relevant authorities, bodies, committees and its members
- Promote institutional interaction and inculcate research development activities
- Ensure that the staff and students are aware of rules, policies and procedures laid down by the college.
- With regard to the disciplinary measures, the Principal has the authority to take all the necessary actions as per the direction of the regulatory authority. In this regard he/she should take actions, which should be impartial and he/she should maintain complete transparency.
- Recommend and forward communication to the authorities.
- Monitor, manage and educate the administration of the institution and take remedial actions based on the stakeholder's feedback.
- Execute any other qualitative and quantitative work for the welfare of the students and institution.
- Empower all his staff and students to reach their maximum potential.
- The Principal should convene meetings of different cells as and when required.
- Principal has the responsibility for the smooth conduct of curricular, co-curricular and extra-curricular activities of the College.
- The Principal should forward confidential report of all staff members of the Institute and submit it to the Management.

**DUTIES & RESPONSIBILITIES OF HEAD OF THE DEPARTMENT:**

- HOD is responsible for conducting all academic programmes of the Department as per the norms of Savitribai Phule Pune University.
- Teachers should handle the subjects assigned by the Head of the Department



*[Signature]*  
**Principal**  
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Sector No.21, Yamunanagar, Nigdi,  
Pune - 411 044.



- As per the rules of the institute staff members must adjust their classes and show the consent of the substitute teacher to the HOD before going on leave.
- All the staff members are advised to strictly follow the above procedure; failing which the leave will be treated as unauthorized with loss of pay.
- Should ensure that all classes are held as per the time table and make alternate arrangement for the class work of teachers absent on that day. Should recommend for disciplinary action against those availing leave without prior arrangement for class work.
- Should verify the student attendance registers to check for proper marking of attendance and implementation of lecture plans.
- Should go around the class rooms and laboratories to ensure the decorum and discipline as per time-table.
- Should call meetings of Faculty to review academic activities of the department.
- The Head of the Department should encourage Faculty Members to update their knowledge by attending seminars/ workshops/ conferences.
- The Head of the Department should encourage Faculty Members to author text books and publish research papers in reputed International / Indian Journals / Conferences.
- The Head of the Department should arrange for feedback responses from the students, and the parents on quality-related department processes.

#### DUTIES & RESPONSIBILITIES OF CLASS TEACHER

- Class-teachers shall monitor mentor- mentee system of his/her class.
- The Class-teachers shall try to see through mentors that institution maintain contact with the parents of their students, send report of their performance to the parents whenever necessary and meet the parents in meetings convened for the purpose for mutual exchange of ideas for the benefit of the institution.
- Communicating to students at the commencement of the course, not only the session plan and evaluation plan but also the rules to be



Principal

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enforced on punctuality, attendance, behaviour in class, timely submission of assignments, academic honesty.

**NORMS FOR CONDUCTING EXAMINATIONS:**

- Teachers shall do supervision of college and university exams as per requirements and as per duty assigned by exam department. Teacher shall undertake internal assessment, semester-end assessment as per allotted by Head of the department/Principal.
- Every teacher shall assess impartially the performance of students in tests, examinations, assignments, practicals, dissertations, theses, etc.
- Practical examinations have to be conducted in the respective Laboratories only.
- Both the examiners (Internal and External) have to assess the students for practical. Internal examiners have to brief the external examiners regarding allocation of marks for each component of practical activity.
- Marks must be noted on the answer sheets clearly indicating the marks awarded for each component of practical activity.
- Both the examiners must sign on the Answer Sheets as well as on the award lists.

  
Principal  
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Sector No 21, Yamunanagar, Nigdi,  
Pune - 411 044





### CODE OF CONDUCT FOR STUDENTS

- **Regularity:** A student should be required to put in at least 80% attendance in individual courses considering theory and practical separately as per university norms. Attend lectures, practical sessions and appear for the class test/tutorials regularly. Should complete class work, assignments and journals regularly.
- **Punctuality:** Students should be on time to college for theory and practical sessions.
- **Professionalism:** Students should come to the class room in decent and presentable attire. The student is required to demonstrate professionalism in all dealings in campus with regard to behavior with all employees of the college on/off-campus.
- **Discipline:** Based on the direction of Hon'ble Supreme Court of India the UGC has issued the following regulation: 'UGC Regulations on Curbing the Menace of Ragging in Higher Educational Institutions, 2009'. Ragging is completely prohibited in the campus. If any student is found to indulge in ragging he/she would be dealt with as per law. For the Students seeking admission, their guardian must give anti ragging undertaking along with the admission form. Mobile phones should be switched off during lecture hour and on 'Silent mode' in the college premises. Use of internet for purposes other than academic related activities is banned. Eating, drinking in theory and practical sessions is not allowed. Smoking and use of alcohol/drugs is strictly prohibited within the campus.
- **Examination:** Unfair practices in examination are strictly prohibited and if any student found doing the same or violating the rule will be punishable.
- **Intimation:** In case of absentees, he/she should inform to class teacher. Students should read the notice board every day.
- **Behavior:** Be honest, polite and treat others with respect. Show fairness, courtesy and good faith towards others. Ragging/harassment (in any form) are banned in the campus. Be respectful and maintain the decorum in college premises while participating in college activities.



Principal

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- **Care:** Utilize amenities provided by the college with care. Intentionally damaging the property of the college or any person (Students/Faculty) is liable for disciplinary action.
- **Interference:** Students should behave in a manner that will not interfere with the dignity of others. Engaging in disruptive activities like creating unreasonable noise, creating chaos, participating in a riot is prohibited.
- **Library:** All students should enroll for biometric system at entrance of library. Students should keep their bags in the baggage section and not in the reading room. Students should preserve their belongings or valuables. In case of loss he/she would be solely responsible. All students must use their student library card in order to avail the library facilities. Issued books must be submitted on or before submission dates. Do not write / scribble on any furniture or wall of the library. Any student found doing so will be penalized. Reference books will be available only in reading room and issued on the student card. Students are not allowed to take a reference book outside. For renewal purpose: student will have to be present in person along with the book. Mishandling, tearing of books or underlining with pen or pencil will not be tolerated. All Journals / Periodicals should be kept in their respective place after use. Journals / Periodicals cannot be taken outside the Library. Do not enter into the stack room without prior permission. All borrowers should obey the above-mentioned rules.
- **Discrimination:** Any act of discrimination regarding gender, caste, creed, race, religion, color, language, disability, sexual orientation will not be tolerated and demand disciplinary action by the college.
- **Report:** Report to appropriate college authorities in any emergency or unlawful situations in the college.
- **Virtual etiquettes:** Join the online classroom using their own mail account and be prepared, on time and ready to learn. Treat the virtual classroom the same as an in-person classroom at college. Use online tools to engage in and add to the learning community (e.g. participate, ask questions, etc.). Treat others with kindness, dignity and respect. Respect the privacy of everyone in the virtual classroom.

Principal

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Sector No.21, Yamunanagar, Nigdi,  
Pune - 411 044.



classroom and avoid taking photos, screenshots or capturing images of other students. Not share images/videos from a virtual classroom on social media without permission. Not share the link to online meetings, activities or resources with anyone. Not participate in unauthorized online collaboration during tests and exams. Not anonymize yourself when participating in online classroom activities. The College shall have the jurisdiction over the conduct of students enrolled with the college and to take cognizance of all acts of misconduct or indiscipline with respect to the code of conduct taking place within the campus and thus hampering the image and functioning of the college

#### CODE OF CONDUCT FOR SUPPORTIVE STAFF

Every employee shall, at all times, maintain absolute integrity and devotion to duty and do nothing which is unbecoming of an employee of an educational institution.

Professional Conduct of Support Staff is assessed in relation to:

**Job performance-** Staff should work, and be seen to work in an open and transparent way. They should familiarize themselves with college policies that are relevant to their responsibilities. And they should adhere to those policies to the best of their ability.

**Relationship with students-** Staff should be vigilant in maintaining their privacy and mindful of the need to avoid placing themselves in vulnerable situations, be mindful of the need to maintain professional boundaries, communicate with students in an appropriate and professional manner. Relationship with faculty, colleagues, administrative staffs, and the general public- Should be supportive and cooperative with other staff members. Practice mutual respect, trust and confidentiality. Practice justice by being committed to the well being of individuals, the wider community and the common good of all people. Must respect and maintain the hierarchy in the Administration.

**Work of conduct-** College expects all supportive staff to conform to the standards of professionalism. Supportive staffs who demonstrate behaviour that does not comply with the minimal standards of



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Sector No.21, Yamunanagar, Nigdi,  
Pune - 411 044.



Professionalism may be subjected to the range of disciplinary actions by the administrative authority.

No employee can claim the leave as a matter of right. When the exigencies of service so require, discretion to refuse leave of any description is reserved to the Principal empowered to grant leave.

All employees shall abide by the rules of the college and all orders and directions of his competent authorities issued from time to time.

No employee shall engage directly or indirectly in any trade or business or undertake any other employment. For undertaking honorary work of a social and charitable nature or work of a literary, artistic or scientific character the employee shall obtain prior permission of the authority.

Should adhere strictly to the official resumption/ closing time and must dress decently & appropriately.

  
Principal  
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Sector No 21, Yamunanagar, Nigdi,  
Pune - 411 044.





### CODE OF CONDUCT FOR ADMINISTRATIVE STAFF

Administrative staffs are expected to proceed in their daily duties in a manner that upholds the dignity of their profession; to honor the terms and intent of the collective agreements that have been entered into with faculty and support staff.

The professional conduct of administrative staff at Modern College is assessed in four distinct areas of College activity:

- Professionalism
- Management
- Conflict Resolution
- Public Relations

#### **Professionalism and professional conduct**

All employees shall abide by the rules of the college and all orders and directions of his competent authorities issued from time to time. Every employee shall maintain the utmost secrecy regarding the college affairs and the affairs of its constituents and shall not divulge, directly or indirectly, any information of confidential nature either to a member of the public or of the colleges staff. Demonstrate courtesy and respect in all dealings with students, academic employees, and support staff

#### **Management**

Admin staff shall maintain the Service Record of each employee of the college on the printed service books prescribed for the purpose. They shall maintain Separate personal files of the employees Confidential Report in the proforma of each employee shall be recorded every year in the month



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Pune - 411 044.





of June and shall be maintained. Admin staff shall maintain leave account. All leave other than casual leave must be entered in the service book of the employee & his leave account completed as soon as it is sanctioned. Practice fiscal responsibility (financial discipline) to ensure that all expenditures fall within budget and be sensible in the expenditure of College funds.

#### **Conflict Resolution**

Administrative staff will demonstrate professionalism in conflict resolution by doing the following:

- Respecting the dignity of all parties involved;
- Refusing their own perceptions regarding the conflicts and preclude attempts to achieve resolution of the problem;
- Ensuring that specific complaints are resolved by a specific timetable for the resolution with all parties concerned;
- Refusing to permit the same complaints or concerns to be raised without making a commitment to resolution, followed by reasonable and appropriate efforts to attain resolution;
- Ensuring the terms of all resolutions of specific complaints are appropriately documented.

#### **Public Relations**

Administrators understand that how they represent the college is vitally important to all members of the college community. Professionalism in the realm of public relations will be demonstrated by ensuring:


Public statements are accurate, and

Public statements do not misrepresent or distort the intentions of the college.

Administrators are responsible for ensuring that the required statistical data provided for external agencies providing funds is accurate. Administrators will avoid attempts to use their authority as managers or the reputation of the college to forward any personal or political agendas.

**Failure of conform to the above-mentioned norms shall be constructed as misconduct.**



  
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Pune - 411 044.



Progressive Education Society's  
**MODERN COLLEGE OF PHARMACY**

Accredited by NAAC & NBA  
DST FIST Funded College

'Best College Award' by Savitribai Phule Pune University



Approved by All India Council for Technical Education, New Delhi, Pharmacy Council of India, New Delhi,  
Directorate of Technical Education, Mumbai (MS), Permanently affiliated to  
Savitribai Phule Pune University, Pune & Approved under Section (2 (f) & 12 (B) of UGC Act, 1956

Sector No. 21, Yamunanagar, Nigdi, Pune - 411 044. (M.S.) Tel. : 020-27661314 / 15

E-mail : mcpnigdi44@gmail.com Website : www.mcop.org.in

Prof. Dr. P. D. Chaudhari  
M.Pharm., Ph.D.  
Principal

Prof. Dr. Gajanan R. Ekbote  
M.S., M.N.A.M.S.  
Chairman, Business Council  
P.E. Society, Pune

Ref :

Date :





# Professional Ethics


(Academic year 2021-22)



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<b>P. E. Society's MODERN COLLEGE OF PHARMACY, NIGDI, PUNE-44 NSS REGULAR ACTIVITY REPORT 2021-22</b>	
1.	<b>Name of Activity</b> International Yoga Day
2.	<b>Date of activity</b> 21.06.2021
3.	<b>Time</b> 10.00 am to 2.00 pm
4.	<b>Total no students participated</b> 100
5.	<b>Occasion of activity</b> Yoga day
6.	<b>Inauguration by</b> Dr. P.D. Chaudhari
7.	<b>Place of activity</b> PES Modern College of Pharmacy, Nigdi, Pune (Online)
8.	<b>Objectives of activity</b> To maintain and promote healthy lifestyle. To enable students to have good health by doing yoga. To understand different yogasan for healthy lifestyle. To bring certain amount of self-discipline in students. To develop control on breathing and concentration.
9.	<b>Outcome of activity</b> Students understood and done different yogasan. Students got importance of good health and healthy lifestyle and awareness towards health. Students got knowledge about lifestyle and diet.
10.	<b>Activity co-coordinator</b> Dr. A. S. Tapkir Prof.R.M.Gurav Prof.P.A.Pawar








  **Vivekananda Rock Memorial  
Vivekananda Kendra**

Progressive Education Society's  
**MODERN EDUCATIONAL CAMPUS**  
Behind LIC Building, Yamunanagar, Nigdi, Pune 44

In association with  
**Vivekananda Kendra, Kanyakumari  
Branch - Pimpri Chinchwad**



 **INTERNATIONAL  
DAY  
OF YOGA**  
**21 June 2021**


Yoga for Harmony & Peace


TIME : 08:00 AM

**SPEAKER : MR. PRAMOD SHAHANE**  
Programme is organized online.  
Link will be shared shortly.

For Registration, Contact  
Rashmi Tamboli : 9503370909  
Yugandhara Patil : 9960925745
















   	
<p align="center"><b>P. E. Society's</b> <b>MODERN COLLEGE OF PHARMACY, NIGDI, PUNE-44</b> <b>NSS REGULAR ACTIVITY REPORT</b> <b>2021-22</b></p>	
1. Name of activity	Health checkup campaign
2. Date of activity	02.09.2021
3. Time	10.00 am to 2.00 pm
4. Total no students participated	100
5. Occasion of activity	Fit India Campaign
6. Inauguration by	Dr. P.D. Chaudhari
7. Place of activity	PES Modern College of Pharmacy, Nigdi, Pune
8. Objectives of activity	<ul style="list-style-type: none"><li>• To maintain and promote healthy lifestyle.</li><li>• To enable students to have good health</li><li>• To checkup basic medical tests</li><li>• To bring certain amount of self-discipline in students.</li><li>• Suggestions to symptoms and illness.</li></ul>
9. Outcome of activity	<ul style="list-style-type: none"><li>• Various medical tests on students and staff like BP, blood tests, BMI, sugar etc were done.</li><li>• Students get importance of good health and healthy lifestyle and awareness towards health.</li><li>• Students get knowledge about lifestyle and diet.</li></ul>
10. Activity co-coordinator	Dr. A. S. Tapkir Prof.R.M.Gurav Prof.P.A.Pawar







# पुढारी

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## राष्ट्रीय सेवा योजनेच्या शिबिरास प्रतिसाद

**सज्जद : पुढारी मुख्यालय**

शिबिरात भागीदार असलेल्या फार्मासी यंत्रणेवरून येथे राष्ट्रीय सेवा योजनेचे अद्ययावत शिबिर चालू आहे. या शिबिरातून यंत्रणेच्याकडून ही यंत्रणा प्रतिवर्षी संपादित करते.

हिंदू धर्माचा या भारता सारकायच आहे. त्यामुळेच शिबिरात भागीदार असलेल्या फार्मासी यंत्रणेवरून येथे राष्ट्रीय सेवा योजनेचे अद्ययावत शिबिर चालू आहे. या शिबिरातून यंत्रणेच्याकडून ही यंत्रणा प्रतिवर्षी संपादित करते.

शिबिरात भागीदार असलेल्या फार्मासी यंत्रणेवरून येथे राष्ट्रीय सेवा योजनेचे अद्ययावत शिबिर चालू आहे. या शिबिरातून यंत्रणेच्याकडून ही यंत्रणा प्रतिवर्षी संपादित करते.



शिबिरात भागीदार असलेल्या फार्मासी यंत्रणेवरून येथे राष्ट्रीय सेवा योजनेचे अद्ययावत शिबिर चालू आहे.

शिबिरात भागीदार असलेल्या फार्मासी यंत्रणेवरून येथे राष्ट्रीय सेवा योजनेचे अद्ययावत शिबिर चालू आहे.

शिबिरात भागीदार असलेल्या फार्मासी यंत्रणेवरून येथे राष्ट्रीय सेवा योजनेचे अद्ययावत शिबिर चालू आहे.

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**Dr. A. S. Tapkir**  
 NSS Program Officer










**Dr. P. D. Chaudhari**  
 Principal  
 Principal  
 P. E. S. Modern College of Pharmacy  
 Sector No.21, Yamunanagar, Nigdi,  
 Pune - 411 044





   	
<p align="center"><b>P. E. Society's MODERN COLLEGE OF PHARMACY, NIGDI, PUNE-44 NSS REGULAR ACTIVITY REPORT 2021-22</b></p>	
1. Name of activity	COVID-19 RT-PCR Test Campaign
2. Date of activity	29.09.2021
3. Time	10.00 am to 5.00 pm
4. Total no students participated	100
5. Occasion of activity	COVID-19 RT-PCR Test campaign
6. Inauguration by	Dr. P.D. Chaudhari
7. Place of activity	PES Modern College of Pharmacy, Nigdi, Pune
8. Objectives of activity	To conduct RT-PCR Test To secure the life and make safe to the students against infection of <b>COVID-19</b> . To spread knowledge and awareness of COVID-19 virus and its precautions amongst students and society.
9. Outcome of activity	Students and staff have been tested for Covid19 Students get cleared about knowledge regarding COVID-19 infection and its spread. As a pharmacist student got their role in prevention and in counselling to patients. Students were aware and educated from posters.
10. Activity co-coordinator	Dr. A. S. Tapkir Prof. R.M. Gurav Prof. P.A. Pawar














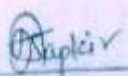


   	
<b>P. E. Society's MODERN COLLEGE OF PHARMACY, NIGDI, PUNE-44 NSS REGULAR ACTIVITY REPORT 2021-22</b>	
1. Name of activity	COVID-19 Vaccination Drive
2. Date of activity	29.10.2021
3. Time	10.00 am to 2.00 pm
4. Total no students participated	100
5. Occasion of activity	COVID-19
6. Inauguration by	Dr. P.D. Chaudhari
7. Place of activity	PES Modern College of Pharmacy, Nigdi, Pune
8. Objectives of activity	To secure the life and make safe to the students against infection of <b>COVID-19</b> . To spread knowledge and awareness of COVID-19 virus and its precautions amongst students and society. Posters and videos collection from students regarding COVID-19 awareness.
9. Outcome of activity	Students get cleared about knowledge regarding COVID-19 infection and its spread. As a pharmacist student got their role in prevention and in counselling to patients. Students were aware and educated from posters.
10. Activity co-coordinator	Dr. A. S. Tapkir Prof. R.M. Gurav Prof. P.A. Pawar








  
Dr. A. S. Tapkir  
NSS Program Officer



  
Dr. P.D. Chaudhari  
Principal

Principal  
P. E. S. Modern College of Pharmacy  
Sector No.21, Yamunanagar, Nigdi,  
Pune - 411 044.





P. E. Society's MODERN COLLEGE OF PHARMACY, NIGDI, PUNE-44 NSS REGULAR ACTIVITY REPORT 2021-22	
1. Name of activity	AIDS Day Awareness
2. Date of activity	01.12.2021
3. Time	10.00 am to 2.00 pm
4. Total no students participated	100
5. Occasion of activity	World AIDS Day
6. Inauguration by	Dr. P.D. Chaudhari
7. Place of activity	PES Modern College of Pharmacy, Nigdi, Pune
8. Objectives of activity	To educate students regarding facts and misconcepts regarding AIDS. To spread knowledge and awareness of AIDS amongst students and society. Posters presentation regarding AIDS.
9. Outcome of activity	Students get cleared about misconcepts of AIDS. As a pharmacist students got their role in prevention and in counselling to patients. Students were aware and educated from posters.
10. Activity co-coordinator	Dr. A. S. Tapkir Prof. P.A.Pawar Prof. R.M.Gurav








*Dr. A. S. Tapkir*  
Dr. A. S. Tapkir  
NSS Program Officer



*Dr. P.D. Chaudhari*  
Dr. P.D. Chaudhari  
Principal  
P. E. S. Modern College of Pharmacy  
Sector No 21, Yamunanagar, Nigdi,  
Pune - 411 044.



   	
<p align="center"><b>P. E. Society's MODERN COLLEGE OF PHARMACY, NIGDI, PUNE-44 NSS REGULAR ACTIVITY REPORT 2021-22</b></p>	
1. Name of activity	Sun Salutation (Surya Namaskar)
2. Date of activity	06.02.2022
3. Time	8.00 to 10 am
4. Total no students participated	100
5. Occasion of activity	Azadi ka Amrit Mohotsav
6. Inauguration by	Dr. P.D. Chaudhuri
7. Place of activity	PES Modern College of Pharmacy, Nigdi, Pune
8. Objectives of activity	To maintain and promote healthy lifestyle. To enable students to have good health by doing Sun Salutation To understand different steps of sun salutation for healthy lifestyle. To bring certain amount of self-discipline in students. To develop control on breathing and concentration.
9. Outcome of activity	Students understood and done different sun salutation steps. Students got importance of good health and healthy lifestyle and awareness towards health. Students got knowledge about lifestyle.
10. Activity co-coordinator	Dr. A. S. Tapkir Prof.R.M.Gurav Prof.P.A.Pawar








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Dr. A. S. Tapkir  
NSS Program Officer




  
Dr. P.D. Chaudhari  
Principal  
P. E. S. Modern College of Pharmacy  
Sector No.21, Yamunanagar, Nigdi,  
Pune - 411 044.





   	
<p align="center"><b>P. E. Society's</b> <b>MODERN COLLEGE OF PHARMACY, NIGDI, PUNE-44</b> <b>NSS REGULAR ACTIVITY REPORT</b> <b>2021-22</b></p>	
1. Name of activity	Pulse Polio Campaign
2. Date of activity	27.02.22
3. Time	09.00 am to 5.00 pm
4. Total no. students participated	100
5. Occasion of activity	Pulse Polio Abhiyan, Government of India
6. Inauguration by	Dr. Harish Shende
7. Place of activity	Sambhajinagar, Nigdi
8. Objectives of activity	<ul style="list-style-type: none"><li>• To understand the role as a health care provider.</li><li>• To implement modern &amp; social values</li></ul>
9. Outcome of activity	<ul style="list-style-type: none"><li>• More than 5000 dose vaccination done.</li><li>• Students get importance of good health and healthy lifestyle and awareness towards health.</li></ul>
10. Activity co-coordinator	Dr. A. S. Tapkir Prof.R.M.Gurav Prof.P.A.Pawar















## NSS Special Camp- Seven Day's Residential Camp at Jambawade Village.

### Awareness Rally 2021-22

		
<b>P. E. Society's Modern College of Pharmacy, Nigdi, Pune-44</b>		
<b>NSS REGULAR ACTIVITY REPORT 2021-2022</b>		
1. Name of activity	Health Awareness rally	
2. Date of activity	23.02.2022	
3. Time	8am – 10am	
4. Total no students participate	50	
5. Occasion of activity	NSS Camp- Awareness Program	
6. Inauguration by	Dr. A. S. Tapkir	
7. Place of activity	Jambhawade, Tal. Maval, Dist. Pune 410507.	
8. Objectives of activity	To Create awareness among communities towards sanitation and cleanliness. To aware peoples improving the quality of life in rural areas through cleanliness and personal hygiene. To aware villagers for fighting against corona diseases.	
9. Outcome of activity	Villager's peoples were encouraged to maintain their surrounding clean and hygienic. Villager's peoples understood the tricks for fighting against corona diseases.	
10. Activity co-coordinator	Dr. A. S. Tapkir	








Photos of activity






  
Dr. A. S. Tapkir  
NSS Program officer




  
Dr. P. D. Chaudhari  
Principal  
P. E. S. Modern College of Pharmacy  
Sector No.21, Yamunanagar, Nigdi,  
Pune - 411 044.



## NSS Special Camp- Health Checkup Camp for Students 2021-22

		
<b>P. E. Society's Modern College of Pharmacy, Nigdi, Pune-44</b>		
<b>NSS CAMP ACTIVITY REPORT 2021-22</b>		
1.	<b>Name of activity</b>	Health check-up camp for village children's and medicines distribution.
2.	<b>Date of activity</b>	23/02/2022
3.	<b>Time</b>	10 am to 1pm
4.	<b>Total no students participate</b>	50
5.	<b>Occasion of activity</b>	NSS camp activity
6.	<b>Inauguration by</b>	Dr. A. S. Tapkir,
7.	<b>Place of activity</b>	Jambhawade, Tal. Maval, Dist. Pune 410507.
8.	<b>Objectives of activity</b>	To perform basic health checkup of the village children's, it included i.e. Height, Weight, and BMI and dental checkup. To aware students regarding social activity to held for villagers. To distribute medicationsto the children's..
9.	<b>Outcome of activity</b>	Children'sbenefited by this health checkup camp. Students understood the needs of villagers and their problems. Children's weregot medicated toothpaste.
10.	<b>Activity co-coordinator</b>	Dr. A. S. Tapkir.






Photos of activity






  
Dr. A. S. Tapkir  
NSS Program officer


  
Dr. B. D. Chaudhari  
Principal  
P. E. S. Modern College of Pharmacy  
Sector No.21, Yamunanagar, Nigdi,  
Pune - 411 044.





## NSS Special Camp- Health Checkup Camp for Villagers 2021-22

		
<b>P. E. Society's Modern College of Pharmacy, Nigdi, Pune-44</b>		
<b>NSS CAMP ACTIVITY REPORT 2021-2022</b>		
1. Name of activity	Health check-up camp and dental checkup camp for villagers.	
2. Date of activity	24/02/2022	
3. Time	9.00 am to 12.00 pm	
4. Total no students participate	50	
5. Occasion of activity	NSS camp activity for villagers.	
6. Inauguration by	Dr. A. S. Tapkir	
7. Place of activity	Jambhawade, Tal. Maval, Dist. Pune 410507.	
8. Objectives of activity	To perform basic health checkup of the villagers i.e. Height, Weight, and BMI, Blood Pressure and blood sugar. To perform Dental checkup. To aware students regarding social activity to held for students.	
9. Outcome of activity	Many villagers benefited by this health checkup camp. Students understood the needs of poor peoples and their problems. Many needy peoples were got medicine. Many villagers dental check-up is completed	
10. Activity co-coordinator	Dr. A. S. Tapkir.	








Photos of activity






  
**Dr. A. S. Tapkir**  
NSS Program officer




  
**Dr. P. D. Chaudhari**  
Principal  
P. E. S. Modern College of Pharmacy  
Sector No.21, Yamunanagar, Nigdi,  
Pune - 411 044.



## NSS Special Camp- Swachh Bharat Abhiyan Activity

		
<b>P. E. Society's Modern College of Pharmacy, Nigdi, Pune-44</b>		
<b>NSS CAMP ACTIVITY REPORT 2021-2022</b>		
1.	<b>Name of activity</b>	Gram swachata Abhiyan
2.	<b>Date of activity</b>	25/02/2022
3.	<b>Time</b>	7.30 am to 12.00pm
4.	<b>Total no students participate</b>	50
5.	<b>Occasion of activity</b>	NSS camp
6.	<b>Inauguration by</b>	Dr. Amit Tapkir
7.	<b>Place of activity</b>	Jambhawade, Tal. Maval, Dist. Pune 410507.
8.	<b>Objectives of activity</b>	To clean the premises of At post Jambhawade, Tal. Maval, Dist. Pune 410507. To make the students aware about the cleaning.
9.	<b>Outcome of activity</b>	Jambhawade Premises has been free from unwanted dusty materials and students got idea regarding importance of cleaning activity to keep good environment.
10.	<b>Activity co-coordinator</b>	Dr. Amit Tapkir





Photos of activity






  
Dr. Amit Tapkir  
NSS Program officer




  
Dr. P. D. Chaudhari  
Principal  
P. E. S. Modern College of Pharmacy  
Sector No.21, Yamunanagar, Nigdi,  
Pune - 411 044.



## NSS Special Camp- Water and Soil Analysis Activity

		
<b>P. E. Society's Modern College of Pharmacy, Nigdi, Pune-44</b>		
<b>NSS REGULAR ACTIVITY REPORT 2021-2022</b>		
1.	<b>Name of activity</b>	Water & soil analysis
2.	<b>Date of activity</b>	25/02/2022
3.	<b>Time</b>	10am – 12pm
4.	<b>Total no students participate</b>	35
5.	<b>Occasion of activity</b>	NSS Campactivity
6.	<b>Inauguration by</b>	Dr. P.D. Chaudhari (Principal)
7.	<b>Place of activity</b>	Jambhawade, Tal. Maval, Dist. Pune 410507.
8.	<b>Objectives of activity</b>	To analyses Soil and Water. To check safety of water, and certain chemical parameters for safe limits. To determine the level of availability of nutrients in the soil.
9.	<b>Outcome of activity</b>	Soil and water analysis was done. Many villagers/Farmers got result for water purity and quality of soil for the growth of farm. Students got information regarding testing of water and soil.
10.	<b>Activity co-coordinator</b>	Dr. A. S. Tapkir







Photos of activity






Dr. A. S. Tapkir  
NSS Program officer




Dr. P. D. Chaudhari  
Principal  
P. E. S. Modern College of Pharmacy  
Sector No.21, Yamunanagar, Nigdi,  
Pune - 411 044.



## NSS Special Camp- Tree Plantation Activity 2021-22

		
<b>P. E. Society's Modern College of Pharmacy, Nigdi, Pune-44</b>		
<b>NSS REGULAR ACTIVITY REPORT 2021-2022</b>		
1.	<b>Name of activity</b>	Tree Plantation activity.
2.	<b>Date of activity</b>	26.02.2022
3.	<b>Time</b>	11am-1pm
4.	<b>Total no students participate</b>	50
5.	<b>Occasion of activity</b>	NSS camp activity
6.	<b>Inauguration by</b>	Dr. Amit Tapkir
7.	<b>Place of activity</b>	Jambhawade, Tal. Maval, Dist. Pune 410507.
8.	<b>Objectives of activity</b>	To clean the premises of Jambhawade, or destruction of unwanted weeds and to sow the seeds for plant growth. To make the students aware about the tree plantation on hills. To make the premises green.
9.	<b>Outcome of activity</b>	The Premises of Jambhawade, is free from unwanted weeds and students got idea how to do tree plantation and importance of tree plantation for our foresteco system.
10.	<b>Activity co-coordinator</b>	Dr. Amit Tapkir,





Photos of activity






  
**Dr. Amit Tapkir.**  
NSS Program officer




  
**Dr. P. D. Chaudhari**  
**Principal**  
P. E. S. Modern College of Pharmacy  
Sector No.21, Yamunanagar, Nigdi,  
Pune - 411 044.



## NSS Special Camp- Wall Painting Activity

		
<b>P. E. Society's Modern College of Pharmacy, Nigdi, Pune-44</b>		
<b>NSS REGULAR ACTIVITY REPORT 2021-2022</b>		
1.	Name of activity	Wall Painting Activity.
2.	Date of activity	26.02.2022
3.	Time	11am-1pm
4.	Total no students participate	50
5.	Occasion of activity	NSS camp activity
6.	Inauguration by	Dr. Amit Tapkir
7.	Place of activity	Jambhawade, Tal. Maval, Dist. Pune 410507.
8.	Objectives of activity	To draw the beautiful educational picture on the different walls of the premises of Jambhawade for increase interest of students in learning To make the learning easy for students To make the premises fresh.
9.	Outcome of activity	Many walls of Jambhawade village had taking unique and attractive look.
10.	Activity co-coordinator	Dr. Amit Tapkir.







Photos of activity






Dr. Amit Tapkir.  
NSS Program officer




Dr. P. D. Chaudhari  
Principal  
P. E. S. Modern College of Pharmacy  
Sector No.21, Yamunanagar, Nigdi,  
Pune - 411 044.



## NSS Special Camp- Self-Defense Training for Girls 2021-22

		
<b>P. E. Society's Modern College of Pharmacy, Nigdi, Pune-44</b>		
<b>NSS CAMP ACTIVITY REPORT 2021-2022</b>		
1.	<b>Name of activity</b>	Self-defense training for girls
2.	<b>Date of activity</b>	26/02/2022
3.	<b>Time</b>	11am to 1pm
4.	<b>Total no students participate</b>	50
5.	<b>Occasion of activity</b>	NSS Camp
6.	<b>Inauguration by</b>	Dr. A. S. Tapkir
7.	<b>Place of activity</b>	Jambhawade, Tal. Maval, Dist. Pune 410507.
8.	<b>Objectives of activity</b>	To train girls for handling troubleshooting situation if any sudden incidence happen with her. To improve self-confidence and courage of girls if she is suffering from any critical situation. To aware girls students regarding this basic life skill like self-defense.
9.	<b>Outcome of activity</b>	Girls understood the some tricks to handled troubleshooting situation if any sudden incidence happen with her. Girl's student's confidence has been buildup to face critical situation. Girl students were motivated and their confidence level is increased by knowing about life skill like self-defense.
10.	<b>Activity co-coordinator</b>	Dr. A. S. Tapkir.





Photos of activity






Dr. A. S. Tapkir  
NSS Program officer




Dr. P. D. Chaudhari  
Principal  
P.E.S. Modern College of Pharmacy  
Sector No.21, Yamunanagar, Nigdi,  
Pune - 411 044.



## NSS Special Camp- Villagers' Health Survey Activity

		
<b>P. E. Society's Modern College of Pharmacy, Nigdi, Pune-44</b>		
<b>NSS REGULAR ACTIVITY REPORT 2021-2022</b>		
1.	<b>Name of activity</b>	Village Health Survey
2.	<b>Date of activity</b>	26.02.2022
3.	<b>Time</b>	10am – 12pm
4.	<b>Total no students participate</b>	50
5.	<b>Occasion of activity</b>	NSS Campactivity
6.	<b>Inauguration by</b>	Dr. A. S. Tapkir
7.	<b>Place of activity</b>	Jambhawade, Tal. Maval, Dist. Pune 410507.
8.	<b>Objectives of activity</b>	To Create awareness among villagers towards health issues. To aware peoples improving the quality of life in village through taking care of own health. To aware villagers for fighting against corona diseases.
9.	<b>Outcome of activity</b>	Villager's peoples were encouraged to maintain their healthy and fit life. Villager's peoples understood the tricks for fighting against corona diseases.
10.	<b>Activity co-coordinator</b>	Dr. A. S. Tapkir









Photos of activity



  
**Dr. A. S. Tapkir**  
NSS Program officer



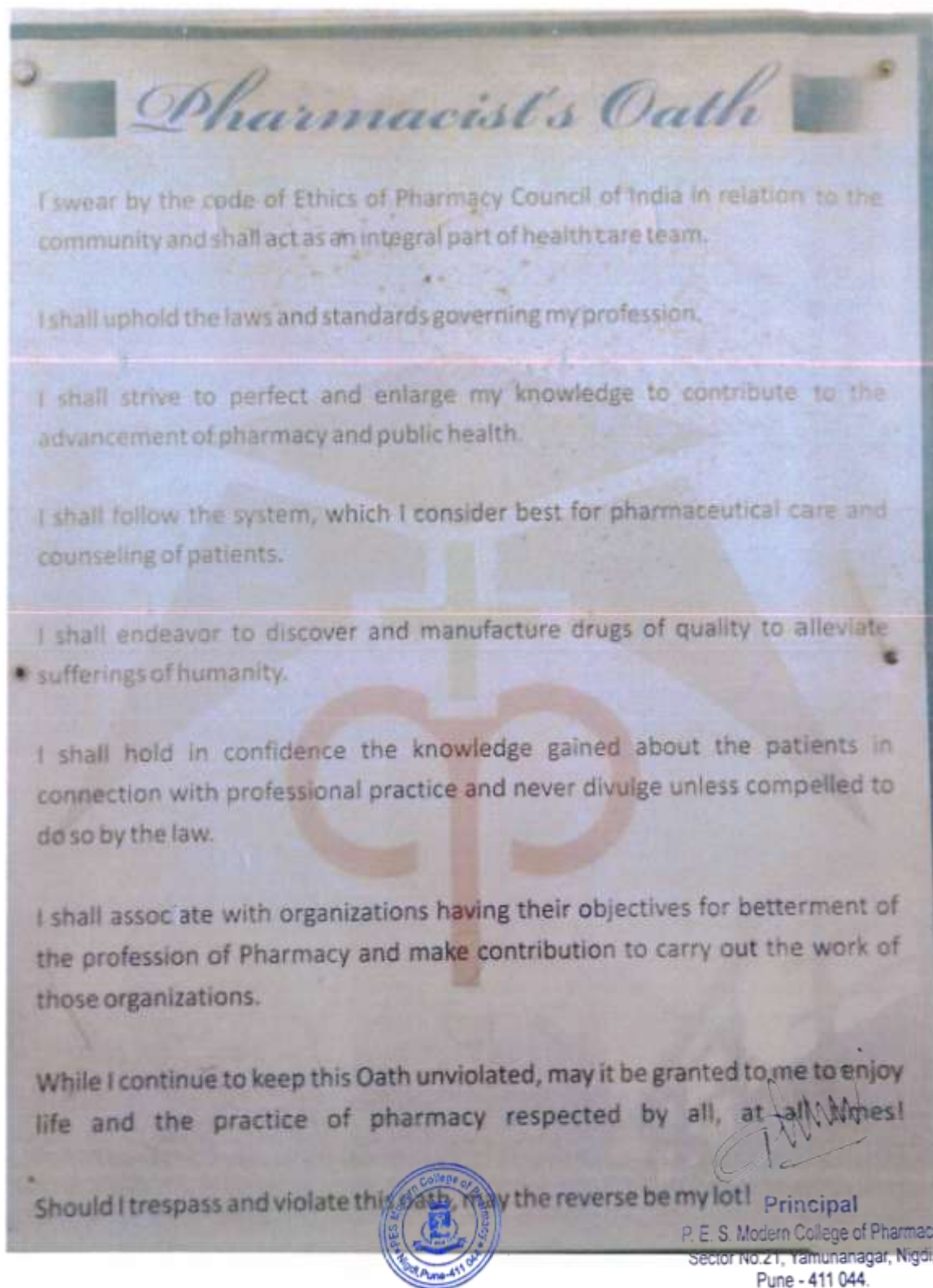
  
**Dr. P. D. Chaudhari**  
Principal  
P. E. S. Modern College of Pharmacy  
Sector No.21, Yamunanagar, Nigdi,  
Pune - 411 044



P. E. Society's MODERN COLLEGE OF PHARMACY, NIGDI, PUNE-44 NSS REGULAR ACTIVITY REPORT 2021-22	
1. Name of activity	Constitution Day
2. Date of activity	26.11.2021
3. Time	10.00 am to 2.00 pm
4. Total no students participated	100
5. Occasion of activity	Indian Constitution Day
6. Inauguration by	Dr. P.D. Chaudhari
7. Place of activity	PES Modern College of Pharmacy, Nigdi, Pune
8. Objectives of activity	To educate students regarding constitution of India. To spread knowledge and awareness of facts about constitution and how it is valuable for all citizens of India. Preamble reading by students of Indian Constitution.
9. Outcome of activity	Students get educated regarding Indian constitution. Students get aware about valuable knowledge of Indian constitution. Students were participated in preamble reading of Indian Constitution.
10. Activity co-coordinator	Dr. A. S. Tapkir











P.E Society's Modern College of Pharmacy,  
Nigdi, Pune-44.

Circular No: 01/RMC/2013-14

Date: 29/10/13

All the faculty and students are hereby informed that the constitution of the Research Monitoring Committee (RMC) has been revised. Following are the members of the RMC.

Sr. No.	Name of the member	Designation
1.	Dr. P D Chaudhari Principal	Chairman
2.	Dr. Ms. S B Jadhav Head, Department of Pharmaceutical Chemistry	Member
3.	Mr. A A Phatak Head, Department of Pharmaceutics	Member
4.	Dr. Ms. D D Bandawane Head, Department of Pharmacology	Member
5.	Mr. U C Galgatte	Member
6.	Dr. Ms. S S Pimple	Member
7.	Dr. Ms. K S Shaikh Head, Department of Quality Assurance Techniques	Member
8.	Mr. B P Pimple Head, Department of Pharmacognosy	Member

This committee shall work with the previous set objectives with immediate effect from 29/10/2013 till further notification.

All applications, activities, publications, training, consultancy, collaborations or any other information pertaining to research shall be communicated to the RMC at [researchatmcp@gmail.com](mailto:researchatmcp@gmail.com).

  
Dr. P D Chaudhari,  
Principal





Progressive Education Society's

## MODERN COLLEGE OF PHARMACY



Approved by All India Council for Technical Education, New Delhi (F.No. 740-BB-397 (F)/ET/98,  
Pharmacy Council of India, (32-336/2002-PCI-2061-62), Directorate of Technical Education, Mumbai (20NGP/1002/1347),  
Permanently affiliated to University of Pune & Approved under Section ( 2 (f) & 12 (B) of UGC Act, 1956).

Sector No. 21, Yashwanagar, Nigdi, Pune - 411 044 (M.S.) Tel : 920-27661315 Fax : 920-27661314  
E-mail : mcoopharm@hotmail.com Website : www.mcop.org.in

Prof. Dr. P. D. Chaudhari  
M.Pharm / Ph.D.  
Principal

Prof. Dr. Gajanan R. Ekote  
M.S. M.R.A.M.S.  
Chairman, Building & Council  
P.E. Society, Pune

Ref: Mcof/Gen/2011-12/208

Date: 15/07/2011

### Research Monitoring Committee Policy

In view of the academic proliferation of the college, paradigm shift and ever evolving landscape of pharmacy education it is imperative to establish a Research Monitoring Committee (RMC) in the college. The principal of this college ponders to carry out frontline research in pharmaceuticals exploring newer vistas on industry-focussed research. Hence a RMC has been constituted in the college.

The RMC of the college envisions the following objectives:

1. To provide conducive ambience and nurture research culture in the college.
2. To lay stress on multidisciplinary research of societal relevance.
3. To inspire and motivate researchers and faculty to submit research projects to various funding agencies like DST, CSIR, AICTE, BCUD etc. in order to augment research funds and upgrade and update the academic infrastructure.
4. To give better emphasis on technology oriented and industry-driven research with relevance to the dynamic corporate needs.
5. To tie-up with institutes of higher learning and industries to carry out collaborative research.
6. To organise seminars to bring greater interaction among researchers of diverse disciplines.
7. To conduct guest lectures of senior academia of national and international repute to share domain expertise and broaden the research perspective.
8. To motivate faculty for participation in quality improvement programmes such as seminars, workshops, conferences and faculty development programmes by bearing the registration charges and travelling allowance.
9. To encourage researchers and faculty to publish their research work in reputed national and international peer reviewed journals of high impact value.
10. To motivate researchers and faculty to carry out patentable research
11. To make consistent and concerted efforts to intensify industry-institute interactions by inviting industrial experts to bridge the industry-institute gap.



*(Signature)*  
Principal

P. E. Society's

Modern College of Pharmacy

Sector No. 21,

Nigdi, Pune - 411 044

STRIVING TOWARDS EXCELLENCE FOREVER



P. E. Society's,  
Modern College of Pharmacy, Nigdi, Pune-411044

### CODE OF CONDUCT

#### INTRODUCTION:

P.E.S. Modern College of Pharmacy is mandated by law and by the community it serves to provide an educational environment that demonstrates professionalism and academic currency, values diversity, and respects the learning process.

The purpose of this code of conduct is to make the Students, Teachers, College Departments/Cells/Committees familiar about the rules and regulations of the College and to progress towards the achievement of the mission and vision of the College.

### CODE OF CONDUCT FOR TEACHING STAFF

#### PROFESSIONAL CONDUCT AND DUTIES:

- Every teacher shall, at all times, maintain absolute integrity and devotion to duty. He/She shall be strictly honest and impartial in his official dealings
- A teacher shall furnish correct information to the best of his/her knowledge regarding his/her qualification, experience, age etc. in respect to his/her appointment/promotion
- Teachers must report in time for duty as per the working hours prescribed and should be available in the campus unless they are assigned duties elsewhere.
- Teachers must always wear their identity badge during working hours.
- No teachers shall be absent from duty without prior permission or grant of leave except for valid reasons or unforeseen contingencies.
- Every teacher shall engage classes regularly, punctually and impart lessons so as to maintain and strengthen standards of academic excellence.
- His academic duties shall include guidance and instruction to students in the form of Tutorial/Seminars/Practicals and



*[Signature]*

Principal

P. E. S. Modern College of Pharmacy  
Sector No.21, Yamunanagar, Nigdi,  
Pune - 411 044.



assessment/ examination/valuation work assigned to him by the College authorities.

- Every teacher shall participate fully and enthusiastically in every college activity including curricular and extra-curricular work.
- Teacher shall be committed to the best interests of students and promote their holistic development by his/her treatment of students in the classroom as well as with such interactions elsewhere.
- Teachers shall make use of all ICT infrastructure built in the institution as per topic/concept/subject of discussion. Teacher shall help, guide, encourage and assist students to ensure that the learning experience is effective and successful.
- Teachers are encouraged to write subject reference books. Also, they are encouraged to publish their original research findings in reputed journals and present papers in conferences/symposiums/seminars. Staff members are encouraged to take up Research projects provided they refrain from plagiarism.
- Make him/ herself available to the students even beyond their class hours and help and guide them without any remuneration or reward.
- Teachers should complete the syllabus in time and shall produce good results in the subjects handled by them and are accountable for the same.
- Teachers should be good counselors and facilitators. They should help, guide, encourage and assist the students to ensure that the Teaching-Learning Process is effective and successful. Value based education must be their motto.
- Be responsible and interact positively with parents and other stakeholders in educating the students.
- Faculty should maintain academic record on Institutional LMS (VM Edulife) for each subject offered during semester/year.
- It shall have details of syllabus, lecture plan, date and time of lectures.

**DUTIES & RESPONSIBILITIES OF PRINCIPAL:**

- The Principal of an Institution should always be honest, fair, supportive, protective and law abiding.



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- The Principal has the responsibility to deliver leadership, direction and co-ordination within the College.
- The Principal has to implement the new ideas and plan to execute the vision and mission.
- The Principal should ensure that the development plans of the College, both long-term and short-term, with respect to the academic programmes are duly processed and implemented through relevant authorities, bodies, committees and its members
- Promote institutional interaction and inculcate research development activities
- Ensure that the staff and students are aware of rules, policies and procedures laid down by the college.
- With regard to the disciplinary measures, the Principal has the authority to take all the necessary actions as per the direction of the regulatory authority. In this regard he/she should take actions, which should be impartial and he/she should maintain complete transparency.
- Recommend and forward communication to the authorities.
- Monitor, manage and educate the administration of the institution and take remedial actions based on the stakeholder's feedback.
- Execute any other qualitative and quantitative work for the welfare of the students and institution.
- Empower all his staff and students to reach their maximum potential.
- The Principal should convene meetings of different cells as and when required.
- Principal has the responsibility for the smooth conduct of curricular, co-curricular and extra-curricular activities of the College.
- The Principal should forward confidential report of all staff members of the Institute and submit it to the Management.

**DUTIES & RESPONSIBILITIES OF HEAD OF THE DEPARTMENT:**

- HOD is responsible for conducting all academic programmes of the Department as per the norms of Savitribai Phule Pune University.
- Teachers should handle the subjects assigned by the Head of the Department



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- As per the rules of the institute staff members must adjust their classes and show the consent of the substitute teacher to the HOD before going on leave.
- All the staff members are advised to strictly follow the above procedure; failing which the leave will be treated as unauthorized with loss of pay.
- Should ensure that all classes are held as per the time table and make alternate arrangement for the class work of teachers absent on that day. Should recommend for disciplinary action against those availing leave without prior arrangement for class work.
- Should verify the student attendance registers to check for proper marking of attendance and implementation of lecture plans.
- Should go around the class rooms and laboratories to ensure the decorum and discipline as per time-table.
- Should call meetings of Faculty to review academic activities of the department.
- The Head of the Department should encourage Faculty Members to update their knowledge by attending seminars/ workshops/ conferences.
- The Head of the Department should encourage Faculty Members to author text books and publish research papers in reputed International / Indian Journals / Conferences.
- The Head of the Department should arrange for feedback responses from the students, and the parents on quality-related department processes.

#### DUTIES & RESPONSIBILITIES OF CLASS TEACHER

- Class-teachers shall monitor mentor- mentee system of his/her class.
- The Class-teachers shall try to see through mentors that institution maintain contact with the parents of their students, send report of their performance to the parents whenever necessary and meet the parents in meetings convened for the purpose for mutual exchange of ideas for the benefit of the institution.
- Communicating to students at the commencement of the course, not only the session plan and evaluation plan but also the rules to be



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enforced on punctuality, attendance, behaviour in class, timely submission of assignments, academic honesty.

**NORMS FOR CONDUCTING EXAMINATIONS:**

- Teachers shall do supervision of college and university exams as per requirements and as per duty assigned by exam department. Teacher shall undertake internal assessment, semester-end assessment as per allotted by Head of the department/Principal.
- Every teacher shall assess impartially the performance of students in tests, examinations, assignments, practicals, dissertations, theses, etc.
- Practical examinations have to be conducted in the respective Laboratories only.
- Both the examiners (Internal and External) have to assess the students for practical. Internal examiners have to brief the external examiners regarding allocation of marks for each component of practical activity.
- Marks must be noted on the answer sheets clearly indicating the marks awarded for each component of practical activity.
- Both the examiners must sign on the Answer Sheets as well as on the award lists.

  
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#### CODE OF CONDUCT FOR STUDENTS

- **Regularity:** A student should be required to put in at least 80% attendance in individual courses considering theory and practical separately as per university norms. Attend lectures, practical sessions and appear for the class test/tutorials regularly. Should complete class work, assignments and journals regularly.
- **Punctuality:** Students should be on time to college for theory and practical sessions.
- **Professionalism:** Students should come to the class room in decent and presentable attire. The student is required to demonstrate professionalism in all dealings in campus with regard to behavior with all employees of the college on/off-campus.
- **Discipline:** Based on the direction of Hon'ble Supreme Court of India the UGC has issued the following regulation: 'UGC Regulations on Curbing the Menace of Ragging in Higher Educational Institutions, 2009'. Ragging is completely prohibited in the campus. If any student is found to indulge in ragging he/she would be dealt with as per law. For the Students seeking admission, their guardian must give anti ragging undertaking along with the admission form. Mobile phones should be switched off during lecture hour and on 'Silent mode' in the college premises. Use of internet for purposes other than academic related activities is banned. Eating, drinking in theory and practical sessions is not allowed. Smoking and use of alcohol/drugs is strictly prohibited within the campus.
- **Examination:** Unfair practices in examination are strictly prohibited and if any student found doing the same or violating the rule will be punishable.
- **Intimation:** In case of absentees, he/she should inform to class teacher. Students should read the notice board every day.
- **Behavior:** Be honest, polite and treat others with respect. Show fairness, courtesy and good faith towards others. Ragging/harassment (in any form) are banned in the campus. Be respectful and maintain the decorum in college premises while participating in college activities.



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- **Care:** Utilize amenities provided by the college with care. Intentionally damaging the property of the college or any person (Students/Faculty) is liable for disciplinary action.
- **Interference:** Students should behave in a manner that will not interfere with the dignity of others. Engaging in disruptive activities like creating unreasonable noise, creating chaos, participating in a riot is prohibited.
- **Library:** All students should enroll for biometric system at entrance of library. Students should keep their bags in the baggage section and not in the reading room. Students should preserve their belongings or valuables. In case of loss he/she would be solely responsible. All students must use their student library card in order to avail the library facilities. Issued books must be submitted on or before submission dates. Do not write / scribble on any furniture or wall of the library. Any student found doing so will be penalized. Reference books will be available only in reading room and issued on the student card. Students are not allowed to take a reference book outside. For renewal purpose: student will have to be present in person along with the book. Mishandling, tearing of books or underlining with pen or pencil will not be tolerated. All Journals / Periodicals should be kept in their respective place after use. Journals / Periodicals cannot be taken outside the Library. Do not enter into the stack room without prior permission. All borrowers should obey the above-mentioned rules.
- **Discrimination:** Any act of discrimination regarding gender, caste, creed, race, religion, color, language, disability, sexual orientation will not be tolerated and demand disciplinary action by the college.
- **Report:** Report to appropriate college authorities in any emergency or unlawful situations in the college.
- **Virtual etiquettes:** Join the online classroom using their own mail account and be prepared, on time and ready to learn. Treat the virtual classroom the same as an in-person classroom at college. Use online tools to engage in and add to the learning community (e.g. participate, ask questions, etc.). Treat others with kindness, dignity and respect. Respect the privacy of everyone in the virtual

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classroom and avoid taking photos, screenshots or capturing images of other students. Not share images/videos from a virtual classroom on social media without permission. Not share the link to online meetings, activities or resources with anyone. Not participate in unauthorized online collaboration during tests and exams. Not anonymize yourself when participating in online classroom activities.

The College shall have the jurisdiction over the conduct of students enrolled with the college and to take cognizance of all acts of misconduct or indiscipline with respect to the code of conduct taking place within the campus and thus hampering the image and functioning of the college

#### CODE OF CONDUCT FOR SUPPORTIVE STAFF

Every employee shall, at all times, maintain absolute integrity and devotion to duty and do nothing which is unbecoming of an employee of an educational institution.

Professional Conduct of Support Staff is assessed in relation to:

**Job performance-** Staff should work, and be seen to work in an open and transparent way. They should familiarize themselves with college policies that are relevant to their responsibilities. And they should adhere to those policies to the best of their ability.

**Relationship with students-** Staff should be vigilant in maintaining their privacy and mindful of the need to avoid placing themselves in vulnerable situations, be mindful of the need to maintain professional boundaries, communicate with students in an appropriate and professional manner. Relationship with faculty, colleagues, administrative staffs, and the general public- Should be supportive and cooperative with other staff members. Practice mutual respect, trust and confidentiality. Practice justice by being committed to the well being of individuals, the wider community and the common good of all people. Must respect and maintain the hierarchy in the Administration.

**Work of conduct-** College expects all supportive staff to conform to the standards of professionalism. Supportive staffs who demonstrate behaviour that does not comply with the minimal standards of



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Professionalism may be subjected to the range of disciplinary actions by the administrative authority.

No employee can claim the leave as a matter of right. When the exigencies of service so require, discretion to refuse leave of any description is reserved to the Principal empowered to grant leave.

All employees shall abide by the rules of the college and all orders and directions of his competent authorities issued from time to time.

No employee shall engage directly or indirectly in any trade or business or undertake any other employment. For undertaking honorary work of a social and charitable nature or work of a literary, artistic or scientific character the employee shall obtain prior permission of the authority.

Should adhere strictly to the official resumption/ closing time and must dress decently & appropriately.

  
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### CODE OF CONDUCT FOR ADMINISTRATIVE STAFF

Administrative staffs are expected to proceed in their daily duties in a manner that upholds the dignity of their profession; to honor the terms and intent of the collective agreements that have been entered into with faculty and support staff.

The professional conduct of administrative staff at Modern College is assessed in four distinct areas of College activity:

- Professionalism
- Management
- Conflict Resolution
- Public Relations

#### **Professionalism and professional conduct**

All employees shall abide by the rules of the college and all orders and directions of his competent authorities issued from time to time. Every employee shall maintain the utmost secrecy regarding the college affairs and the affairs of its constituents and shall not divulge, directly or indirectly, any information of confidential nature either to a member of the public or of the colleges staff. Demonstrate courtesy and respect in all dealings with students, academic employees, and support staff

#### **Management**

Admin staff shall maintain the Service Record of each employee of the college on the printed service books prescribed for the purpose. They shall maintain Separate personal files of the employees Confidential Report in the proforma of each employee shall be recorded every year in the month



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of June and shall be maintained. Admin staff shall maintain leave account. All leave other than casual leave must be entered in the service book of the employee & his leave account completed as soon as it is sanctioned. Practice fiscal responsibility (financial discipline) to ensure that all expenditures fall within budget and be sensible in the expenditure of College funds.

#### **Conflict Resolution**

Administrative staff will demonstrate professionalism in conflict resolution by doing the following:

- Respecting the dignity of all parties involved;
- Refusing their own perceptions regarding the conflicts and preclude attempts to achieve resolution of the problem;
- Ensuring that specific complaints are resolved by a specific timetable for the resolution with all parties concerned;
- Refusing to permit the same complaints or concerns to be raised without making a commitment to resolution, followed by reasonable and appropriate efforts to attain resolution;
- Ensuring the terms of all resolutions of specific complaints are appropriately documented.

#### **Public Relations**

Administrators understand that how they represent the college is vitally important to all members of the college community. Professionalism in the realm of public relations will be demonstrated by ensuring:

Public statements are accurate, and

Public statements do not misrepresent or distort the intentions of the college.

Administrators are responsible for ensuring that the required statistical data provided for external agencies providing funds is accurate. Administrators will avoid attempts to use their authority as managers or the reputation of the college to forward any personal or political agendas.

**Failure to conform to the above-mentioned norms shall be constructed as misconduct.**



  
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P.E. Society's Modern College of Pharmacy, Nigdi, Pune - 44

9<sup>th</sup> IAEC meeting

Date: 22/11/2021

Time: 11.00 am

Minutes of the Meeting

- This was the second meeting in the year 2021.
- Following members attended the meeting  
1. Dr. P.D. Chaudhari, 2. Dr. Vijaya Pandit, 3. Dr. Musti Krishnasastri, 4. Dr. Yogesh Talekar, 5. Dr. M N Potfode, 6. Dr. D.D. Bandawane, 7. Dr.S.S. Nipate, 8. Dr. S.B. Jadhav, 9. Dr. H.P. Pimple
- All the members were welcomed by the member secretary.
- Minutes of last meeting were read and confirmed.
- Discussion was carried out amongst all members that the IAEC constitution tenure of five years is about to end in January 2022 and this will be the last IAEC meeting of the current constitution.
- 7 animal study protocols were discussed in detail.
- Protocol no 1 entitled "Effect of hydroalcoholic extract of *Cassia auriculata* leaves in high fructose induced insulin resistance in experimental animals," was presented by Ms. Ingole Pooja in presence of research guide Dr. D.D. Bandawane.  
Following modifications were suggested –
  - Reduce the volume of retroorbital blood withdrawal as 0.5-1.5 ml.
  - Mention the doses of plant extracts in mg/kg instead of dose 1 and dose 2.
  - It was decided to refer the literature and accordingly replace the standard drug rosiglitazone with pioglitazone/metformin.
  - It was decided to refer the literature and standardise the model of fructose induced insulin resistance.



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- Protocol no 2 entitled "Effect of hydroalcoholic extract of *Punica granatum* leaves in high fructose induced insulin resistance in experimental animals" was presented by Ms. Kotkar Ashwini in presence of research guide Dr. D.D. Bandawane.

Following modifications were suggested –

- Reduce the volume of retroorbital blood withdrawal as 0.5-1.5 ml.
- Mention the doses of plant extracts in mg/kg instead of dose 1 and dose 2.
- It was decided to refer the literature and accordingly replace the standard drug rosiglitazone with pioglitazone/metformin.
- It was decided to mention the antioxidant enzymes like SOD, CAT and glutathione instead of antioxidant status.
- It was decided to refer the literature and standardise the model of fructose induced insulin resistance.

- Protocol no 3 entitled "Evaluation of wound healing activity of some herbal compounds in experimental animals" was presented by Ms. Snehal Kotwal in presence of research guide Dr. S.S. Nipate.

Following modifications were suggested –

- It was decided to modify the title as "To evaluate wound healing activity of *Manilkara zapota* and Turmeric extract preparations in experimental animals".
- It was decided to mention the preparations of *Manilkara zapota* and Turmeric extract in ointment form.
- It was decided to refer the literature and mention the wound size as 20 mm.
- It was decided to perform the evaluation intermittently and for that increase the number of animals to be used from 8 to 10.
- Rectify the histopathology parameter angiogenesis as new vascularisation.

- Protocol no 4 entitled "Evaluation of wound healing activity of some herbal compounds in experimental animals" was presented by Ms. Rita Mahale in presence of research guide Dr. S.S. Nipate.

Following modifications were suggested –



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- It was decided to modify the title as "Evaluation of wound healing activity of *Rumex Acetosa* Iodide, Turmeric Iodide and Ginger Iodide preparations in experimental animals".
  - It was decided to mention the preparations of *Rumex Acetosa* Iodide, Turmeric Iodide and Ginger Iodide in dusting powder form.
  - It was decided to refer the literature and mention the wound size as 20 mm.
  - It was decided to perform the evaluation intermittently and for that increase the number of animals to be used from 8 to 10.
  - Rectify the histopathology parameter angiogenesis as new vascularisation
- Protocol no 5 entitled "Cardioprotective effect of crude extract and active solvent fractions of *Brassica cretica* leaves on cyclophosphamide induced myocardial injury in rats" was presented by Ms. Navale Ashwini in presence of research guide Dr. P.S. Kore.
  - Following modifications were suggested –
    - Refer to literature and accordingly modify acute toxicity procedure as per guideline no. 423 or 425.
    - It was suggested not to include control group for acute toxicity studies.
    - For toxicity studies, use rats weighing between 150-170 grams females.
    - Mention acute toxicity study as single dose study and do not include biochemical and histopathological parameters.
    - Include additional functional parameters for cardiac functions as troponin is reported to exhibit only ischaemic changes.
    - Perform literature survey for active fractions present in the leaves and carry out studies for only active fractions and exclude the remaining fractions.
    - Remove the parameters ALT, AST from the study as they are liver function tests.
  - Protocol no 6 entitled "Formulation and evaluation of topical pickering emulsion of ketoconazole" was presented by Ms. Abuj Sham Bharat in presence of research guide Dr. K.S. Shaikh.
    - It was decided to modify the title as "To study acute dermal toxicity of prepared pickering emulsion of ketoconazole".

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- It was decided to mention the acute dermal toxicity study by OECD 402.
- Protocol no 7 entitled "Evaluation of wound healing activity of herbal gel in experimental animals" was presented by Ms. Satpute Suraj in presence of research guide Dr. A.R. Balap.
- Following modifications were suggested –
  - It was decided to modify the title as "Evaluation of wound healing activity of herbal gel containing leaves extract of *Azadirachta indica* A. and Juss and *Tridax procumbens* L. leaves extract in experimental animals".
  - Mention the anaesthetic agent to be used as ketamine instead of diethyl ether.
  - Rectify the word wound concentration as wound contraction.
  - It was decided to mention the healing biochemical parameters as evaluation parameters.
  - Rectify the parameter angiogenesis as new vascularisation.
- Dr. S.S. Nigote, Scientist in charge of animal house facility was been given the responsibility to verify that due modifications were done before granting the approval to protocol no. 1 to 7.
- The meeting ended with the vote of thanks by Dr. D.D. Bandawane.

*Ramk*



*[Signature]*

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Following members were present for IAEC meeting held on 22<sup>nd</sup> Nov 2021

Sr. No	Name of IAEC member	Designation as IAEC member	Signature
1.	Dr. P. D. Chaudhari	Chairman	
2.	Dr. Vijaya Pandit	Main Nominee	
3.	Dr. Musti Krishnasastri	Scientist from outside the institute	
4.	Dr. Yogesh Talekar	Socially aware member	
5.	Dr. M.N. Potfode	Veterinarian	
6.	Dr. D. D. Bandawane	Biological scientist	
7.	Dr. S.S. Nipate	Scientist in charge of animals facility	
8.	Dr. S.B. Jadhav	Scientist from different biological discipline	
9.	Dr. B.P. Pimple	Scientist from different biological discipline	



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Progressive Education Society's  
**MODERN COLLEGE OF PHARMACY**

Accredited by NAAC & NBA  
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'Best College Award' by Savitribai Phule Pune University



Approved by All India Council for Technical Education, New Delhi, Pharmacy Council of India, New Delhi,  
Directorate of Technical Education, Mumbai (MS), Permanently affiliated to  
Savitribai Phule Pune University, Pune & Approved under Section (2 (f) & 12 (B) of UGC Act, 1956

Sector No. 21, Yamunanagar, Nigdi, Pune - 411 044. (M.S.) Tel. : 020-27661314 / 15

E-mail : mcopnigdi44@gmail.com Website : www.mcop.org.in

Prof. Dr. P. D. Chaudhari  
M.Pharm., Ph.D.  
Principal

Prof. Dr. Gajanan R. Ekbote  
M.S., M.N.A.M.S.  
Chairman, Business Council  
P.E.Society, Pune

Ref :

Date :

# Professional Ethics

(Academic year 2020-21)

STRIVING TOWARDS EXCELLENCE FOREVER



P. E. Society's  
Modern College of Pharmacy, Nigdi, Pune-44  
NSS REGULAR ACTIVITY REPORT  
2020-2021

1.	Name of activity	NSS day celebration
2.	Date of activity	24.09.2020
3.	Time	10.00 am to 2.00 pm
4.	Total no students participated	100
5.	Occasion of activity	NSS Day
6.	Intuguration by.	Dr. P.D. Chaudhari
7.	Place of activity	PES Modern College of Pharmacy, Nigdi, (Online)
8.	Objectives of activity	To understand the community and principles of NSS. To implement various activities of NSS To actively participated in activities which are organized by University and NSS. To organize NSS questionnaire competition.
9.	Outcome of activity	Students implemented various activities on occasion of NSS day. Students actively participated in various activity. Students took pledge of NSS. Students actively participated in NSS questionnaire competition.
10.	Activity co-coordinator	Dr. A. S. Tapkir



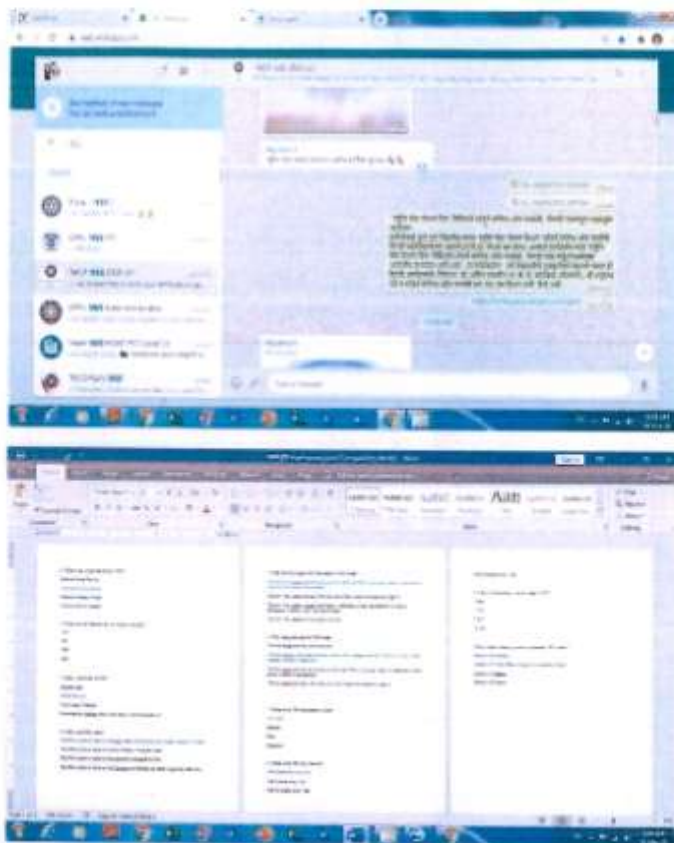
Principal

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*Photos of activity*



  
Dr. A. S. Tapkir  
NSS Program Officer



  
Dr. P.D. Chaudhari  
Principal  
Principal  
P. E. S. Modern College of Pharmacy  
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**P. E. Society's  
MODERN COLLEGE OF PHARMACY, NIGDI, PUNE-44  
NSS REGULAR ACTIVITY REPORT  
2020-2021**

1.	Name of activity	Central Vigilance Commission week celebration
2.	Date of activity	27.10.2020, 10.00 am-2.00pm
3.	Total no students participated	100
4.	Occasion of activity	Central Vigilance Commission week celebration
5.	Inauguration by	Dr. P.D. Chaudhari
6.	Place of activity	PES Modern College of Pharmacy, Nigdi, (Online)
7.	Objectives of activity	To generate awareness in the students about the ill effects of corruption. To remember sardar vallabh bhai patel known to be man of high integrity.
8.	Outcome of activity	Students got knowledge about punishments of corruption. Students learned integrity and ethics are must in professional life. Students celebrated Birth anniversary of Sardar Vallabh Bhai Patel.
9.	Activity co-coordinator	Dr. A. S. Tapkir









  
**Dr. A. S. Tapkir**  
 NSS Program Officer



  
**Dr. P.D. Chaudhari**  
 Principal


**Principal**  
**P. E. S. Modern College of Pharmacy**  
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**P. E. Society's**  
**MODERN COLLEGE OF PHARMACY, NIGDI, PUNE-44**  
**NSS REGULAR ACTIVITY REPORT**  
**2020-2021**

1.	Name of activity	Election literacy
2.	Date of activity	5.12.2020, 10.00 am to 2.00 pm
3.	Total no students participated	100
4.	Occasion of activity	Election literacy club
5.	Inauguration by	Dr. P.D. Chaudhari
6.	Place of activity	PES Modern College of Pharmacy, Nigdi, Pune (Online)
7.	Objectives of activity	<p>To promote awareness of right to vote amongst students &amp; society.</p> <p>To enable critical thinking on issues related to elections rights, electoral system and its process.</p> <p>To educate students about voter registration &amp; related matters.</p> <p>To help students to understand value and their vote.</p> <p>To spread awareness regarding ethical voting.</p>
8.	Outcome of activity	<p>Promoted awareness of right to vote amongst students and society.</p> <p>Students understood about voter registration, related matters and moto of election literacy.</p> <p>Students registered names in respective voting wards.</p>
9.	Activity co-coordinator	Dr. A. S. Tapkir

  
**Dr. A. S. Tapkir**  
 NSS Program Officer

  
**Dr. P.D. Chaudhari**  
 Principal



P. E. Society's  
Modern College of Pharmacy, Nigdi, Pune-44  
NSS REGULAR ACTIVITY REPORT  
2020-2021

1.	Name of activity	AIDS awareness
2.	Date of activity	06.12.2020
3.	Time	10.00 am to 2.00 pm
4.	Total no students participated	100
5.	Occasion of activity	AIDS awareness selfie with slogan
6.	Inauguration by	Dr. P.D. Chaudhari
7.	Place of activity	PES Modern College of Pharmacy, Nigdi, Pune (Online)
8.	Objectives of activity	To educate students regarding facts and misconception regarding AIDS. To spread knowledge and awareness of AIDS amongst students and society. Posters presentation regarding AIDS.
9.	Outcome of activity	Students get cleared about misconception of AIDS. As a pharmacist students got their role in prevention and in counselling to patients. Students were aware and educated from posters.
10.	Activity co-coordinator	Dr. A. S. Tapkir

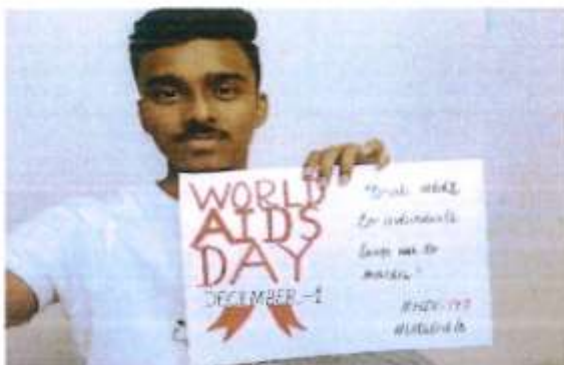



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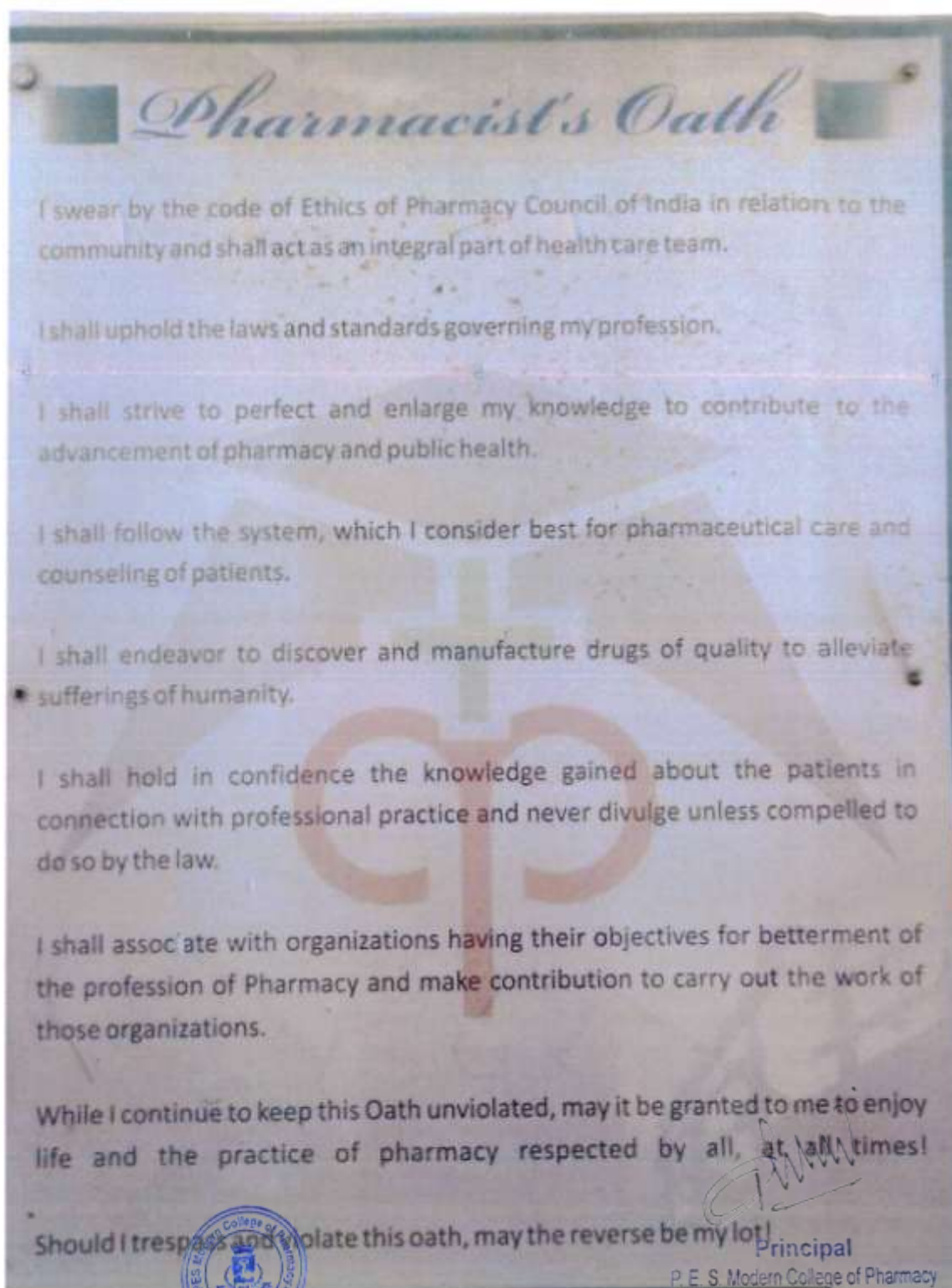
Photos of activity



  
Dr. A. S. Tapkir  
NSS Program Officer



  
Dr. P.D. Chaudhari  
Principal  
Principal  
P. E. S. Modern College of Pharmacy  
Sector No.21, Yashwanagar, Nigdi,  
Pune - 411 044.





P.E Society's Modern College of Pharmacy,  
Nigdi, Pune-44.

**Circular No: 01/RMC/2013-14**

**Date: 29/10/13**

All the faculty and students are hereby informed that the constitution of the Research Monitoring Committee (RMC) has been revised. Following are the members of the RMC.

Sr. No.	Name of the member	Designation
1.	Dr. P D Chaudhari Principal	Chairman
2.	Dr. Ms. S B Jadhav Head, Department of Pharmaceutical Chemistry	Member
3.	Mr. A A Phatak Head, Department of Pharmaceutics	Member
4.	Dr. Ms. D D Bandawane Head, Department of Pharmacology	Member
5.	Mr. U C Galgatte	Member
6.	Dr. Ms. S S Pimple	Member
7.	Dr. Ms. K S Shaikh Head, Department of Quality Assurance Techniques	Member
8.	Mr. B P Pimple Head, Department of Pharmacognosy	Member

This committee shall work with the previous set objectives with immediate effect from 29/10/2013 till further notification.

All applications, activities, publications, training, consultancy, collaborations or any other information pertaining to research shall be communicated to the RMC at [researchatmcp@gmail.com](mailto:researchatmcp@gmail.com).

  
Dr. P.D Chaudhari,  
Principal





Progressive Education Society's

## MODERN COLLEGE OF PHARMACY



Approved by All India Council for Technical Education, New Delhi (F.No. 740-89-397 (P)/ET/98, Pharmacy Council of India. (32-236/2002-PC-2061-62), Directorate of Technical Education, Mumbai (2/NGP/1008/1347), Permanently affiliated to University of Pune & Approved under Section (2 (f) & 12 (B) of UGC Act, 1956).

Sector No. 21, Yamunanagar, Nigdi, Pune - 411 044 (M.S.) Tel. : 020-27681315 Fax : 020-27681314  
Email : mcopharm@hotmail.com Website : www.mcop.org.in

Prof. Dr. R. D. Chaudhari  
M.Pharm., Ph.D.  
Principal

Prof. Dr. Gayatri R. Ekote  
M.S., M.B.A., M.D.  
Chairman, Business Council  
P.E. Society, Pune

Ref : MOP/Gen/2011-12/208

Date 15/07/2011

### Research Monitoring Committee Policy

In view of the academic proliferation of the college, paradigm shift and ever evolving landscape of pharmacy education it is imperative to establish a Research Monitoring Committee (RMC) in the college. The principal of this college ponders to carry out frontline research in pharmaceuticals exploring newer vistas on industry-focussed research. Hence a RMC has been constituted in the college.

The RMC of the college envisions the following objectives:

1. To provide conducive ambience and nurture research culture in the college.
2. To lay stress on multidisciplinary research of societal relevance.
3. To inspire and motivate researchers and faculty to submit research projects to various funding agencies like DST, CSIR, AICTE, BCUD etc. in order to augment research funds and upgrade and update the academic infrastructure.
4. To give better emphasis on technology oriented and industry-driven research with relevance to the dynamic corporate needs.
5. To tie-up with institutes of higher learning and industries to carry out collaborative research.
6. To organise seminars to bring greater interaction among researchers of diverse disciplines.
7. To conduct guest lectures of senior academia of national and international repute to share domain expertise and broaden the research perspective.
8. To motivate faculty for participation in quality improvement programmes such as seminars, workshops, conferences and faculty development programmes by bearing the registration charges and travelling allowance.
9. To encourage researchers and faculty to publish their research work in reputed national and international peer reviewed journals of high impact value.
10. To motivate researchers and faculty to carry out patentable research
11. To make consistent and concerted efforts to intensify industry-institute interactions by inviting industrial experts to bridge the industry-institute gap.



*[Signature]*  
Principal

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Sector No. 21,  
Nigdi, Pune - 411 044

STRIVING TOWARDS EXCELLENCE FOREVER





P. E. Society's,  
Modern College of Pharmacy, Nigdi, Pune-411044

### CODE OF CONDUCT

#### INTRODUCTION:

P.E.S. Modern College of Pharmacy is mandated by law and by the community it serves to provide an educational environment that demonstrates professionalism and academic currency, values diversity, and respects the learning process.

The purpose of this code of conduct is to make the Students, Teachers, College Departments/Cells/Committees familiar about the rules and regulations of the College and to progress towards the achievement of the mission and vision of the College.

### CODE OF CONDUCT FOR TEACHING STAFF

#### PROFESSIONAL CONDUCT AND DUTIES:

- Every teacher shall, at all times, maintain absolute integrity and devotion to duty. He/She shall be strictly honest and impartial in his official dealings
- A teacher shall furnish correct information to the best of his/her knowledge regarding his/her qualification, experience, age etc. in respect to his/her appointment/promotion
- Teachers must report in time for duty as per the working hours prescribed and should be available in the campus unless they are assigned duties elsewhere.
- Teachers must always wear their identity badge during working hours.
- No teachers shall be absent from duty without prior permission or grant of leave except for valid reasons or unforeseen contingencies.
- Every teacher shall engage classes regularly, punctually and impart lessons so as to maintain and strengthen standards of academic excellence.
- His academic duties shall include guidance and instruction to students in the form of Tutorial/Seminars/Practicals and



**Principal**

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assessment/ examination/valuation work assigned to him by the College authorities.

- Every teacher shall participate fully and enthusiastically in every college activity including curricular and extra-curricular work.
- Teacher shall be committed to the best interests of students and promote their holistic development by his/her treatment of students in the classroom as well as with such interactions elsewhere.
- Teachers shall make use of all ICT infrastructure built in the institution as per topic/concept/subject of discussion. Teacher shall help, guide, encourage and assist students to ensure that the learning experience is effective and successful.
- Teachers are encouraged to write subject reference books. Also, they are encouraged to publish their original research findings in reputed journals and present papers in conferences/symposiums/seminars. Staff members are encouraged to take up Research projects provided they refrain from plagiarism.
- Make him/ herself available to the students even beyond their class hours and help and guide them without any remuneration or reward.
- Teachers should complete the syllabus in time and shall produce good results in the subjects handled by them and are accountable for the same.
- Teachers should be good counselors and facilitators. They should help, guide, encourage and assist the students to ensure that the Teaching-Learning Process is effective and successful. Value based education must be their motto.
- Be responsible and interact positively with parents and other stakeholders in educating the students.
- Faculty should maintain academic record on Institutional LMS (VM Edulife) for each subject offered during semester/year.
- It shall have details of syllabus, lecture plan, date and time of lectures.

**DUTIES & RESPONSIBILITIES OF PRINCIPAL:**

- The Principal of an Institution should always be honest, fair, supportive, protective and law abiding.



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- The Principal has the responsibility to deliver leadership, direction and co-ordination within the College.
- The Principal has to implement the new ideas and plan to execute the vision and mission.
- The Principal should ensure that the development plans of the College, both long-term and short-term, with respect to the academic programmes are duly processed and implemented through relevant authorities, bodies, committees and its members
- Promote institutional interaction and inculcate research development activities
- Ensure that the staff and students are aware of rules, policies and procedures laid down by the college.
- With regard to the disciplinary measures, the Principal has the authority to take all the necessary actions as per the direction of the regulatory authority. In this regard he/she should take actions, which should be impartial and he/she should maintain complete transparency.
- Recommend and forward communication to the authorities.
- Monitor, manage and educate the administration of the institution and take remedial actions based on the stakeholder's feedback.
- Execute any other qualitative and quantitative work for the welfare of the students and institution.
- Empower all his staff and students to reach their maximum potential.
- The Principal should convene meetings of different cells as and when required.
- Principal has the responsibility for the smooth conduct of curricular, co-curricular and extra-curricular activities of the College.
- The Principal should forward confidential report of all staff members of the Institute and submit it to the Management.

**DUTIES & RESPONSIBILITIES OF HEAD OF THE DEPARTMENT:**

- HOD is responsible for conducting all academic programmes of the Department as per the norms of Savitribai Phule Pune University.
- Teachers should handle the subjects assigned by the Head of the Department





- As per the rules of the institute staff members must adjust their classes and show the consent of the substitute teacher to the HOD before going on leave.
- All the staff members are advised to strictly follow the above procedure; failing which the leave will be treated as unauthorized with loss of pay.
- Should ensure that all classes are held as per the time table and make alternate arrangement for the class work of teachers absent on that day. Should recommend for disciplinary action against those availing leave without prior arrangement for class work.
- Should verify the student attendance registers to check for proper marking of attendance and implementation of lecture plans.
- Should go around the class rooms and laboratories to ensure the decorum and discipline as per time-table.
- Should call meetings of Faculty to review academic activities of the department.
- The Head of the Department should encourage Faculty Members to update their knowledge by attending seminars/ workshops/ conferences.
- The Head of the Department should encourage Faculty Members to author text books and publish research papers in reputed International / Indian Journals / Conferences.
- The Head of the Department should arrange for feedback responses from the students, and the parents on quality-related department processes.

#### DUTIES & RESPONSIBILITIES OF CLASS TEACHER

- Class-teachers shall monitor mentor- mentee system of his/her class.
- The Class-teachers shall try to see through mentors that institution maintain contact with the parents of their students, send report of their performance to the parents whenever necessary and meet the parents in meetings convened for the purpose for mutual exchange of ideas for the benefit of the institution.
- Communicating to students at the commencement of the course, not only the session plan and evaluation plan but also the rules to be



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enforced on punctuality, attendance, behaviour in class, timely submission of assignments, academic honesty.

**NORMS FOR CONDUCTING EXAMINATIONS:**

- Teachers shall do supervision of college and university exams as per requirements and as per duty assigned by exam department. Teacher shall undertake internal assessment, semester-end assessment as per allotted by Head of the department/Principal.
- Every teacher shall assess impartially the performance of students in tests, examinations, assignments, practicals, dissertations, theses. etc.
- Practical examinations have to be conducted in the respective Laboratories only.
- Both the examiners (Internal and External) have to assess the students for practical. Internal examiners have to brief the external examiners regarding allocation of marks for each component of practical activity.
- Marks must be noted on the answer sheets clearly indicating the marks awarded for each component of practical activity.
- Both the examiners must sign on the Answer Sheets as well as on the award lists.

  
Principal

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#### CODE OF CONDUCT FOR STUDENTS

- **Regularity:** A student should be required to put in at least 80% attendance in individual courses considering theory and practical separately as per university norms. Attend lectures, practical sessions and appear for the class test/tutorials regularly. Should complete class work, assignments and journals regularly.
- **Punctuality:** Students should be on time to college for theory and practical sessions.
- **Professionalism:** Students should come to the class room in decent and presentable attire. The student is required to demonstrate professionalism in all dealings in campus with regard to behavior with all employees of the college on/off-campus.
- **Discipline:** Based on the direction of Hon'ble Supreme Court of India the UGC has issued the following regulation: 'UGC Regulations on Curbing the Menace of Ragging in Higher Educational Institutions, 2009'. Ragging is completely prohibited in the campus. If any student is found to indulge in ragging he/she would be dealt with as per law. For the Students seeking admission, their guardian must give anti ragging undertaking along with the admission form. Mobile phones should be switched off during lecture hour and on 'Silent mode' in the college premises. Use of internet for purposes other than academic related activities is banned. Eating, drinking in theory and practical sessions is not allowed. Smoking and use of alcohol/drugs is strictly prohibited within the campus.
- **Examination:** Unfair practices in examination are strictly prohibited and if any student found doing the same or violating the rule will be punishable.
- **Intimation:** In case of absentees, he/she should inform to class teacher. Students should read the notice board every day.
- **Behavior:** Be honest, polite and treat others with respect. Show fairness, courtesy and good faith towards others. Ragging/harassment (in any form) are banned in the campus. Be respectful and maintain the decorum in college premises while participating in college activities.





- **Care:** Utilize amenities provided by the college with care. Intentionally damaging the property of the college or any person (Students/Faculty) is liable for disciplinary action.
- **Interference:** Students should behave in a manner that will not interfere with the dignity of others. Engaging in disruptive activities like creating unreasonable noise, creating chaos, participating in a riot is prohibited.
- **Library:** All students should enroll for biometric system at entrance of library. Students should keep their bags in the baggage section and not in the reading room. Students should preserve their belongings or valuables. In case of loss he/she would be solely responsible. All students must use their student library card in order to avail the library facilities. Issued books must be submitted on or before submission dates. Do not write / scribble on any furniture or wall of the library. Any student found doing so will be penalized. Reference books will be available only in reading room and issued on the student card. Students are not allowed to take a reference book outside. For renewal purpose: student will have to be present in person along with the book. Mishandling, tearing of books or underlining with pen or pencil will not be tolerated. All Journals / Periodicals should be kept in their respective place after use. Journals / Periodicals cannot be taken outside the Library. Do not enter into the stack room without prior permission. All borrowers should obey the above-mentioned rules.
- **Discrimination:** Any act of discrimination regarding gender, caste, creed, race, religion, color, language, disability, sexual orientation will not be tolerated and demand disciplinary action by the college.
- **Report:** Report to appropriate college authorities in any emergency or unlawful situations in the college.
- **Virtual etiquettes:** Join the online classroom using their own mail account and be prepared, on time and ready to learn. Treat the virtual classroom the same as an in-person classroom at college. Use online tools to engage in and add to the learning community (e.g. participate, ask questions, etc.). Treat others with kindness, dignity and respect. Respect the privacy of everyone in the virtual





classroom and avoid taking photos, screenshots or capturing images of other students. Not share images/videos from a virtual classroom on social media without permission. Not share the link to online meetings, activities or resources with anyone. Not participate in unauthorized online collaboration during tests and exams. Not anonymize yourself when participating in online classroom activities. The College shall have the jurisdiction over the conduct of students enrolled with the college and to take cognizance of all acts of misconduct or indiscipline with respect to the code of conduct taking place within the campus and thus hampering the image and functioning of the college.

#### CODE OF CONDUCT FOR SUPPORTIVE STAFF

Every employee shall, at all times, maintain absolute integrity and devotion to duty and do nothing which is unbecoming of an employee of an educational institution.

Professional Conduct of Support Staff is assessed in relation to:

**Job performance-** Staff should work, and be seen to work in an open and transparent way. They should familiarize themselves with college policies that are relevant to their responsibilities. And they should adhere to those policies to the best of their ability.

**Relationship with students-** Staff should be vigilant in maintaining their privacy and mindful of the need to avoid placing themselves in vulnerable situations, be mindful of the need to maintain professional boundaries, communicate with students in an appropriate and professional manner. Relationship with faculty, colleagues, administrative staffs, and the general public- Should be supportive and cooperative with other staff members. Practice mutual respect, trust and confidentiality. Practice justice by being committed to the well being of individuals, the wider community and the common good of all people. Must respect and maintain the hierarchy in the Administration.

**Work of conduct-** College expects all supportive staff to conform to the standards of professionalism. Supportive staffs who demonstrate behaviour that does not comply with the minimal standards of








Professionalism may be subjected to the range of disciplinary actions by the administrative authority.

No employee can claim the leave as a matter of right. When the exigencies of service so require, discretion to refuse leave of any description is reserved to the Principal empowered to grant leave.

All employees shall abide by the rules of the college and all orders and directions of his competent authorities issued from time to time.

No employee shall engage directly or indirectly in any trade or business or undertake any other employment. For undertaking honorary work of a social and charitable nature or work of a literary, artistic or scientific character the employee shall obtain prior permission of the authority.

Should adhere strictly to the official resumption/ closing time and must dress decently & appropriately.

  
Principal  
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Sector No.21, Yamunanagar, Nigdi,  
Pune - 411 044.





### CODE OF CONDUCT FOR ADMINISTRATIVE STAFF

Administrative staffs are expected to proceed in their daily duties in a manner that upholds the dignity of their profession; to honor the terms and intent of the collective agreements that have been entered into with faculty and support staff.

The professional conduct of administrative staff at Modern College is assessed in four distinct areas of College activity:

- Professionalism
- Management
- Conflict Resolution
- Public Relations

#### **Professionalism and professional conduct**

All employees shall abide by the rules of the college and all orders and directions of his competent authorities issued from time to time. Every employee shall maintain the utmost secrecy regarding the college affairs and the affairs of its constituents and shall not divulge, directly or indirectly, any information of confidential nature either to a member of the public or of the colleges staff. Demonstrate courtesy and respect in all dealings with students, academic employees, and support staff

#### **Management**

Admin staff shall maintain the Service Record of each employee of the college on the printed service books prescribed for the purpose. They shall maintain Separate personal files of the employees Confidential Report in the proforma of each employee shall be recorded every year in the month



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of June and shall be maintained. Admin staff shall maintain leave account. All leave other than casual leave must be entered in the service book of the employee & his leave account completed as soon as it is sanctioned. Practice fiscal responsibility (financial discipline) to ensure that all expenditures fall within budget and be sensible in the expenditure of College funds.

#### **Conflict Resolution**

Administrative staff will demonstrate professionalism in conflict resolution by doing the following:

- Respecting the dignity of all parties involved;
- Refusing their own perceptions regarding the conflicts and preclude attempts to achieve resolution of the problem;
- Ensuring that specific complaints are resolved by a specific timetable for the resolution with all parties concerned;
- Refusing to permit the same complaints or concerns to be raised without making a commitment to resolution, followed by reasonable and appropriate efforts to attain resolution;
- Ensuring the terms of all resolutions of specific complaints are appropriately documented.

#### **Public Relations**

Administrators understand that how they represent the college is vitally important to all members of the college community. Professionalism in the realm of public relations will be demonstrated by ensuring:

Public statements are accurate, and

Public statements do not misrepresent or distort the intentions of the college.

Administrators are responsible for ensuring that the required statistical data provided for external agencies providing funds is accurate. Administrators will avoid attempts to use their authority as managers or the reputation of the college to forward any personal or political agendas.

**Failure of conform to the above-mentioned norms shall be constructed as misconduct.**



  
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**3<sup>rd</sup> IAEC meeting**

Date: 06/11/2020

Time: 11.00 am

**Minutes of the Meeting**

- This was the first meeting in the year 2020 and conducted through online platform because of the current pandemic situation.
- Following members attended the meeting
  1. Dr. P.D. Chaudhari, 2. Dr. Vijaya Pandit, 3. Dr. Musti Krishnaswamy, 4. Dr. Yogesh Talekar, 5. Dr. D.D. Bandawane, 6. Dr. S.S. Nipate, 7. Dr. S.B. Jadhav, 8. Dr. B.P. Pimple
- All the members were welcomed by the member secretary.
- Minutes of last meeting were read and confirmed.
- 10 animal study protocols were discussed in detail.
- Protocol no 1 entitled "Evaluation of L-Carnitine as a Hepatoprotective in experimental Animals" was presented by Mr. Vikram Nimbalkar in presence of research guide Dr. N.S. Vyavhare.

Following modifications were suggested –

  - Dose of ketamine to be crosschecked by referencing research articles.
- Protocol no 2 entitled "Evaluation of wound healing potential of Cinnamic acid and Naringenin in different experimental animal models" was presented by Mr. Anand Rahigade in presence of research guide Dr. D.D. Bandawane.

Following modifications were suggested –

  - Use only 5% of combinatorial gel as there is no need to evaluate 1% and 10% of gel in combination.



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- It was suggested that the duration of experiment should be the day of epithelization or day 15.
  - Increase the number of animals in diabetic excision wound model due to chances of mortality.
  - Refer literature for acute dermal toxicity (OECD, 402) and confirm the doses as per guideline.
  - Rectify the blood withdrawal volume as 0.5 ml
- Protocol no 3 entitled "Evaluation of hydroalcoholic extract of *Murraya koenigii* leaves on liver impairment in high fat high fructose induced insulin resistance in experimental animals." was presented by Ms. Prachi Gholve in presence of research guide Dr. D.D. Bandawane.  
Following modifications were suggested –
    - It was suggested not to mention liver impairment in title and rewrite the title as "Evaluation of hydroalcoholic extract of *Murraya koenigii* leaves on high fat high fructose induced insulin resistance in experimental animals
    - Fructose concentration should be reduced from 25% to 10%.
    - Parameter liver weight should be mentioned in evaluation parameters and not in physiological parameters.
    - Liver lipid profile should be corrected as serum lipid profile.
- Protocol no 4 entitled "Evaluation of Antiuro lithiatic activity of ethanolic extract of *Delonix regia* leaves in experimental animals" was presented by Ms. Rajnigandha Jori in presence of research guide Dr. S.S. Nipate.  
Following modifications were suggested-
    - Volume of oral route to be mentioned as 0.5ml
    - Crosscheck references for parameters and include correct parameters.
    - It was suggested to carry out urine analysis before and after treatment.
    - It was suggested to confirm the induction of urolithiasis on day 14 before starting drug treatment.
    - It was suggested to check urine sample under microscope to see crystal formation.



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- Protocol no 5 entitled "Evaluation of anti-atherosclerosis activity of aqueous extract *Pisum sativum* pod extract in experimental animals" was presented by Ms. Aishwarya Mandhare in presence of research guide Dr. S.S. Nipate.

Following modifications were suggested-

- Rectify the retro-orbital blood withdrawal volume as 0.5 ml.
- It was suggested to mention the duration of treatment as 60-80 days instead of 0-20 days.

- Protocol no 6 entitled "Evaluation of neuroprotective activity of *Delonix regia* leaves on haloperidol induced Parkinsonism in experimental animals" was presented by Mr Nilesh Choudhary in presence of research guide Dr. S. S. Nipate.

Following modifications were suggested –

- It was suggested to rectify the induction period and treatment period.
- It was suggested not to mention haloperidol in treatment group
- For estimation of parameters, mention the organ as brain

- Protocol no 7 entitled "Effect of ethanol extract of *Annona squamosa* leaves on renal impairment in high fat - high fructose induced insulin resistance in experimental animals" was presented by Ms. Priyanka Karad in presence of research guide Dr. D.D. Bandawane.

Following modifications were suggested –

- It was suggested not to mention renal impairment in title and rewrite the title as "Effect of ethanol extract of *Annona squamosa* leaves on renal impairment in high fat high fructose induced insulin resistance in experimental animals" It was suggested to include the biochemical parameters feasible at laboratory level under plan of study.
- It was suggested to include serum insulin in evaluation parameters and not the fasting insulin.
- Crosscheck the utility of standard drug selected in kidney damage.



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- It was suggested not to include histopathology of kidney as significant damage may not take place in short span of study.
- Protocol no 8 entitled "Evaluation of anti-diabetic activity of some coumarin derivatives" was presented by Ms. Pallavi Vavhal in presence of research guide Dr. S.B. Jadhav.  
Following modifications were suggested –
  - Rectify the acute toxicity study by including female wistar rats of weight 80-120 g and by mentioning proper dosage schedule particularly starting dose.
  - Rectify total number of animals, by considering individual synthesized compounds.
  - It was suggested to use nicotinamide along with high fat diet and STZ for induction of diabetes.
  - Rectify the retro-orbital blood withdrawal volume as 0.5 ml
- Protocol no 9 entitled "Evaluation of Antidiabetic activity of Tetrahydropyrimidine and Imidazo pyridine derivatives" was presented by Prerana Jadhav in presence of research guide Dr. S.B. Jadhav.  
Following modifications were suggested –
  - Rectify the acute toxicity study by including female Wistar rats of weight 80-120 g and by mentioning proper dosage schedule particularly starting dose.
  - Rectify total number of animals by considering the number of synthesized compounds.
  - It was suggested to use nicotinamide along with high fat diet and STZ for induction of diabetes.
  - Rectify the retro-orbital blood withdrawal volume as 0.5 ml
- Protocol no 10 entitled "Evaluation of Antidiabetic activity of Some Heterocyclic compound derivative" was presented by Ms. Megha Salve in presence of research guide Dr. S.B. Jadhav.  
Following modifications were suggested –



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- Rectify the acute toxicity study by including female wistar rats of weight 80-120 g and by mentioning proper dosage schedule particularly starting dose.
- Rectify total number of animals by considering the number of synthesized compounds.
- It was suggested to use nicotinamide along with high fat diet on STZ for induction of diabetes.
- Rectify the retro-orbital blood withdrawal volume as 0.5 ml.
- Dr. S.S. Nipate, Scientist in charge of animals facility was been given the responsibility to verify that due modifications were done before granting the approval to protocol no. 1 to 10.
- The meeting ended with the vote of thanks by Dr. D.D. Bandawane.



  
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8<sup>th</sup> IAEC meeting

Date: 24/05/2021

Time: 11.00 am

Minutes of the Meeting

- This was the first meeting in the year 2021 and conducted through online platform because of the current pandemic situation.
- Following members attended the meeting
  1. Dr. P.D. Chaudhari, 2. Dr. Vijaya Pandit, 3. Dr. Musti Krishnasastri, 4. Dr. Yogesh Talekar, 5. Dr. D.D. Bandawane, 6. Dr. S.S. Nipate, 7. Dr. S.B. Jadhav, 8. Dr. B.P. Pimple
- All the members were welcomed by the member secretary.
- Minutes of last meeting were read and confirmed.
- 2 animal study protocols were discussed in detail.
- Protocol no 1 entitled "Evaluation of combinatorial effect of amitriptyline, methylcobalamine and phytonutrients in experimental diabetic neuropathy" was presented by Ms. Varsha Shende in presence of research guide Dr. D.D. Bandawane. Following modifications were suggested –
  - Rewrite the explanation for number of estimated animals in protocol form as follows "Based on the power law of statistics and variables, we believe that we require the mentioned number of animals"
  - Number of animals in each group should be corrected as 10 instead of 8 considering the STZ induced mortality during the experimental period.
  - Mention the dose of administration as volume per 200 g rat and make sure that it is not exceeding the limits specified.
  - Reduce the volume of intraperitoneal injection to 1.5 ml.
  - It was suggested to revise the blood withdrawal details by mentioning blood withdrawal by retro-orbital plexus instead of cardiac puncture for Biochemical



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estimations and tail puncture method for periodical glucose estimation. Do not mention GOD-POD method as it is not needed.

- Diabetic neuropathy development step has to be added in flow chart. Also add the parameters to be evaluated to confirm the development of diabetic neuropathy.
  - Correct the glucose tolerance term as impaired glucose tolerance.
  - Use ketamine as an anaesthetic agent for the procedures where anaesthesia is required.
  - It was suggested not to include pancreas for histopathology study.
- Protocol no 2 entitled "To evaluate the effect of hydroalcoholic seed extracts of *Glycin max* (L.) Merr, *Macrotyloma uniflorum* and *Brassica oleracea* var. *italica* on haloperidol-induced catalepsy in mice" was presented by Dr. Padmaja Kalshetty.

Following modifications were suggested –

- It was suggested to correct the normal control group without inclusion of haloperidol.
  - It was suggested to include additional group of haloperidol treatment.
  - It was suggested to mention the study parts as single dose study and long term study instead of acute and chronic study.
  - Mention the dose schedule of chronic study at the start of the experimental design.
  - The procedure in Annexure I should be similar as per the table.
  - The same set of animals to be reused after washout period should be clearly mentioned below the table.
  - Mention the parameters to be evaluated.
- Dr. S.S. Nipate, Scientist in charge of animal house facility was been given the responsibility to verify that due modifications were done before granting the approval to protocol no. 1 and 2.
  - The meeting ended with the vote of thanks by Dr. D.D. Bandawane.



Principal

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Progressive Education Society's  
**MODERN COLLEGE OF PHARMACY**

Accredited by NAAC & NBA  
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'Best College Award' by Savitribai Phule Pune University



Approved by All India Council for Technical Education, New Delhi, Pharmacy Council of India, New Delhi,  
Directorate of Technical Education, Mumbai (MS), Permanently affiliated to  
Savitribai Phule Pune University, Pune & Approved under Section (2 (f) & 12 (B) of UGC Act, 1956

Sector No. 21, Yamunanagar, Nigdi, Pune - 411 044. (M.S.) Tel. : 020-27661314 / 15

E-mail : mcpnigdi44@gmail.com Website : www.mcop.org.in

Prof. Dr. P. D. Chaudhari  
M.Pharm., Ph.D.  
Principal

Prof. Dr. Gajanan R. Ekbote  
M.S., M.N.A.M.S.  
Chairman, Business Council  
P.E.Society, Pune

Ref :

Date :

# Professional Ethics

(Academic year 2019-20)



STRIVING TOWARDS EXCELLENCE FOREVER





P. E. Society's  
Modern College of Pharmacy, Nigdi, Pune-44

NSS REGULAR ACTIVITY REPORT 2019-20

1.	Name of activity	Pharmacy related Model competition "World Pharmacist DAY"
2.	Date of activity	25.09.2019
3.	Time	9.00 am to 5.30 pm
4.	Total no students participate	100
5.	Occasion of activity	--
6.	Inauguration by	Dr. A. A. Pathak PES, Modern College of Pharmacy, Nigdi, Pune.
7.	Place of activity	Seminar Hall, MCOP
8.	Objectives of activity	It helps students to develop their creativity and their skill sets Improving Teamwork and Collaboration Facilitating Growth Mindsets.
9.	Outcome of activity	Students were actively participated in model competition
10.	Activity co-coordinator	Dr. A. S. Tapkir

Photos of activity



Principal

P. E. S. Modern College of Pharmacy  
Sector No.21, Yamunanagar, Nigdi,  
Pune - 411 044.





  
Dr. A.S. Tapkir  
Program officer



  
Dr. P.D. Chaudhari  
Principal

Principal  
P.E.S. Modern College of Pharmacy  
Sector No 21, Yamunanagar, Nigdi,  
Pune - 411044



P. E. Society's  
Modern College of Pharmacy, Nigdi, Pune-44

**NSS REGULAR ACTIVITY REPORT 2019-20**

1.	Name of activity	Indian Constitution day celebration
2.	Date of activity	26.11.2019
3.	Time	10.00 am 10.30 am
4.	Total no students participate	100
5.	Occasion of activity	Indian Constitutional Day
6.	Inauguration by	Dr. P. D. Chaudhari, Principal, PES, Modern College of Pharmacy, Nigdi, Pune.
7.	Place of activity	Seminar Hall, MCOP Nigdi
8.	Objectives of activity	Constitution Day (National Law Day), also known as Samvidhan Divas, is celebrated in India on 26 November every year to commemorate the adoption of the Constitution of India. On 26 November 1949, the Constituent Assembly of India adopted the Constitution of India, and it came into effect on 26 January 1950.
9.	Outcome of activity	Pladge was given to 100 students
10.	Activity co-coordinator	Dr. A. S. Tapkir





Photos of activity










  
Dr. A. S. Tapkir  
Program officer




  
Dr. P. D. Chaudhari  
Principal

**Principal**  
P. E. S. Modern College of Pharmacy  
Sector No.21, Yashwanthnagar, Nigdi,  
Pune - 411 044



  		
<p>P. E. Society's Modern College of Pharmacy, Nigdi, Pune-44</p>		
<p>NSS REGULAR ACTIVITY REPORT 2019-20</p>		
1.	Name of activity	Elocution competition
2.	Date of activity	10.02.2020
3.	Time	2.00pm to 6.00pm
4.	Total no students participate	100
5.	Occasion of activity	Lokshahi Pandhravada
6.	Inauguration by	Mr. Bhosale (PCMC Officer), Adv. Kamble, Adv. Mrs. Gaikwad Madam, Dr. P. D. Chaudhari, principal, Modern College of Pharmacy, Nigdi, Pune.
7.	Place of activity	Modern College of Pharmacy, Nigdi, Pune.
8.	Objectives of activity	<ul style="list-style-type: none"><li>• To create social awareness among students.</li><li>• To encourage students towards the elections and voting.</li></ul>
9.	Outcome of activity	<ul style="list-style-type: none"><li>• Students encouraged for social responsibilities.</li></ul>
10.	Activity co-coordinator	Dr. A. S. Tapkir





Photos of activity





  
Dr. A. S. Tapkir  
Program officer







  
Dr. P. D. Chaudhari  
Principal

Principal  
P. E. S. Modern College of Pharmacy  
Sector No 21, Yamunanagar, Nigdi,  
Pune - 411 044.










**P. E. Society's  
MODERN COLLEGE OF PHARMACY, NIGDI, PUNE-44  
NSS REGULAR ACTIVITY REPORT  
2019-2020**

1.	Name of activity	COVID-19 awareness campaign (Posters and Videos)
2.	Date of activity	12.4.2020, 10.00 am to 2.00 pm
3.	Total no students participated	100
4.	Occasion of activity	COVID-19 Awareness
5.	Inauguration by	Dr. P.D. Chaudhari
6.	Place of activity	PES Modern College of Pharmacy, Nigdi, Pune (Online)
7.	Objectives of activity	To educate students regarding facts and mis concepts regarding COVID-19. To spread knowledge and awareness of COVID-19 virus and its precautions amongst students and society. Posters and videos collection from students regarding COVID-19 awareness.
8.	Outcome of activity	Students get cleared about knowledge regarding COVID-19 infection and its spread. As a pharmacist student got their role in prevention and in counselling to patients. Students were aware and educated from posters.
9.	Activity co-coordinator	Dr. A. S. Tapkir









P. E. Society's  
Modern College of Pharmacy, Nigdi, Pune-44

NSS SPECIAL WINTER CAMP ACTIVITY REPORT 2019-20

1.	Name of activity	Inauguration
2.	Date of activity	13/01/2020
3.	Time	4.00 pm to 6.00 pm
4.	Total no students participate	50
5.	Occasion of activity	Special Winter Camp
6.	Inauguration by	Mr. Nitin Marathe (Z.P Member), Mrs. Mangala Gopale (Sarpanch- Shirgaon), Dr.P.D.Chaudhari (Principal MCOP), Dr. Atul Pathak, All Grampanchayat Members.
7.	Place of activity	A/P Shirgaon, Tal- Maval, Dist.-Pune
8.	Objectives of activity	<ul style="list-style-type: none"><li>• To arrange NSS special winter camp for village students and villagers.</li><li>• To guide all the NSS Volunteers.</li><li>• To discuss activities conducting in the village during seven days camp.</li></ul>
9.	Outcome of activity	<ul style="list-style-type: none"><li>• All activities were discussed.</li><li>• Important guidance given to all NSS volunteers.</li><li>• Villagers problems and issues were discussed.</li></ul>
10.	Activity co-coordinator	Dr. A. S. Tapkir





Photos of activity





P. E. Society's  
Modern College of Pharmacy, Nigdi, Pune-44

NSS SPECIAL WINTER CAMP ACTIVITY REPORT 2019-20

1.	Name of activity	Awareness rally
2.	Date of activity	14/01/2020
3.	Time	8.00 am to 10.00 am
4.	Total no students participate	50
5.	Occasion of activity	Special Winter Camp
6.	Inauguration by	Mrs. Mangala Gopale (Sarpanch- Shirgaon)
7.	Place of activity	A/P Shirgaon, Tal- Maval, Dist.-Pune
8.	Objectives of activity	<ul style="list-style-type: none"><li>• Swachh Bharat</li><li>• AIDS awareness</li><li>• Women empowerment</li><li>• Organ Donation etc</li></ul>
9.	Outcome of activity	<ul style="list-style-type: none"><li>• Villegers are aware about gram swachta, infectious disease, AIDS awareness,</li></ul>
10.	Activity co-coordinator	Dr. A. S. Tapkir







Photos of activity





P. E. Society's  
Modern College of Pharmacy, Nigdi, Pune-44

NSS SPECIAL WINTER CAMP ACTIVITY REPORT 2019-20

1.	Name of activity	Dental Check-up
2.	Date of activity	14/01/2020
3.	Time	8.00am to 12.00pm
4.	Total no students participate	50
5.	Occasion of activity	Special Winter Camp
6.	Inauguration by	Mrs. Mangala Gopale (Sarpanch- Shirgaon)
7.	Place of activity	A/P Shirgaon, Tal- Maval, Dist.-Pune
8.	Objectives of activity	<ul style="list-style-type: none"><li>• To check the dental health of orphanage students, other village students and villagers.</li><li>• To distribute toothpaste to all participants.</li><li>• To demonstrate all participants that how to take care of the teeth.</li></ul>
9.	Outcome of activity	<ul style="list-style-type: none"><li>• The participants got aware about the tooth care.</li><li>• Needy people and orphanage students had got free medicines.</li><li>• Also the participants got free medication in case of affected teeth.</li></ul>
10.	Activity co-coordinator	Dr. A. S. Tapkir





Photos of activity





P. E. Society's  
Modern College of Pharmacy, Nigdi, Pune-44

NSS SPECIAL WINTER CAMP ACTIVITY REPORT 2019-20

1.	Name of activity	Eye Check-up
2.	Date of activity	16/01/2020
3.	Time	8.00am to 12.00pm
4.	Total no students participate	50
5.	Occasion of activity	Special Winter Camp
6.	Inauguration by	Mrs. Mangala Gopale (Sarpanch- Shirgaon)
7.	Place of activity	A/P Shirgaon, Tal- Maval, Dist.-Pune
8.	Objectives of activity	<ul style="list-style-type: none"><li>• To check the eyes of orphanage students, other village students and villagers.</li><li>• To distribute goggles to needy participants.</li><li>• To demonstrate all participants that how to take care of the eyes.</li></ul>
9.	Outcome of activity	<ul style="list-style-type: none"><li>• The participants got aware about the eyes care.</li><li>• Needy people and orphanage students had got free medicines like eye drops, goggles, etc.</li><li>• Also the participants got free medication in case of eyes infection.</li></ul>
10.	Activity co-coordinator	Dr. A. S. Tapkir







Photos of activity





P. E. Society's  
Modern College of Pharmacy, Nigdi, Pune-44

NSS SPECIAL WINTER CAMP ACTIVITY REPORT 2019-20

1.	Name of activity	Haemoglobin check up
2.	Date of activity	18/01/2020 and 17/01/2020
3.	Time	8.00am to 12.00pm
4.	Total no students participate	50
5.	Occasion of activity	Special Winter Camp
6.	Inauguration by	Mrs. Mangala Gopale (Sarpanch- Shirgaon)
7.	Place of activity	A/P Shirgaon, Tal- Maval, Dist.-Pune
8.	Objectives of activity	<ul style="list-style-type: none"><li>• To check the Haemoglobin of orphanage students, other village students and villagers.</li><li>• To demonstrate all participants that how to take care of the Haemoglobin.</li></ul>
9.	Outcome of activity	<ul style="list-style-type: none"><li>• The participants got aware about the Haemoglobin.</li><li>• Also the participants got suggestions about daily diet from physicians.</li></ul>
10.	Activity co-coordinator	Dr. A. S. Tapkir





Photos of activity





P. E. Society's  
Modern College of Pharmacy, Nigdi, Pune-44

NSS SPECIAL WINTER CAMP ACTIVITY REPORT 2019-20

1.	Name of activity	Plantation
2.	Date of activity	16/01/2020
3.	Time	8.00am to 12.00pm
4.	Total no students participate	50
5.	Occasion of activity	Special Winter Camp
6.	Inauguration by	Mrs. Mangala Gopale (Sarpanch- Shirgaon)
7.	Place of activity	A/P Shirgaon, Tal- Maval, Dist.-Pune
8.	Objectives of activity	<ul style="list-style-type: none"><li>• We are striving to uplift the quality of our living environment through active planting, proper maintenance and preservation of trees together with other vegetation</li></ul>
9.	Outcome of activity	<ul style="list-style-type: none"><li>• 100 sapling planted successfully</li></ul>
10.	Activity co-coordinator	Dr. A. S. Tapkir







Photos of activity





P. E. Society's  
Modern College of Pharmacy, Nigdi, Pune-44

NSS SPECIAL WINTER CAMP ACTIVITY REPORT 2019-20

1.	Name of activity	Street play
2.	Date of activity	14/01/2020 and 18/01/2020
3.	Time	6.00 pm to 8.00 pm
4.	Total no students participate	50
5.	Occasion of activity	Special Winter Camp
6.	Inauguration by	Mrs. Mangala Gopale (Sarpanch- Shirgaon)
7.	Place of activity	A/P Shirgaon, Tal- Maval, Dist.-Pune
8.	Objectives of activity	<ul style="list-style-type: none"><li>• Swachh Bharat</li><li>• AIDS awareness</li><li>• Women empowerment</li><li>• Plastic free india</li><li>• Organ Donation etc</li></ul>
9.	Outcome of activity	<ul style="list-style-type: none"><li>• Villegers are aware about gram swachta, infectious disease, AIDS awareness by street play</li></ul>
10.	Activity co-coordinator	Dr. A. S. Tapkir





Photos of activity



Dr. A. S. Tapkir  
Dr. A. G. More  
NSS Programme Officer



Dr. P. D. Chaudhari  
Principal  
Principal  
P. E. S. Modern College of Pharmacy  
Sector No.21, Yashwanagar, Nigdi,  
Pune - 411 004



*Pharmacist's Oath*

I swear by the code of Ethics of Pharmacy Council of India in relation to the community and shall act as an integral part of healthcare team.

I shall uphold the laws and standards governing my profession.

I shall strive to perfect and enlarge my knowledge to contribute to the advancement of pharmacy and public health.

I shall follow the system, which I consider best for pharmaceutical care and counseling of patients.

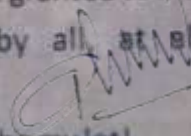
I shall endeavor to discover and manufacture drugs of quality to alleviate sufferings of humanity.


I shall hold in confidence the knowledge gained about the patients in connection with professional practice and never divulge unless compelled to do so by the law.

I shall associate with organizations having their objectives for betterment of the profession of Pharmacy and make contribution to carry out the work of those organizations.

While I continue to keep this Oath unviolated, may it be granted to me to enjoy life and the practice of pharmacy respected by all at all times!

Should I trespass and violate this oath, may the reverse be my lot!

  
Principal  
P. E. S. Modern College of Pharmacy  
Sector No.21, Yamunanagar, Nigdi,  
Pune - 411 044.







P.E Society's Modern College of Pharmacy,  
Nigdi, Pune-44.

**Circular No: 01/RMC/2013-14**

**Date: 29/10/13**

All the faculty and students are hereby informed that the constitution of the Research Monitoring Committee (RMC) has been revised. Following are the members of the RMC.

Sr. No.	Name of the member	Designation
1.	Dr. P D Chaudhari Principal	Chairman
2.	Dr. Ms. S B Jadhav Head, Department of Pharmaceutical Chemistry	Member
3.	Mr. A A Phatak Head, Department of Pharmaceutics	Member
4.	Dr. Ms. D D Bandawane Head, Department of Pharmacology	Member
5.	Mr. U C Galgatte	Member
6.	Dr. Ms. S S Pimple	Member
7.	Dr. Ms. K S Shaikh Head, Department of Quality Assurance Techniques	Member
8.	Mr. B P Pimple Head, Department of Pharmacognosy	Member

This committee shall work with the previous set objectives with immediate effect from 29/10/2013 till further notification.

All applications, activities, publications, training, consultancy, collaborations or any other information pertaining to research shall be communicated to the RMC at [researchatmcp@gmail.com](mailto:researchatmcp@gmail.com).

  
Dr. P.D Chaudhari,  
Principal





Progressive Education Society's

## MODERN COLLEGE OF PHARMACY



Approved by All India Council for Technical Education, New Delhi (F.No. 740-89-397 (P)/ET/98,  
Pharmacy Council of India, (32-336/2002-PCI-2001-02), Directorate of Technical Education, Mumbai (2/NGP/1008/1347),  
Permanently affiliated to University of Pune & Approved under Section (2 (f) & 12 (B) of UGC Act, 1956).  
Sector No. 21, Yamanagar, Nigdi, Pune - 411 044. (M.S.) Tel. : 020-27881315 Fax : 020-27881314  
E-mail : mcofpharm@hotmail.com Website : www.mcof.org.in

Prof. Dr. P. D. Chaudhari  
M.Pharm., Ph.D.  
Principal

Prof. Dr. Gajanan R. Ekbole  
M.S., M.B.A., M.S.  
Chairman, Business Council  
P.E. Society, Pune

Ref: Mcof/Gen/2011-12/208

Date: 15/07/2011

### Research Monitoring Committee Policy

In view of the academic proliferation of the college, paradigm shift and ever evolving landscape of pharmacy education it is imperative to establish a Research Monitoring Committee (RMC) in the college. The principal of this college ponders to carry out frontline research in pharmaceuticals exploring newer vistas on industry-focussed research. Hence a RMC has been constituted in the college.

The RMC of the college envisions the following objectives:

1. To provide conducive ambience and nurture research culture in the college.
2. To lay stress on multidisciplinary research of societal relevance.
3. To inspire and motivate researchers and faculty to submit research projects to various funding agencies like DST, CSIR, AICTE, BCUD etc. in order to augment research funds and upgrade and update the academic infrastructure.
4. To give better emphasis on technology oriented and industry-driven research with relevance to the dynamic corporate needs.
5. To tie-up with institutes of higher learning and industries to carry out collaborative research.
6. To organise seminars to bring greater interaction among researchers of diverse disciplines.
7. To conduct guest lectures of senior academia of national and international repute to share domain expertise and broaden the research perspective.
8. To motivate faculty for participation in quality improvement programmes such as seminars, workshops, conferences and faculty development programmes by bearing the registration charges and travelling allowance.
9. To encourage researchers and faculty to publish their research work in reputed national and international peer reviewed journals of high impact value.
10. To motivate researchers and faculty to carry out patentable research
11. To make consistent and concerted efforts to intensify industry-institute interactions by inviting industrial experts to bridge the industry-institute gap.



*[Signature]*  
Principal

STRIVING TOWARDS EXCELLENCE FOREVER

Modern College of Pharmacy  
Nigdi, Pune - 411 044



P. E. Society's,  
Modern College of Pharmacy, Nigdi, Pune-411044

### CODE OF CONDUCT

#### INTRODUCTION:

P.E.S. Modern College of Pharmacy is mandated by law and by the community it serves to provide an educational environment that demonstrates professionalism and academic currency, values diversity, and respects the learning process.

The purpose of this code of conduct is to make the Students, Teachers, College Departments/Cells/Committees familiar about the rules and regulations of the College and to progress towards the achievement of the mission and vision of the College.

### CODE OF CONDUCT FOR TEACHING STAFF

#### PROFESSIONAL CONDUCT AND DUTIES:

- Every teacher shall, at all times, maintain absolute integrity and devotion to duty. He/She shall be strictly honest and impartial in his official dealings
- A teacher shall furnish correct information to the best of his/her knowledge regarding his/her qualification, experience, age etc. in respect to his/her appointment/promotion
- Teachers must report in time for duty as per the working hours prescribed and should be available in the campus unless they are assigned duties elsewhere.
- Teachers must always wear their identity badge during working hours.
- No teachers shall be absent from duty without prior permission or grant of leave except for valid reasons or unforeseen contingencies.
- Every teacher shall engage classes regularly, punctually and impart lessons so as to maintain and strengthen standards of academic excellence.
- His academic duties shall include guidance and instruction to students, in the form of Tutorial/Seminars/Practicals and





assessment/ examination/valuation work assigned to him by the College authorities.

- Every teacher shall participate fully and enthusiastically in every college activity including curricular and extra-curricular work.
- Teacher shall be committed to the best interests of students and promote their holistic development by his/her treatment of students in the classroom as well as with such interactions elsewhere.
- Teachers shall make use of all ICT infrastructure built in the institution as per topic/concept/subject of discussion. Teacher shall help, guide, encourage and assist students to ensure that the learning experience is effective and successful.
- Teachers are encouraged to write subject reference books. Also, they are encouraged to publish their original research findings in reputed Journals and present papers in conferences/symposiums/seminars. Staff members are encouraged to take up Research projects provided they refrain from plagiarism.
- Make him/ herself available to the students even beyond their class hours and help and guide them without any remuneration or reward.
- Teachers should complete the syllabus in time and shall produce good results in the subjects handled by them and are accountable for the same.
- Teachers should be good counselors and facilitators. They should help, guide, encourage and assist the students to ensure that the Teaching-Learning Process is effective and successful. Value based education must be their motto.
- Be responsible and interact positively with parents and other stakeholders in educating the students.
- Faculty should maintain academic record on Institutional LMS (VM Edulife) for each subject offered during semester/year.
- It shall have details of syllabus, lecture plan, date and time of lectures.

**DUTIES & RESPONSIBILITIES OF PRINCIPAL:**

- The Principal of an Institution should always be honest, fair, supportive, protective and law abiding.







- The Principal has the responsibility to deliver leadership, direction and co-ordination within the College.
- The Principal has to implement the new ideas and plan to execute the vision and mission.
- The Principal should ensure that the development plans of the College, both long-term and short-term, with respect to the academic programmes are duly processed and implemented through relevant authorities, bodies, committees and its members
- Promote institutional interaction and inculcate research development activities
- Ensure that the staff and students are aware of rules, policies and procedures laid down by the college.
- With regard to the disciplinary measures, the Principal has the authority to take all the necessary actions as per the direction of the regulatory authority. In this regard he/she should take actions, which should be impartial and he/she should maintain complete transparency.
- Recommend and forward communication to the authorities.
- Monitor, manage and educate the administration of the institution and take remedial actions based on the stakeholder's feedback.
- Execute any other qualitative and quantitative work for the welfare of the students and institution.
- Empower all his staff and students to reach their maximum potential.
- The Principal should convene meetings of different cells as and when required.
- Principal has the responsibility for the smooth conduct of curricular, co-curricular and extra-curricular activities of the College.
- The Principal should forward confidential report of all staff members of the Institute and submit it to the Management.

**DUTIES & RESPONSIBILITIES OF HEAD OF THE DEPARTMENT:**

- HOD is responsible for conducting all academic programmes of the Department as per the norms of Savitribai Phule Pune University.
- Teachers should handle the subjects assigned by the Head of the Department





- As per the rules of the institute staff members must adjust their classes and show the consent of the substitute teacher to the HOD before going on leave.
- All the staff members are advised to strictly follow the above procedure; failing which the leave will be treated as unauthorized with loss of pay.
- Should ensure that all classes are held as per the time table and make alternate arrangement for the class work of teachers absent on that day. Should recommend for disciplinary action against those availing leave without prior arrangement for class work.
- Should verify the student attendance registers to check for proper marking of attendance and implementation of lecture plans.
- Should go around the class rooms and laboratories to ensure the decorum and discipline as per time-table.
- Should call meetings of Faculty to review academic activities of the department.
- The Head of the Department should encourage Faculty Members to update their knowledge by attending seminars/ workshops/ conferences.
- The Head of the Department should encourage Faculty Members to author text books and publish research papers in reputed International / Indian Journals / Conferences.
- The Head of the Department should arrange for feedback responses from the students, and the parents on quality-related department processes.

#### DUTIES & RESPONSIBILITIES OF CLASS TEACHER

- Class-teachers shall monitor mentor- mentee system of his/her class.
- The Class-teachers shall try to see through mentors that institution maintain contact with the parents of their students, send report of their performance to the parents whenever necessary and meet the parents in meetings convened for the purpose for mutual exchange of ideas for the benefit of the institution.
- Communicating to students at the commencement of the course, not only the session plan and evaluation plan but also the rules to be



Principal

P. E. S. Modern College of Pharmacy  
Sector No.21, Yamunanagar, Nigdi,  
Pune - 411 044.



enforced on punctuality, attendance, behaviour in class, timely submission of assignments, academic honesty.

**NORMS FOR CONDUCTING EXAMINATIONS:**

- Teachers shall do supervision of college and university exams as per requirements and as per duty assigned by exam department. Teacher shall undertake internal assessment, semester-end assessment as per allotted by Head of the department/Principal.
- Every teacher shall assess impartially the performance of students in tests, examinations, assignments, practicals, dissertations, theses, etc.
- Practical examinations have to be conducted in the respective Laboratories only.
- Both the examiners (Internal and External) have to assess the students for practical. Internal examiners have to brief the external examiners regarding allocation of marks for each component of practical activity.
- Marks must be noted on the answer sheets clearly indicating the marks awarded for each component of practical activity.
- Both the examiners must sign on the Answer Sheets as well as on the award lists.

  
Principal  
P. E. S. Modern College of Pharmacy  
Sector No.21, Yamunanagar, Nigdi,  
Pune - 411 044.





#### CODE OF CONDUCT FOR STUDENTS

- **Regularity:** A student should be required to put in at least 80% attendance in individual courses considering theory and practical separately as per university norms. Attend lectures, practical sessions and appear for the class test/tutorials regularly. Should complete class work, assignments and journals regularly.
- **Punctuality:** Students should be on time to college for theory and practical sessions.
- **Professionalism:** Students should come to the class room in decent and presentable attire. The student is required to demonstrate professionalism in all dealings in campus with regard to behavior with all employees of the college on/off-campus.
- **Discipline:** Based on the direction of Hon'ble Supreme Court of India the UGC has issued the following regulation: 'UGC Regulations on Curbing the Menace of Ragging in Higher Educational Institutions, 2009'. Ragging is completely prohibited in the campus. If any student is found to indulge in ragging he/she would be dealt with as per law. For the Students seeking admission, their guardian must give anti ragging undertaking along with the admission form. Mobile phones should be switched off during lecture hour and on 'Silent mode' in the college premises. Use of internet for purposes other than academic related activities is banned. Eating, drinking in theory and practical sessions is not allowed. Smoking and use of alcohol/drugs is strictly prohibited within the campus.
- **Examination:** Unfair practices in examination are strictly prohibited and if any student found doing the same or violating the rule will be punishable.
- **Intimation:** In case of absentees, he/she should inform to class teacher. Students should read the notice board every day.
- **Behavior:** Be honest, polite and treat others with respect. Show fairness, courtesy and good faith towards others. Ragging/harassment (in any form) are banned in the campus. Be respectful and maintain the decorum in college premises while participating in college activities.







- **Care:** Utilize amenities provided by the college with care. Intentionally damaging the property of the college or any person (Students/Faculty) is liable for disciplinary action.
- **Interference:** Students should behave in a manner that will not interfere with the dignity of others. Engaging in disruptive activities like creating unreasonable noise, creating chaos, participating in a riot is prohibited.
- **Library:** All students should enroll for biometric system at entrance of library. Students should keep their bags in the baggage section and not in the reading room. Students should preserve their belongings or valuables. In case of loss he/she would be solely responsible. All students must use their student library card in order to avail the library facilities. Issued books must be submitted on or before submission dates. Do not write / scribble on any furniture or wall of the library. Any student found doing so will be penalized. Reference books will be available only in reading room and issued on the student card. Students are not allowed to take a reference book outside. For renewal purpose: student will have to be present in person along with the book. Mishandling, tearing of books or underlining with pen or pencil will not be tolerated. All Journals / Periodicals should be kept in their respective place after use. Journals / Periodicals cannot be taken outside the Library. Do not enter into the stack room without prior permission. All borrowers should obey the above-mentioned rules.
- **Discrimination:** Any act of discrimination regarding gender, caste, creed, race, religion, color, language, disability, sexual orientation will not be tolerated and demand disciplinary action by the college.
- **Report:** Report to appropriate college authorities in any emergency or unlawful situations in the college.
- **Virtual etiquettes:** Join the online classroom using their own mail account and be prepared, on time and ready to learn. Treat the virtual classroom the same as an in-person classroom at college. Use online tools to engage in and add to the learning community (e.g. participate, ask questions, etc.). Treat others with kindness, dignity and respect. Respect the privacy of everyone in the virtual





classroom and avoid taking photos, screenshots or capturing images of other students. Not share images/videos from a virtual classroom on social media without permission. Not share the link to online meetings, activities or resources with anyone. Not participate in unauthorized online collaboration during tests and exams. Not anonymize yourself when participating in online classroom activities.

The College shall have the jurisdiction over the conduct of students enrolled with the college and to take cognizance of all acts of misconduct or indiscipline with respect to the code of conduct taking place within the campus and thus hampering the image and functioning of the college

#### CODE OF CONDUCT FOR SUPPORTIVE STAFF

Every employee shall, at all times, maintain absolute integrity and devotion to duty and do nothing which is unbecoming of an employee of an educational institution.

Professional Conduct of Support Staff is assessed in relation to:

**Job performance-** Staff should work, and be seen to work in an open and transparent way. They should familiarize themselves with college policies that are relevant to their responsibilities. And they should adhere to those policies to the best of their ability.

**Relationship with students-** Staff should be vigilant in maintaining their privacy and mindful of the need to avoid placing themselves in vulnerable situations, be mindful of the need to maintain professional boundaries, communicate with students in an appropriate and professional manner. Relationship with faculty, colleagues, administrative staffs, and the general public- Should be supportive and cooperative with other staff members. Practice mutual respect, trust and confidentiality. Practice justice by being committed to the well being of individuals, the wider community and the common good of all people. Must respect and maintain the hierarchy in the Administration.

**Work of conduct-** College expects all supportive staff to conform to the standards of professionalism. Supportive staffs who demonstrate behaviour that does not comply with the minimal standards of





Professionalism may be subjected to the range of disciplinary actions by the administrative authority.

No employee can claim the leave as a matter of right. When the exigencies of service so require, discretion to refuse leave of any description is reserved to the Principal empowered to grant leave.

All employees shall abide by the rules of the college and all orders and directions of his competent authorities issued from time to time.

No employee shall engage directly or indirectly in any trade or business or undertake any other employment. For undertaking honorary work of a social and charitable nature or work of a literary, artistic or scientific character the employee shall obtain prior permission of the authority.

Should adhere strictly to the official resumption/ closing time and must dress decently & appropriately.

  
Principal  
P. E. S. Modern College of Pharmacy  
Sector No 21, Yamunanagar, Nigdi,  
Pune - 411 044.





### CODE OF CONDUCT FOR ADMINISTRATIVE STAFF

Administrative staffs are expected to proceed in their daily duties in a manner that upholds the dignity of their profession; to honor the terms and intent of the collective agreements that have been entered into with faculty and support staff.

The professional conduct of administrative staff at Modern College is assessed in four distinct areas of College activity:

- Professionalism
- Management
- Conflict Resolution
- Public Relations

#### **Professionalism and professional conduct**

All employees shall abide by the rules of the college and all orders and directions of his competent authorities issued from time to time. Every employee shall maintain the utmost secrecy regarding the college affairs and the affairs of its constituents and shall not divulge, directly or indirectly, any information of confidential nature either to a member of the public or of the colleges staff. Demonstrate courtesy and respect in all dealings with students, academic employees, and support staff

#### **Management**

Admin staff shall maintain the Service Record of each employee of the college on the printed service books prescribed for the purpose. They shall maintain Separate personal files of the employees Confidential Report in the proforma of each employee shall be recorded every year in the month



**Principal**

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of June and shall be maintained. Admin staff shall maintain leave account. All leave other than casual leave must be entered in the service book of the employee & his leave account completed as soon as it is sanctioned. Practice fiscal responsibility (financial discipline) to ensure that all expenditures fall within budget and be sensible in the expenditure of College funds.

#### **Conflict Resolution**

Administrative staff will demonstrate professionalism in conflict resolution by doing the following:

- Respecting the dignity of all parties involved;
- Refusing their own perceptions regarding the conflicts and preclude attempts to achieve resolution of the problem;
- Ensuring that specific complaints are resolved by a specific timetable for the resolution with all parties concerned;
- Refusing to permit the same complaints or concerns to be raised without making a commitment to resolution, followed by reasonable and appropriate efforts to attain resolution;
- Ensuring the terms of all resolutions of specific complaints are appropriately documented.

#### **Public Relations**

Administrators understand that how they represent the college is vitally important to all members of the college community. Professionalism in the realm of public relations will be demonstrated by ensuring:

Public statements are accurate, and

Public statements do not misrepresent or distort the intentions of the college.

Administrators are responsible for ensuring that the required statistical data provided for external agencies providing funds is accurate. Administrators will avoid attempts to use their authority as managers or the reputation of the college to forward any personal or political agendas.

**Failure of conform to the above-mentioned norms shall be constructed as misconduct.**



  
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**P.E. Society's Modern College of Pharmacy, Nigdi, Pune - 44**

**6<sup>th</sup> IAEC meeting**

Date: 27/11/19

**Minutes of the Meeting**

- This was the second meeting in the year 2019.
  - Following members attended the meeting  
1. Dr. P.D. Chaudhari, 2. Dr. Vijaya Pandit, 3. Dr. Musti Krishnasastry, 4. Dr. Yogesh Talekar, 5. Dr. M.N. Potphode, 6. Dr. D.D. Bandawane, 7. Dr.S.S. Nipate, 8. Dr. S.B. Jadhav, 9. Dr. B.P. Pimple
  - All the members were welcomed by the member secretary.
  - Minutes of last meeting were read and confirmed.
  - 8 animal study protocols were discussed in detail.
- These were the corrections in almost all the protocols
  - Group II should be mentioned as Disease Control group.
  - Rewrite the explanation for point 10 in protocol form as follows-
  - We have scanned the literature and to the best of my knowledge similar studies have not been conducted.
  - Use ketamine as an anaesthetic agent for the procedures where retro-orbital blood withdrawal is required.
- Protocol no 1 entitled "Investigation of antidepressant and antianxiety activity of hydroalcoholic peel extract of *Musa paradisiaca* Linn" was presented by Ms Shweta Ghodke in presence of research guide Dr. D.D. Bandawane.  
Following modifications were suggested –
  - Mention the method of induction of depression.
  - Add justification for use of male mice for the study.



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- Rectify the volume of administration and blood withdrawal volumes of rats by that of mice as follows-

Volume of administration- 0.15 ml

Volume of blood withdrawal- 0.2 ml

- Protocol no 2 entitled "Evaluation of Antigout activity of *Dolichos biflorus* Linn. seeds extract in experimental animals" was presented by Mr. Vikrant Kandage in presence of research guide Dr. S.S. Nipate.

Following modifications were suggested –

- Mention the dose of drugs to be administered as 1 ml/100 gm rat
- Add justification for use of male rats for the study.
- It was suggested to include one additional group of standard anti-inflammatory agent to compare effectiveness of the extract under study.

- Protocol no 3 entitled "Evaluation of Anti-atherosclerotic activity on *Tinospora cardifolia* stem extract in experimental animals" was presented by Ms. Krushna Korachkar in presence of research guide Dr. S.S. Nipate.

Following modifications were suggested –

- Mention the dose of drugs to be administered as 1 ml/100 gm rat
- It was suggested to include protein estimation as additional parameter as an indicator of liver damage.

- Protocol no 4 entitled "Effect of ethanolic extract of *Moringa olifera* leaves on fructose induced Non Alcoholic Fatty Liver in rats" was presented by Ms. Shraddha Makeshwar in presence of research guide Dr. D.D. Bandawane.

Following modifications were suggested-

- Mention the dose of drugs to be administered as 1 ml/100 gm rat
- It was suggested to include one additional group of standard drug metformin to compare effectiveness of the extract under study.



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- Protocol no 5 entitled "Effect of alkaloidal fraction from ethanolic extract of *Astonia scholaris* Linn leaves on fructose induced insulin resistance in rats" was presented by Ms. Varsha Satav in presence of research guide Dr. D.D. Bandawane.

Following modifications were suggested-

- It was suggested to add reference for selection of male rats.
- Mention the dose of drugs to be administered as 1 ml/100 gm rat
- It was suggested to include one additional group of standard drug pioglitazone to compare effectiveness of the extract under study.

- Protocol no 6 entitled "Evaluation of Antiuro lithiatic activity of Flavonoid rich fraction of *Sesbania grandiflora* leaves in experimental animals" was presented by Ms Chaitali Waghmare in presence of research guide Dr. S. S. Nipate.

Following modifications were suggested –

- Mention the dose of drugs to be administered as 1 ml/100 gm rat.
- It was suggested to specify the compounds that will be used for induction of disease and the drugs that will be used for treatment.

- Protocol no 7 entitled "Evaluation of Phytoconstituents for management of CNS complications associated with Alcohol withdrawal" was presented by Mr Prashant Mali in presence of research guide Dr. D.D. Bandawane.

Following modifications were suggested –

- Mention the route of administration (eg oral and intraperitoneal) separately for various drugs to be administered under point 9.
- For blood withdrawal process- because of sophisticated methods available for estimation of the amount of alcohol in the blood, it was suggested to carry out a trial run to confirm how much blood needs to be collected.
- Since there are many time points for the collection of blood, blood withdrawal should be done with using alternate animals in the group. So, accordingly, the protocol needs to be modified.
- Rats to be used in the study should be of weight 150-180 g.
- It was suggested to replace the drug diazepam by standard antidepressant drug.



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- It was suggested to include the biochemical parameters relevant to the study under plan of study.
  - Protocol no 8 entitled "Evaluation of wound healing and anti-hemorrhoid formulations of *Colocasia* and *Portulaca Oleracea*" was presented by Dr Padmaja Kore
- Following modifications were suggested –
- For observation, edema in epithelial layer should be mentioned in place of linear development of edema
  - Mention the names of the drugs included in the development of ointments and creams.
  - The range of wounds is 300mm<sup>2</sup>.
  - In the measurement of wound contraction area, mention day 12 before day 16.
  - Remove saline control group.
  - Since the reuse of animals is not possible it is recommended to use additional set of animals (once the animals are used for wound healing activity same animals cannot be used for another wound healing (hemorrhoid) so another set of animal is recommended) and hence accordingly, the protocol needs to be modified.
- Dr. S.S. Nipate, Scientist in charge of animals facility was been given the responsibility to verify that due modifications were done before granting the approval to protocol no. 1 to 8.
  - All the members visited different departments in the college and the animal house.
  - The meeting ended with the vote of thanks by Dr. S.S. Nipate.



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Following members were present for LAEC meeting held on 27<sup>th</sup> November 2019

Sr. No	Name of IA EC member	Designation as LAEC member	Signature
1.	Dr. P. D. Chaudhari	Chairman	
2.	Dr. Vijaya Pandit	Main Nominee	
3.	Dr. Musti Krishnasastry	Scientist from outside the institute	
4.	Dr. Yogesh Talekar	Socially aware member	
5.	Dr. M.N. Potphode	Veterinarian	
6.	Dr. D. D. Bandawane	Biological scientist	
7.	Dr. S.S. Nipate	Scientist in charge of animals facility	
8.	Dr. S.B. Jadhav	Scientist from different biological discipline	
9.	Dr. B.P. Pimple	Scientist from different biological discipline	



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Progressive Education Society's  
**MODERN COLLEGE OF PHARMACY**

Accredited by NAAC & NBA  
DST FIST Funded College

'Best College Award' by Savitribai Phule Pune University



Approved by All India Council for Technical Education, New Delhi, Pharmacy Council of India, New Delhi,  
Directorate of Technical Education, Mumbai (MS), Permanently affiliated to  
Savitribai Phule Pune University, Pune & Approved under Section (2 (f) & 12 (B) of UGC Act, 1956

Sector No. 21, Yamunanagar, Nigdi, Pune - 411 044. (M.S.) Tel. : 020-27661314 / 15

E-mail : mcopnigdi44@gmail.com Website : www.mcop.org.in

Prof. Dr. P. D. Chaudhari  
M.Pharm., Ph.D.  
Principal

Prof. Dr. Gajanan R. Ekbote  
M.S., M.N.A.M.S.  
Chairman, Business Council  
P.E. Society, Pune

Ref :

Date :

# Professional Ethics

(Academic year 2018-19)



STRIVING TOWARDS EXCELLENCE FOREVER



**P. E. Society's  
Modern College of Pharmacy, Nigdi, Pune-44**

**NSS REGULAR ACTIVITY REPORT 2018-2019**

1.	Name of activity	State Level Program officer Workshop 2019
2.	Date of activity	23.02.2019 to 24.02.2019
3.	Time	10:00 am to 5:00 pm
4.	Total no students participate	5
5.	Occasion of activity	Program officer Workshop 2019
6.	Inauguration by	Mr. Vinod Tawade(Education Minister of Maharashtra).
7.	Place of activity	ShivchatrapatiKridanagriBalewadi, Pune
8.	Objectives of activity	To help felicitation and welcome ceremony of Mr. Vinod Tawade (Education Minister of Maharashtra).
9.	Outcome of activity	Participated students nominated and appreciated by National Service Scheme Mumbai and National Service Scheme unit of SavitribaiPhule Pune University.
10.	Activity co-coordinator	Dr. A. S. Tapkir





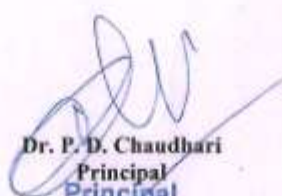


Photos of activity



  
**Dr. A. S. Tapkir**  
NSS Program officer



  
**Dr. P. D. Chaudhari**  
**Principal**  
Principal  
P. E. S. Modern College of Pharmacy  
Sector No.21, Yamunanagar, Nigdi,  
Pune - 411 044.



**P. E. Society's  
Modern College of Pharmacy, Nigdi, Pune-44**

**NSS REGULAR ACTIVITY REPORT 2018-2019**

1.	Name of activity	Health check-up camp
2.	Date of activity	03/10/2018.
3.	Time	10:00 am to 4:00 pm
4.	Total no students participate	100
5.	Occasion of activity	Sharangdhar's Ayurvedic Medicine conducting Health check-up camp
6.	Inauguration by	Dr. P. D. Chaudhari (Principal)
7.	Place of activity	Modern college of Pharmacy, Nigdi
8.	Objectives of activity	To check the health of all the students and staff members from Ayurvedic Medicinal practitioners. To know the proper immunity boosting natural diet food.
9.	Outcome of activity	Students understood the importance of Ayurvedic system of medicine. Students getting different benefits of Ayurvedic medicine.
10.	Activity co-coordinator	Dr. A. S. Tapkir

**Photos of activity**



Dr. A. S. Tapkir  
NSS Program officer



Dr. P. D. Chaudhari  
Principal  
P. E. S. Modern College of Pharmacy  
Sector No.21, Yamunanagar, Nigdi.



**P. E. Society's  
Modern College of Pharmacy, Nigdi, Pune-44**

**NSS CAMP ACTIVITY REPORT 2018-2019**

1.	Name of activity	Health check-up camp for villagers and medicines distribution for villagers and needful peoples
2.	Date of activity	15/01/2019
3.	Time	11.15am to 5.00pm
4.	Total no students participate	50
5.	Occasion of activity	NSS activity to distribute medicine and Health check-up camp for villagers.  1. Blood pressure 2. Blood group 3. Body mass index 4. Hemoglobin 5. Blood sugar 6. Eye check up
6.	Inauguration by	Dr. A. S. Tapkir
7.	Place of activity	At post Shirgaon Tal. Mawal, Dist Pune
8.	Objectives of activity	To perform basic health checkup of the local villagers, it included anthropometric measurements i.e. Height, Weight, and BMI, Blood Pressure and blood sugar. To aware students regarding social activity to held for poor and needy peoples. To distribute medicine to the needy villagers.
9.	Outcome of activity	Many villagers benefited by this health checkup camp. Students understood the needs of poor peoples and their problems. Many needy peoples were got medicine.
10.	Activity co-coordinator	Dr. A. S. Tapkir







Photos of activity



  
Dr. A. S. Tapkir  
NSS Program officer



  
Dr. P. D. Chaudhari  
Principal  
P. E. S. Modern College of Pharmacy  
Sector No.21, Yamunanagar, Nigdi,  
Pune - 411 044.





**P. E. Society's  
Modern College of Pharmacy, Nigdi, Pune-44**

**NSS CAMP ACTIVITY REPORT 2018-2019**

1.	Name of activity	Health check-up camp for students and medicines distribution for students
2.	Date of activity	16/01/2019
3.	Time	9.00 to 12.00
4.	Total no students participate	50
5.	Occasion of activity	NSS activity to distribute medicine and Health check-up camp for students.  1. Blood pressure 2. Blood group 3. Body mass index 4. Hemoglobin 5. Blood sugar 6. Eye check up
6.	Inauguration by	Dr. A. S. Tapkir
7.	Place of activity	At post Shirgaon Tal. Mawal, Dist Pune
8.	Objectives of activity	To perform basic health checkup of the students, it included anthropometric measurements i.e. Height, Weight, and BMI, Blood Pressure and blood sugar. To aware students regarding social activity to held for students. To distribute medicine to the children's..
9.	Outcome of activity	Many villagers benefited by this health checkup camp. Students understood the needs of poor peoples and their problems. Many needy peoples were got medicine.
10.	Activity co-coordinator	Dr. A. S. Tapkir.






Photos of activity



  
Dr. A. S. Tapkir  
NSS Program officer



  
Dr. P. D. Chaudhari  
Principal  
P. E. S. Modern College of Pharmacy  
Sector No.21, Yamunanagar, Nigdi,  
Pune - 411 004



**P. E. Society's  
Modern College of Pharmacy, Nigdi, Pune-44**

**NSS REGULAR ACTIVITY REPORT 2018-2019**


1.	Name of activity	Medicine donation activity
2.	Date of activity	31/01/2019.
3.	Time	10:00 am to 2:00 pm
4.	Total no students participate	10
5.	Occasion of activity	NSS activity to distribute medicine to orphanage.
6.	Inauguration by	Dr. A. S. Tapkir
7.	Place of activity	Shardashram Aashram School, Shirgaon Pune.
8.	Objectives of activity	To aware students regarding social activity to held for poor and needy peoples. To distribute medicine to the needy children. .
9.	Outcome of activity	Students understood the needs of poor peoples and their problems. Many needy childrens were got medicine.
10.	Activity co-coordinator	Dr. A. S. Tapkir

**Photos of activity**



  
Dr. A. S. Tapkir  
NSS Program officer



  
Dr. P. D. Chaudhari  
Principal  
P. E. S. Modern College of Pharmacy  
Sector No.21, Yamunanagar, Nigdi,  
Pune - 411 044.





**P. E. Society's  
Modern College of Pharmacy, Nigdi, Pune-44**

**NSS CAMP ACTIVITY REPORT 2018-2019**


1.	Name of activity	Street play on swachhanisundarbharat
2.	Date of activity	19/01/2019
3.	Time	6.00 to 8.00pm
4.	Total no students participate	50
5.	Occasion of activity	NSS CAMP ACTIVITY
6.	Inauguration by	Mr. A. S. Tapkir
7.	Place of activity	At post Shirgaon Tal. Mawal, Dist Pune
8.	Objectives of activity	To Create awareness among villagers towards sanitation and cleanliness. To aware peoples improving the quality of life in rural areas through cleanliness and personal hygiene.
9.	Outcome of activity	Villagers were encouraged to maintain their surrounding clean and hygienic.
10.	Activity co-coordinator	Mr. A. S. Tapkir

**Photos of activity**



  
Mr. A. S. Tapkir  
NSS Program officer



  
Dr. P. D. Chaudhari  
Principal  
P. E. S. Modern College of Pharmacy  
Sector No.21, Yamunanagar, Nigdi,  
Pune - 411 044.





*Pharmacist's Oath*

I swear by the code of Ethics of Pharmacy Council of India in relation to the community and shall act as an integral part of health care team.

I shall uphold the laws and standards governing my profession.

I shall strive to perfect and enlarge my knowledge to contribute to the advancement of pharmacy and public health.

I shall follow the system, which I consider best for pharmaceutical care and counseling of patients.


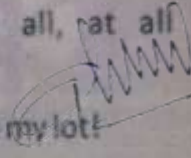
I shall endeavor to discover and manufacture drugs of quality to alleviate sufferings of humanity.

I shall hold in confidence the knowledge gained about the patients in connection with professional practice and never divulge unless compelled to do so by the law.

I shall associate with organizations having their objectives for betterment of the profession of Pharmacy and make contribution to carry out the work of those organizations.

While I continue to keep this Oath unviolated, may it be granted to me to enjoy life and the practice of pharmacy respected by all, at all times!

Should I trespass and violate this oath, may the reverse be my lot!

Principal

P. E. S. Modern College of Pharmacy  
Sector No.21, Yamunanagar, Nigdi,  
Pune - 411 044.



P.E Society's Modern College of Pharmacy,  
Nigdi, Pune-44.

Circular No: 01/RMC/2013-14

Date: 29/10/13

All the faculty and students are hereby informed that the constitution of the Research Monitoring Committee (RMC) has been revised. Following are the members of the RMC.

Sr. No.	Name of the member	Designation
1.	Dr. P D Chaudhari Principal	Chairman
2.	Dr. Ms. S B Jadhav Head, Department of Pharmaceutical Chemistry	Member
3.	Mr. A A Phatak Head, Department of Pharmaceutics	Member
4.	Dr. Ms. D D Bandawane Head, Department of Pharmacology	Member
5.	Mr. U C Galgatte	Member
6.	Dr. Ms. S S Pimple	Member
7.	Dr. Ms. K S Shaikh Head, Department of Quality Assurance Techniques	Member
8.	Mr. B P Pimple Head, Department of Pharmacognosy	Member

This committee shall work with the previous set objectives with immediate effect from 29/10/2013 till further notification.

All applications, activities, publications, training, consultancy, collaborations or any other information pertaining to research shall be communicated to the RMC at [researchatmcp@gmail.com](mailto:researchatmcp@gmail.com).

  
Dr. P D Chaudhari,  
Principal





Progressive Education Society's

## MODERN COLLEGE OF PHARMACY



Approved by All India Council for Technical Education, New Delhi (F.No. 740-89-207 (P)/ET/08,  
Pharmacy Council of India, (32-236/2002-PCI-2001-02), Directorate of Technical Education, Mumbai (2/NGP/1008/1347),  
Permanently affiliated to University of Pune & Approved under Section ( 2 (f) & 12 (B) of UGC Act, 1956).

Sector No. 21, Yamunanagar, Nigdi, Pune - 411 044 (M.S.) Tel. : 020-27661315 Fax : 020-27661314  
E-mail : mcpopharm@hotmail.com Website : www.mcp.org.in

Prof. Dr. P. D. Chaudhari  
M. Pharm., Ph. D.  
Principal

Prof. Dr. Gajanan R. Ekhande  
M.S. M.A.M.S.  
Chairman, Syndicate Council  
P.E. Society, Pune

Ref: MCoP/Gen/2011-12/208

Date: 15/07/2011

### Research Monitoring Committee Policy

In view of the academic proliferation of the college, paradigm shift and ever evolving landscape of pharmacy education it is imperative to establish a Research Monitoring Committee (RMC) in the college. The principal of this college ponders to carry out frontline research in pharmaceuticals exploring newer vistas on industry-focused research. Hence a RMC has been constituted in the college.

The RMC of the college envisions the following objectives:

1. To provide conducive ambience and nurture research culture in the college.
2. To lay stress on multidisciplinary research of societal relevance.
3. To inspire and motivate researchers and faculty to submit research projects to various funding agencies like DST, CSIR, AICTE, BCUD etc. in order to augment research funds and upgrade and update the academic infrastructure.
4. To give better emphasis on technology oriented and industry-driven research with relevance to the dynamic corporate needs.
5. To tie-up with institutes of higher learning and industries to carry out collaborative research.
6. To organise seminars to bring greater interaction among researchers of diverse disciplines.
7. To conduct guest lectures of senior academia of national and international repute to share domain expertise and broaden the research perspective.
8. To motivate faculty for participation in quality improvement programmes such as seminars, workshops, conferences and faculty development programmes by bearing the registration charges and travelling allowance.
9. To encourage researchers and faculty to publish their research work in reputed national and international peer reviewed journals of high impact value.
10. To motivate researchers and faculty to carry out patentable research
11. To make consistent and concerted efforts to intensify industry-institute interactions by inviting industrial experts to bridge the industry-institute gap.



*[Signature]*  
Principal  
P.E. Society's  
Modern College of Pharmacy  
Sector No. 21, Yamunanagar, Nigdi, Pune - 411 044

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Modern College of Pharmacy, Nigdi, Pune-411044

### CODE OF CONDUCT

#### INTRODUCTION:

P.E.S. Modern College of Pharmacy is mandated by law and by the community it serves to provide an educational environment that demonstrates professionalism and academic currency, values diversity, and respects the learning process.

The purpose of this code of conduct is to make the Students, Teachers, College Departments/Cells/Committees familiar about the rules and regulations of the College and to progress towards the achievement of the mission and vision of the College.

### CODE OF CONDUCT FOR TEACHING STAFF

#### PROFESSIONAL CONDUCT AND DUTIES:

- Every teacher shall, at all times, maintain absolute integrity and devotion to duty. He/She shall be strictly honest and impartial in his official dealings
- A teacher shall furnish correct information to the best of his/her knowledge regarding his/her qualification, experience, age etc. in respect to his/her appointment/promotion
- Teachers must report in time for duty as per the working hours prescribed and should be available in the campus unless they are assigned duties elsewhere.
- Teachers must always wear their identity badge during working hours.
- No teachers shall be absent from duty without prior permission or grant of leave except for valid reasons or unforeseen contingencies.
- Every teacher shall engage classes regularly, punctually and impart lessons so as to maintain and strengthen standards of academic excellence.
- His academic duties shall include guidance and instruction to students in the form of Tutorial/Seminars/Practicals and







assessment/ examination/valuation work assigned to him by the College authorities.

- Every teacher shall participate fully and enthusiastically in every college activity including curricular and extra-curricular work.
- Teacher shall be committed to the best interests of students and promote their holistic development by his/her treatment of students in the classroom as well as with such interactions elsewhere.
- Teachers shall make use of all ICT infrastructure built in the institution as per topic/concept/subject of discussion. Teacher shall help, guide, encourage and assist students to ensure that the learning experience is effective and successful.
- Teachers are encouraged to write subject reference books. Also, they are encouraged to publish their original research findings in reputed Journals and present papers in conferences/symposiums/seminars. Staff members are encouraged to take up Research projects provided they refrain from plagiarism.
- Make him/ herself available to the students even beyond their class hours and help and guide them without any remuneration or reward.
- Teachers should complete the syllabus in time and shall produce good results in the subjects handled by them and are accountable for the same.
- Teachers should be good counselors and facilitators. They should help, guide, encourage and assist the students to ensure that the Teaching-Learning Process is effective and successful. Value based education must be their motto.
- Be responsible and interact positively with parents and other stakeholders in educating the students.
- Faculty should maintain academic record on Institutional LMS (VM Edulife) for each subject offered during semester/year.
- It shall have details of syllabus, lecture plan, date and time of lectures.

**DUTIES & RESPONSIBILITIES OF PRINCIPAL:**

- The Principal of an Institution should always be honest, fair, supportive, protective and law abiding.





- The Principal has the responsibility to deliver leadership, direction and co-ordination within the College.
- The Principal has to implement the new ideas and plan to execute the vision and mission.
- The Principal should ensure that the development plans of the College, both long-term and short-term, with respect to the academic programmes are duly processed and implemented through relevant authorities, bodies, committees and its members
- Promote institutional interaction and inculcate research development activities
- Ensure that the staff and students are aware of rules, policies and procedures laid down by the college.
- With regard to the disciplinary measures, the Principal has the authority to take all the necessary actions as per the direction of the regulatory authority. In this regard he/she should take actions, which should be impartial and he/she should maintain complete transparency.
- Recommend and forward communication to the authorities.
- Monitor, manage and educate the administration of the institution and take remedial actions based on the stakeholder's feedback.
- Execute any other qualitative and quantitative work for the welfare of the students and institution.
- Empower all his staff and students to reach their maximum potential.
- The Principal should convene meetings of different cells as and when required.
- Principal has the responsibility for the smooth conduct of curricular, co-curricular and extra-curricular activities of the College.
- The Principal should forward confidential report of all staff members of the Institute and submit it to the Management.

**DUTIES & RESPONSIBILITIES OF HEAD OF THE DEPARTMENT:**

- HOD is responsible for conducting all academic programmes of the Department as per the norms of Savitribai Phule Pune University.
- Teachers should handle the subjects assigned by the Head of the Department





- As per the rules of the institute staff members must adjust their classes and show the consent of the substitute teacher to the HOD before going on leave.
- All the staff members are advised to strictly follow the above procedure; failing which the leave will be treated as unauthorized with loss of pay.
- Should ensure that all classes are held as per the time table and make alternate arrangement for the class work of teachers absent on that day. Should recommend for disciplinary action against those availing leave without prior arrangement for class work.
- Should verify the student attendance registers to check for proper marking of attendance and implementation of lecture plans.
- Should go around the class rooms and laboratories to ensure the decorum and discipline as per time-table.
- Should call meetings of Faculty to review academic activities of the department.
- The Head of the Department should encourage Faculty Members to update their knowledge by attending seminars/ workshops/ conferences.
- The Head of the Department should encourage Faculty Members to author text books and publish research papers in reputed International / Indian Journals / Conferences.
- The Head of the Department should arrange for feedback responses from the students, and the parents on quality-related department processes.

#### DUTIES & RESPONSIBILITIES OF CLASS TEACHER

- Class-teachers shall monitor mentor- mentee system of his/her class.
- The Class-teachers shall try to see through mentors that institution maintain contact with the parents of their students, send report of their performance to the parents whenever necessary and meet the parents in meetings convened for the purpose for mutual exchange of ideas for the benefit of the institution.
- Communicating to students at the commencement of the course, not only the session plan and evaluation plan but also the rules to be





enforced on punctuality, attendance, behaviour in class, timely submission of assignments, academic honesty.

**NORMS FOR CONDUCTING EXAMINATIONS:**

- Teachers shall do supervision of college and university exams as per requirements and as per duty assigned by exam department. Teacher shall undertake internal assessment, semester-end assessment as per allotted by Head of the department/Principal.
- Every teacher shall assess impartially the performance of students in tests, examinations, assignments, practicals, dissertations, theses, etc.
- Practical examinations have to be conducted in the respective Laboratories only.
- Both the examiners (Internal and External) have to assess the students for practical. Internal examiners have to brief the external examiners regarding allocation of marks for each component of practical activity.
- Marks must be noted on the answer sheets clearly indicating the marks awarded for each component of practical activity.
- Both the examiners must sign on the Answer Sheets as well as on the award lists.

  
Principal

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#### CODE OF CONDUCT FOR STUDENTS

- **Regularity:** A student should be required to put in at least 80% attendance in individual courses considering theory and practical separately as per university norms. Attend lectures, practical sessions and appear for the class test/tutorials regularly. Should complete class work, assignments and journals regularly.
- **Punctuality:** Students should be on time to college for theory and practical sessions.
- **Professionalism:** Students should come to the class room in decent and presentable attire. The student is required to demonstrate professionalism in all dealings in campus with regard to behavior with all employees of the college on/off-campus.
- **Discipline:** Based on the direction of Hon'ble Supreme Court of India the UGC has issued the following regulation: 'UGC Regulations on Curbing the Menace of Ragging in Higher Educational Institutions, 2009'. Ragging is completely prohibited in the campus. If any student is found to indulge in ragging he/she would be dealt with as per law. For the Students seeking admission, their guardian must give anti ragging undertaking along with the admission form. Mobile phones should be switched off during lecture hour and on 'Silent mode' in the college premises. Use of internet for purposes other than academic related activities is banned. Eating, drinking in theory and practical sessions is not allowed. Smoking and use of alcohol/drugs is strictly prohibited within the campus.
- **Examination:** Unfair practices in examination are strictly prohibited and if any student found doing the same or violating the rule will be punishable.
- **Intimation:** In case of absentees, he/she should inform to class teacher. Students should read the notice board every day.
- **Behavior:** Be honest, polite and treat others with respect. Show fairness, courtesy and good faith towards others. Ragging/harassment (in any form) are banned in the campus. Be respectful and maintain the decorum in college premises while participating in college activities.





- **Care:** Utilize amenities provided by the college with care. Intentionally damaging the property of the college or any person (Students/Faculty) is liable for disciplinary action.
- **Interference:** Students should behave in a manner that will not interfere with the dignity of others. Engaging in disruptive activities like creating unreasonable noise, creating chaos, participating in a riot is prohibited.
- **Library:** All students should enroll for biometric system at entrance of library. Students should keep their bags in the baggage section and not in the reading room. Students should preserve their belongings or valuables. In case of loss he/she would be solely responsible. All students must use their student library card in order to avail the library facilities. Issued books must be submitted on or before submission dates. Do not write / scribble on any furniture or wall of the library. Any student found doing so will be penalized. Reference books will be available only in reading room and issued on the student card. Students are not allowed to take a reference book outside. For renewal purpose: student will have to be present in person along with the book. Mishandling, tearing of books or underlining with pen or pencil will not be tolerated. All Journals / Periodicals should be kept in their respective place after use. Journals / Periodicals cannot be taken outside the Library. Do not enter into the stack room without prior permission. All borrowers should obey the above-mentioned rules.
- **Discrimination:** Any act of discrimination regarding gender, caste, creed, race, religion, color, language, disability, sexual orientation will not be tolerated and demand disciplinary action by the college.
- **Report:** Report to appropriate college authorities in any emergency or unlawful situations in the college.
- **Virtual etiquettes:** Join the online classroom using their own mail account and be prepared, on time and ready to learn. Treat the virtual classroom the same as an in-person classroom at college. Use online tools to engage in and add to the learning community (e.g. participate, ask questions, etc.). Treat others with kindness, dignity and respect. Respect the privacy of everyone in the virtual





classroom and avoid taking photos, screenshots or capturing images of other students. Not share images/videos from a virtual classroom on social media without permission. Not share the link to online meetings, activities or resources with anyone. Not participate in unauthorized online collaboration during tests and exams. Not anonymize yourself when participating in online classroom activities. The College shall have the jurisdiction over the conduct of students enrolled with the college and to take cognizance of all acts of misconduct or indiscipline with respect to the code of conduct taking place within the campus and thus hampering the image and functioning of the college

#### CODE OF CONDUCT FOR SUPPORTIVE STAFF

Every employee shall, at all times, maintain absolute integrity and devotion to duty and do nothing which is unbecoming of an employee of an educational institution.

Professional Conduct of Support Staff is assessed in relation to:

**Job performance-** Staff should work, and be seen to work in an open and transparent way. They should familiarize themselves with college policies that are relevant to their responsibilities. And they should adhere to those policies to the best of their ability.

**Relationship with students-** Staff should be vigilant in maintaining their privacy and mindful of the need to avoid placing themselves in vulnerable situations, be mindful of the need to maintain professional boundaries, communicate with students in an appropriate and professional manner. Relationship with faculty, colleagues, administrative staffs, and the general public- Should be supportive and cooperative with other staff members. Practice mutual respect, trust and confidentiality. Practice justice by being committed to the well being of individuals, the wider community and the common good of all people. Must respect and maintain the hierarchy in the Administration.

**Work of conduct-** College expects all supportive staff to conform to the standards of professionalism. Supportive staffs who demonstrate behaviour that does not comply with the minimal standards of






Professionalism may be subjected to the range of disciplinary actions by the administrative authority.

No employee can claim the leave as a matter of right. When the exigencies of service so require, discretion to refuse leave of any description is reserved to the Principal empowered to grant leave.

All employees shall abide by the rules of the college and all orders and directions of his competent authorities issued from time to time.

No employee shall engage directly or indirectly in any trade or business or undertake any other employment. For undertaking honorary work of a social and charitable nature or work of a literary, artistic or scientific character the employee shall obtain prior permission of the authority.

Should adhere strictly to the official resumption/ closing time and must dress decently & appropriately.

  
Principal  
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Sector No.21, Yamunanagar, Nigdi,  
Pune - 411 044.







### CODE OF CONDUCT FOR ADMINISTRATIVE STAFF

Administrative staffs are expected to proceed in their daily duties in a manner that upholds the dignity of their profession; to honor the terms and intent of the collective agreements that have been entered into with faculty and support staff.

The professional conduct of administrative staff at Modern College is assessed in four distinct areas of College activity:

- Professionalism
- Management
- Conflict Resolution
- Public Relations

#### **Professionalism and professional conduct**

All employees shall abide by the rules of the college and all orders and directions of his competent authorities issued from time to time. Every employee shall maintain the utmost secrecy regarding the college affairs and the affairs of its constituents and shall not divulge, directly or indirectly, any information of confidential nature either to a member of the public or of the colleges staff. Demonstrate courtesy and respect in all dealings with students, academic employees, and support staff

#### **Management**

Admin staff shall maintain the Service Record of each employee of the college on the printed service books prescribed for the purpose. They shall maintain Separate personal files of the employees Confidential Report in the proforma of each employee shall be recorded every year in the month



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of June and shall be maintained. Admin staff shall maintain leave account. All leave other than casual leave must be entered in the service book of the employee & his leave account completed as soon as it is sanctioned. Practice fiscal responsibility (financial discipline) to ensure that all expenditures fall within budget and be sensible in the expenditure of College funds.

#### **Conflict Resolution**

Administrative staff will demonstrate professionalism in conflict resolution by doing the following:

- Respecting the dignity of all parties involved;
- Refusing their own perceptions regarding the conflicts and preclude attempts to achieve resolution of the problem;
- Ensuring that specific complaints are resolved by a specific timetable for the resolution with all parties concerned;
- Refusing to permit the same complaints or concerns to be raised without making a commitment to resolution, followed by reasonable and appropriate efforts to attain resolution;
- Ensuring the terms of all resolutions of specific complaints are appropriately documented.

#### **Public Relations**

Administrators understand that how they represent the college is vitally important to all members of the college community. Professionalism in the realm of public relations will be demonstrated by ensuring:

Public statements are accurate, and

Public statements do not misrepresent or distort the intentions of the college.

Administrators are responsible for ensuring that the required statistical data provided for external agencies providing funds is accurate. Administrators will avoid attempts to use their authority as managers or the reputation of the college to forward any personal or political agendas.

**Failure to conform to the above-mentioned norms shall be constructed as misconduct.**



  
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4<sup>th</sup> IAEC meeting

Date: 02/11/18

Minutes of the Meeting

- This was the second meeting in the year 2018.
- Following members attended the meeting  
1. Dr. P.D. Chaudhari, 2. Dr. Vijaya Pandit, 3. Dr. Musti Krishnasastri, 4. Dr. Yogesh Talekar, 5. Dr. M.N. Potfode, 6. Dr. D.D. Bandawane, 7. Dr. S.S. Nipate, 8. Dr. S.B. Jadhav, 9. Dr. B.P. Pimple
- All the members were welcomed by the member secretary.
- Minutes of last meeting were read and confirmed.
- 6 animal study protocols were discussed in detail.
- Protocol no 1 entitled "Effect of *Lansone* in high-fat high-fructose diet induced metabolic syndrome in rats" was presented by Mr Subhash Mishra Joshi in presence of research guide Dr. D.D. Bandawane.  
Following modifications were suggested –
  - It was suggested to modify the title by using the term hepatic damage instead of metabolic syndrome and revise the title as "Effect of *Lansone* in high-fat high-fructose diet induced hepatic damage in rats."
  - Biochemical parameters including blood pressure and inflammatory biomarkers should be skipped as it is not related to hepatic damage.
  - It was suggested to use wistar rats instead of SD rats.
  - Weight of rats should be in the range of 150-180 g.
  - Total number of animals should be 8 per group.
  - It was suggested to mention the vehicle in Group I as water.
  - Experimental groups III, IV and V should be renamed as test group and standard treatment group instead of disease control.
  - Additional group VI should be included as animals treated with silymarine



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- Protocol no 2 entitled "Evaluation of anti-arthritis activity on *Pinus roxburghii* sarg leaves extract in experimental animals" was presented by Ms. Ms. Vaishali Raj in presence of research guide Dr. S.S. Nipate.

Following modifications were suggested -

- It was suggested to select the rats having weight range of 150-180 g.
  - It was suggested to use ibuprofen in place of indomethacin as standard.
  - Group II should be mentioned as FCA treated disease control.
  - It was suggested to mention the dose of drugs to be administered and route of administration of the drugs under study.
- Protocol no 3 entitled "Synthesis and Evaluation of anti-diabetic activity of some synthesized compounds" was presented by Ms. Shital S. Phadtare in presence of research guide Dr. S.B. Jadhav.
    - Following modifications were suggested -
      - It was suggested to modify the title by using the term antihyperglycemic instead of antidiabetic and revise the title as - "Synthesis and Evaluation of antihyperglycemic activity of quinazolinone compounds".
      - It was suggested to induce diabetes by using STZ (35mg/kg) and high fat diet instead of STZ- nicotinamide.
      - It was suggested to select one compound based on the docking studies and then extend the antihyperglycemic activity for 14 days.
      - It was suggested to select the rats having weight range of 150-180 g.
  - Protocol no 4 entitled "Evaluation of anti-atherosclerotic activity on *Sesbania grandiflora* leaves extract in experimental animals" was presented by Mr. Mangesh M. Londhe in presence of research guide Dr. Dr. S.S. Nipate.



  
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Following modifications were suggested-

- It was suggested to mention the vehicle in Group I as water.
- It was suggested to mention the volume of drug as ml/100 gm.
- It was suggested to add CKMB as a parameter for antiatherosclerotic activity.
- Protocol no 5 entitled "Evaluation of bacoside based standardized extract of *Bacopa monnieri* on suicide and trait related behaviour in experimental rats" was presented by Ms. Reshma Nehere in presence of research guide Dr. D.D. Bandawane.

Following modifications were suggested-

- It was suggested to add reference for selection of male rats.
  - It was suggested to use wistar rats instead of SD rats.
  - It was suggested to mention type of extract to be used.
  - It was suggested to mention the vehicle in Group I as CMC suspension.
  - It was suggested to review the inclusion of serum sodium as a parameter.
  - Protocol no 6 entitled "The study of syringic acid on kidney impairment in high-fat high-fructose diet induced metabolic syndrome rat model" was presented by Ms. Pradnya Thorat in presence of research guide Dr. D.D. Bandawane.
- Following modifications were suggested -
- It was suggested to modify the title by using the term renal impairment instead of metabolic syndrome and revise the title as - "Study of syringic acid on renal impairment in high-fat high-fructose diet fed rats."
  - Biochemical parameters including blood pressure should be skipped as it is not related to kidney damage.
  - It was suggested to use wistar rats instead of SD rats.
  - Weight of rats should be in the range of 150-180 g.
  - It was suggested to mention the vehicle in Group I as CMC.
  - It was suggested to rename the experimental groups III, IV and V as test group and standard treatment group instead of using the term disease control.



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- Dr. S.S. Nipate, Scientist in charge of animals facility was been given the responsibility to verify that due modifications were done before granting the approval to protocol no. 1 to 6.
- All the members visited different departments in the college and the animal house.
- The meeting ended with the vote of thanks by Dr. S.S. Nipate.

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Following members were present for IAEC meeting held on 27<sup>th</sup> Nov 2018

Sr. No	Name of IA EC member	Designation as IAEC member	Signature
1.	Dr. P. D. Chaudhari	Chairman	
2.	Dr. Vijaya Pandit	Main Nominee	
3.	Dr. Musti Krishnasastri	Scientist from outside the institute	
4.	Dr. Yogesh Talekar	Socially aware member	
5.	Dr. M.N. Potfode	Veterinarian	
6.	Dr. D. D. Bandawane	Biological scientist	
7.	Dr. S.S. Nipate	Scientist in charge of animals facility	
8.	Dr. S.B. Jadhav	Scientist from different biological discipline	
9.	Dr. B.P. Pimple	Scientist from different biological discipline	



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P.E. Society's Modern College of Pharmacy, Nigdi, Pune - 44

5<sup>th</sup> IAEC meeting

Date: 26/04/19

Minutes of the Meeting

- This was the first meeting in the year 2019.
- Following members attended the meeting  
1. Dr. P.D. Chaudhari, 2. Dr. Vijaya Pandit, 3. Dr. Musti Krishnasastry, 4. Dr. Yogesh Talekar, 5. Dr. M.N. Potfode, 6. Dr. D.D. Bandawane, 7. Dr. S.S. Nipate, 8. Dr. S.B. Jadhav, 9. Dr. B.P. Pimple
- All the members were welcomed by the member secretary.
- Minutes of last meeting were read and confirmed.
- 4 animal study protocols were discussed in detail.
- Protocol no 1 entitled "Evaluation of some medicinal plants for immunomodulatory activity in various animal models" was presented by Ms Neelam Dashputre in presence of research guide Dr. D.D. Bandawane.  
Following modifications were suggested –
  - It was suggested to modify the title by mentioning the names of all plant under study and revise the title as "Effect of *A. indicum*, *A. manihot* and *A. ficulneus* for immunomodulatory activity in various animal models."
  - It was suggested to mention the dose of drugs as mg/kg instead of using volume of the drug.
  - Instead of mentioning the blood withdrawal volume as maximum 2 ml, mention the volume of blood required at actual. In case of mice mention it as 200-250  $\mu$ l.
  - It was suggested to confirm the dose of levamisole by referring additional research articles as levamisole shows both immunostimulant and immunosuppressant actions at varying doses.



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- Reasoning for number of animals required for the study should include an additional reason that according to statistical calculations, number of animals would be 6-8.

- Protocol no 2 entitled "To study antifungal activity of Luliconazole loaded nanostructured lipid carrier based gel" was presented by Mr. Mayur Patil in presence of research guide Mr. U.C. Galgatte.

Following modifications were suggested –

- It was discussed that IAEC has no authority to consider the said protocol for approval since the proposal has to go to Institutional Biosafety Committee.
- It was suggested to redesign the protocol for drug penetration study.

- Protocol no 2 redesigned as "To study drug penetration characteristics of Luliconazole loaded nanostructured lipid carrier based gel." was presented by Mr. Mayur Patil in presence of research guide Mr. U.C. Galgatte.

Following modifications were suggested –

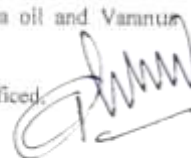
- It was suggested to incorporate either comparative study of the gel under study with already existing drug in market or the study including comparison of normal gel with nanostructured lipid carrier based gel.
- Reasoning for number of animals required for the study should include an additional reason that according to statistical calculations, number of animals would be 6-8.

- Protocol no 3 entitled "Evaluation of wound healing, anti-hemorrhoid and aphrodisiac formulations" was presented by Mr. Parag Potbhare in presence of research guide Ms. A. G. More.

Following modifications were suggested-

- It was suggested to modify the title by mentioning the names of all the formulations under study and revise the title as "Evaluation of wound healing, anti-hemorrhoid and aphrodisiac activity of creams & emulsion containing Brachura oil and Vamunus indicus oil.
- Mention in the respective procedures that animals will not be sacrificed.



  
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- Mention in the respective procedure that hydroxyproline content will be estimated at the end of the study.
- Reasoning for number of animals required for the study should include an additional reason that according to statistical calculations, number of animals would be 6-8.
- Protocol no 4 entitled "Hepatoprotective activity of Siddha Ghrit in paracetamol induced hepatotoxicity in rats" was presented by Dr D.D. Bandawane.  
Following modifications were suggested –
  - It was suggested to mention name of the person in protocol for whom the consultancy project will be carried out.
  - Volume of Ghrit to be administered should not exceed 1 ml/100gms of rat and accordingly the dose of Ghrit to be calculated.
  - It was suggested to mention why Ghrit is medicated and with what it is medicated,
  - It was suggested to mention that induction of hepatotoxicity will be checked at the end of 21 days.
- Dr. S.S. Nipate, Scientist in charge of animals facility was been given the responsibility to verify that due modifications were done before granting the approval to protocol no. 1 to 4.
- All the members visited different departments in the college and the animal house.
- The meeting ended with the vote of thanks by Dr. S.S. Nipate.



**Principal**

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Following members were present for LAEC meeting held on 26<sup>th</sup> April 2019



Sr. No	Name of IA EC member	Designation as LAEC member	Signature
1.	Dr. P. D. Chaudhari	Chairman	
2.	Dr. Vijaya Pandit	Main Nominee	
3.	Dr. Musti Krishnasastry	Scientist from outside the institute	
4.	Dr. Yogesh Talekar	Socially aware member	
5.	Dr. M.N. Potfode	Veterinarian	
6.	Dr. D. D. Bandawane	Biological scientist	
7.	Dr. S.S. Nipate	Scientist in charge of animals facility	
8.	Dr. S.B. Jadhav	Scientist from different biological discipline	
9.	Dr. B.P. Pimple	Scientist from different biological discipline	



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## Co-curricular & Extracurricular Activity- Gender



Progressive Education Society's  
**MODERN COLLEGE OF PHARMACY**  
Accredited by NAAC & NBA  
DST FIST Funded College  
'Best College Award' by Savitribai Phule Pune University

Approved by All India Council for Technical Education, New Delhi, Pharmacy Council of India, New Delhi,  
Directorate of Technical Education, Mumbai (MS), Permanently affiliated to  
Savitribai Phule Pune University, Pune & Approved under Section (2 (f) & 12 (B) of UGC Act, 1956

Sector No. 21, Yamunanagar, Nigdi, Pune - 411 044. (M.S.) Tel. : 020-27661314 / 15  
E-mail : mcopnigdi44@gmail.com Website : www.mcop.org.in

Prof. Dr. P. D. Chaudhari  
M.Pharm., Ph.D.  
Principal

Prof. Dr. Gajanan R. Ekbote  
M.S, M.N.A.M.S.  
Chairman, Business Council  
P.E.Society, Pune

Ref : \_\_\_\_\_ Date : \_\_\_\_\_

**1.3.1 Institution  
integrates crosscutting  
issues relevant to  
Gender.**



STRIVING TOWARDS EXCELLENCE FOREVER





**1.3.1 Institution integrates crosscutting issues relevant to Gender.**

Academic Year	Activities Related To Gender
2022-23	Distribution of sanitary Napkins and counseling regarding the same.
	An awareness programme on: Gender sensititation
	Gender equality
	National Youth Day celebration
2021-22	Gender Sensitization Workshop
2020-21	Gender Equality program on occasion of world women's day
2019-20	Street play: Gender equality
2018-19	World Women's Day
	Self-defense training for girls





Progressive Education Society's  
**MODERN COLLEGE OF PHARMACY**

Accredited by NAAC & NBA  
DST FIST Funded College

'Best College Award' by Savitribai Phule Pune University



Approved by All India Council for Technical Education, New Delhi, Pharmacy Council of India, New Delhi,  
Directorate of Technical Education, Mumbai (MS), Permanently affiliated to  
Savitribai Phule Pune University, Pune & Approved under Section (2 (f) & 12 (B) of UGC Act, 1956

Sector No. 21, Yamunanagar, Nigdi, Pune - 411 044. (M.S.) Tel. : 020-27661314 / 15

E-mail : mcpnigdi44@gmail.com Website : www.mcop.org.in

Prof. Dr. P. D. Chaudhari  
M.Pharm., Ph.D.  
Principal

Prof. Dr. Gajanan R. Ekbote  
M.S., M.N.A.M.S.  
Chairman, Business Council  
P.E. Society, Pune

Ref :

Date :

# Gender

(Academic year 2022-23)



STRIVING TOWARDS EXCELLENCE FOREVER



P.E. Society's  
Modern College of Pharmacy, Yamunanagar, Nigdi, Pune – 44.

**GUEST LECTURES**

Academic Year: 2022-23

Name of guest lecturer: Mrs. Samruddhi Panse  
Bayakarve Stri Abhyas Kendra, Pune.

Topic: An Awareness programme on: Gender Sensitisation

Date: 23/03/2023

Arranged for: For T. Y. B. Pharm students (64)



Dr. S S Pimple  
Portfolio Incharge



Dr. P D Chaudhari  
Principal



Progressive Education Society's  
Modern College of Pharmacy, Yamunanagar, Nigdi, Pune-44.

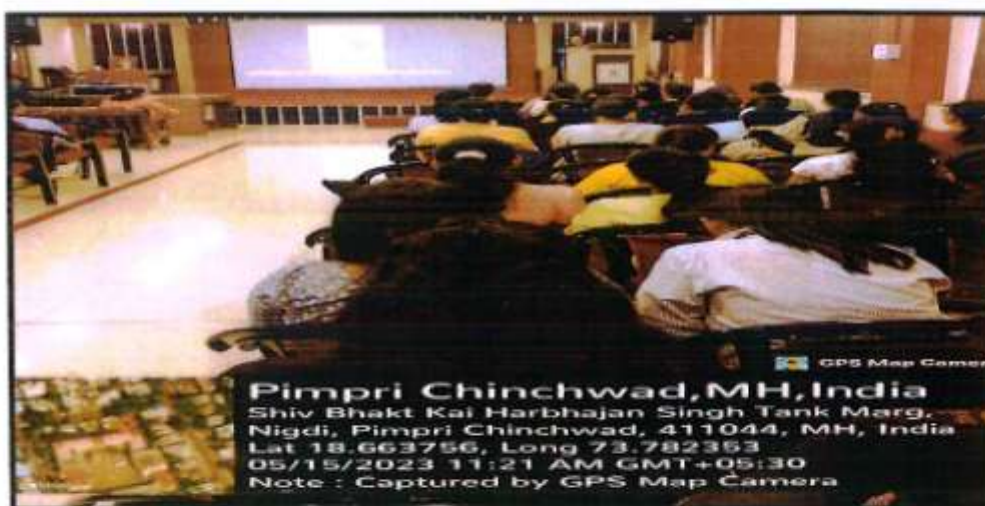
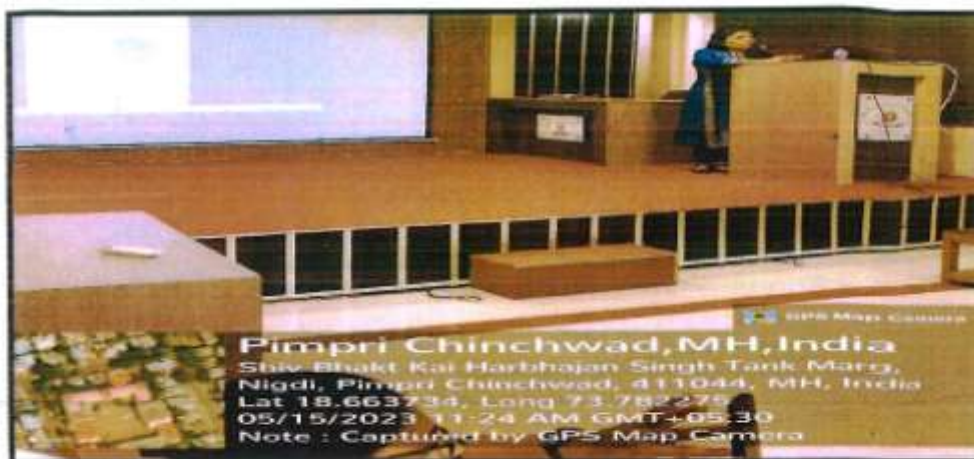
Name of guest lecturer: **Mrs. Anjali M. Dhaske**

**MSc, MEd, Pune**

Topic: **Gender Equality**


Date: 15/05/2023

Arranged for: For all girls students from stream (71)



  
Dr. S S Pimple  
Portfolio Incharge



  
Dr. P D Chaudhari  
Principal





**P. E. Society's  
Modern College of Pharmacy, Nigdi, Pune-44**

**NSS REGULAR ACTIVITY REPORT 2022-2023**

1.	Name of activity	National Youth Day Celebration
2.	Date of activity	12.01.2023
3.	Time	7.00 am to 9.00 am
4.	Total no students participate	100
5.	Occasion of activity	National Youth Day (Swami Vivekananda Jayanti)
6.	Inauguration by	Vivekananda Kendra, Kanyakumari
7.	Place of activity	Modern College of Pharmacy, Nigdi
8.	Objectives of activity	It's a total mind-body workout that combines strengthening and stretching poses with deep breathing and meditation or relaxation.
9.	Outcome of activity	That way, yoga can support the healing process and help the person experience symptoms with more centeredness and less distress. It improves strength, balance and flexibility. ... It relaxes you, to help you sleep better.
10.	Activity co-coordinator	R.M. Gurav, Dr. R. B. Mali, Priyanka Bugade

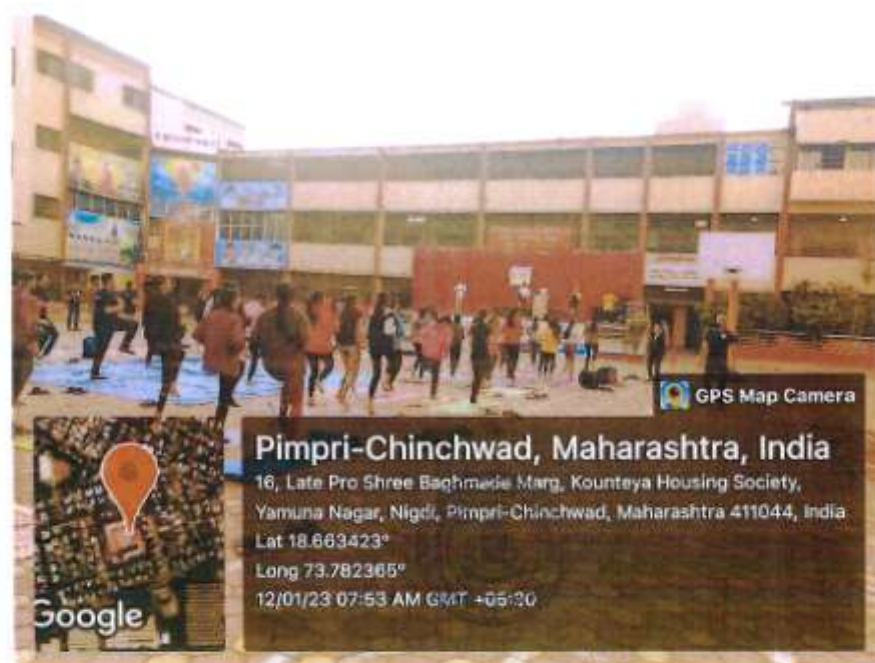


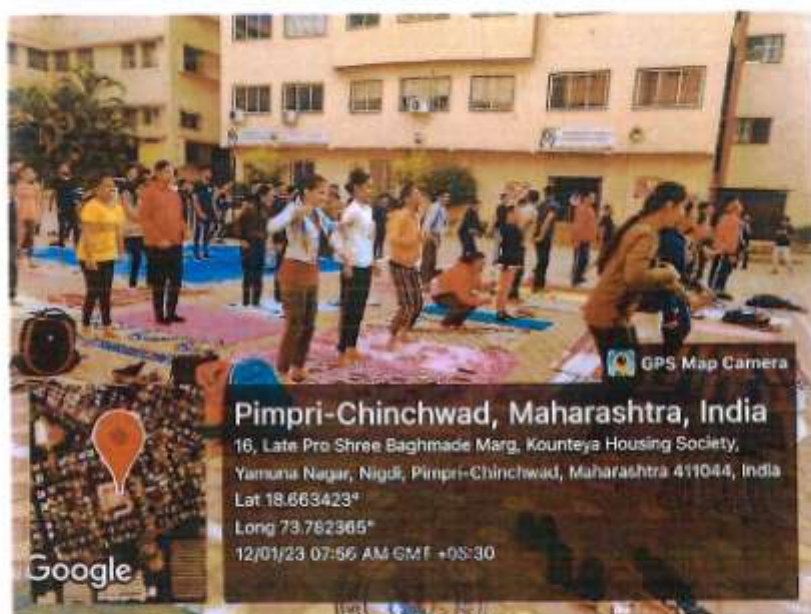
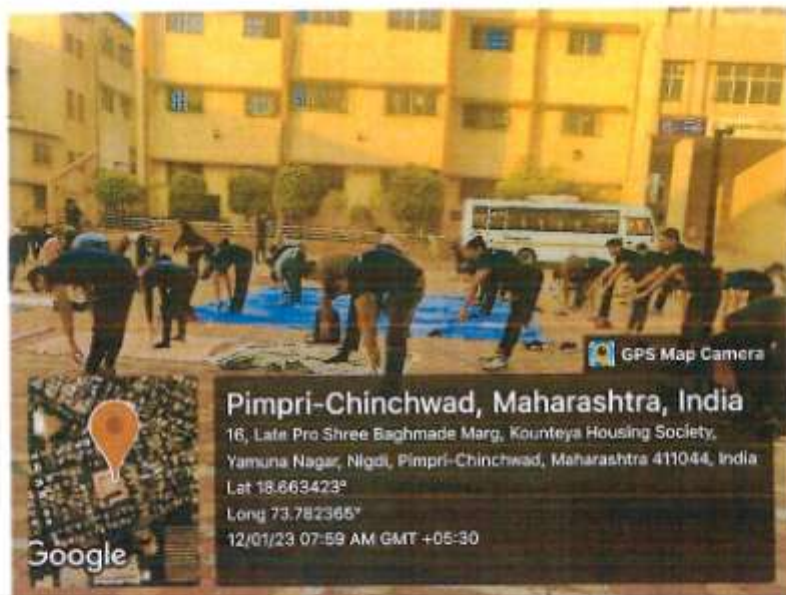
**Principal**

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Pune - 411 044.

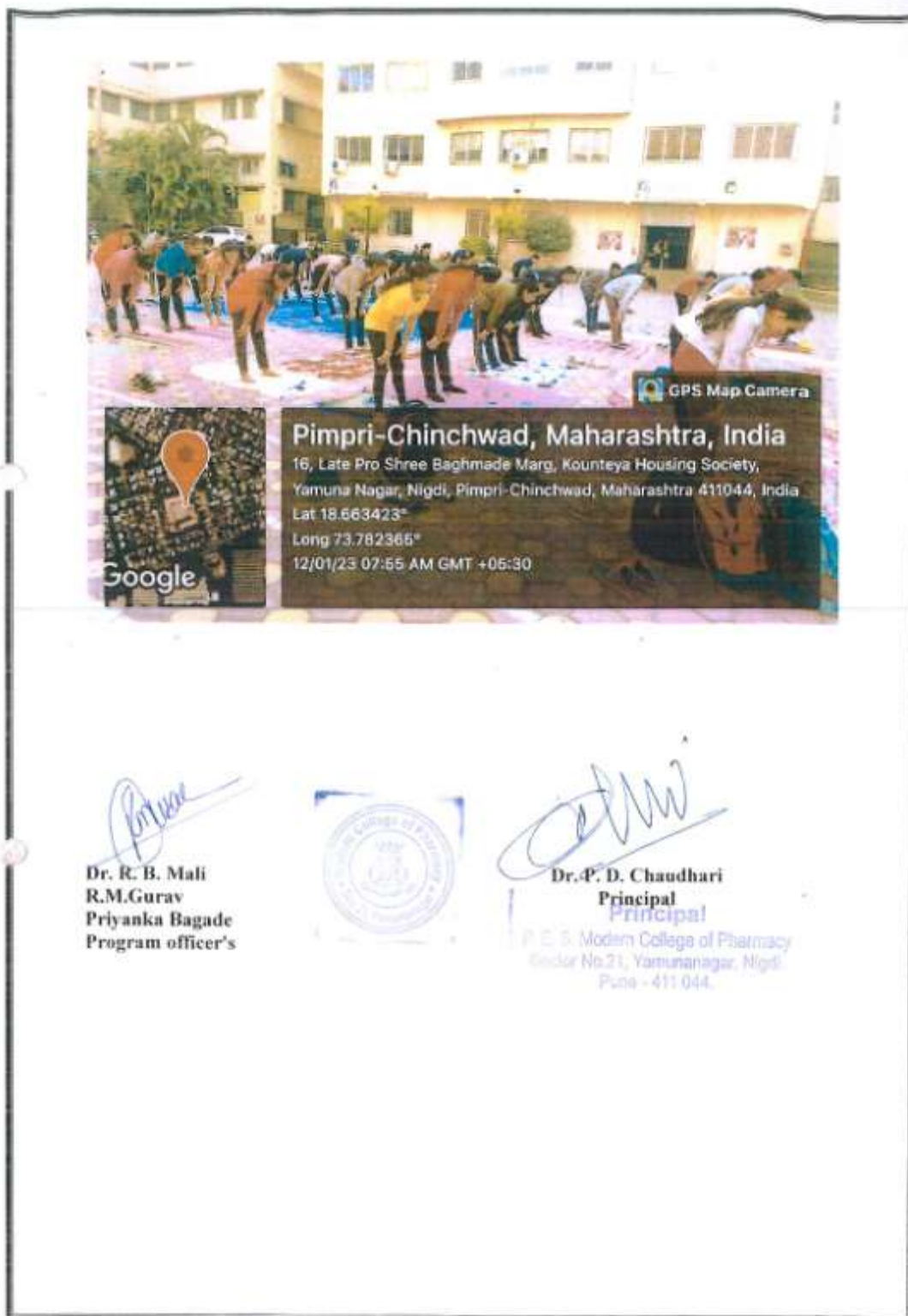


Photos of activity













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Modern College of Pharmacy, Nigdi, Pune-44**

**NSS WINTER CAMP ACTIVITY REPORT 2022- 2023**

1.	Name of activity	Distribution of Sanitary Napkins, and counseling regarding the same.
2.	Date of activity	19.01.2023
3.	Time	12.00 pm to 3.00 pm
4.	No. of total students participated	40
5.	Occasion of activity	NSS Winter Camp
6.	Inauguration by	-
7.	Place of activity	In a closed private setting Gathering Hall and door to door distribution
8.	Objectives of activity	<ul style="list-style-type: none"><li>• To distribute sanitary napkins amongst female population of the village.</li><li>• To counsel females regarding maintaining safe and hygienic practices during menstruation.</li></ul>
9.	Outcome of activity	150 sanitary napkins were distributed to the females residing in the village area, and they were counseled by the volunteers regarding maintaining safe and hygienic practices during menstruation.
10.	Activity co-coordinator	Dr. R. B. Mali, P.V.Bagade,R.M.Gurav



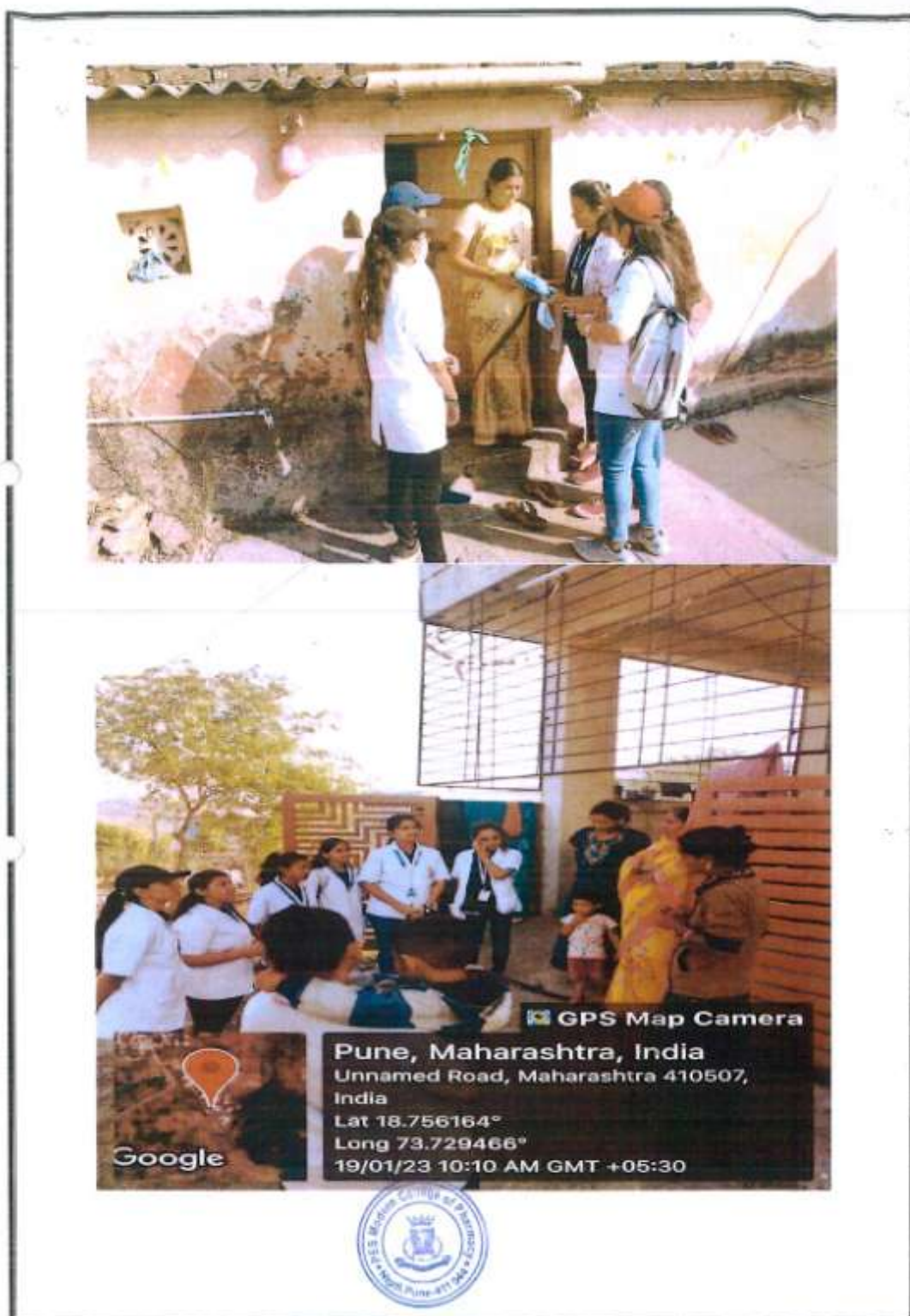
**Principal**

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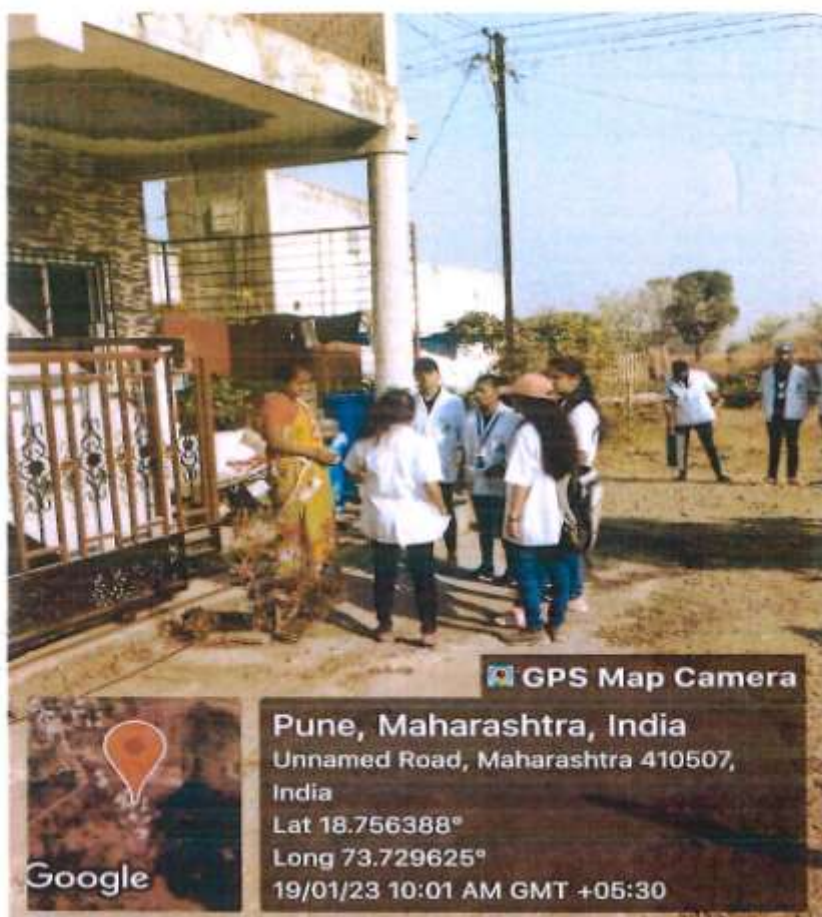


Photos of activity









Dr. B. B. Mali  
R.M.Gurav  
P.V.Bagade  
Program officer's



Dr. P. D. Chaudhari  
Principal

Principal

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Principal

Prof. Dr. Gajanan R. Ekbote  
M.S., M.N.A.M.S.  
Chairman, Business Council  
P.E. Society, Pune

Ref :

Date :





# Gender



(Academic year 2021-22)



STRIVING TOWARDS EXCELLENCE FOREVER




   	
<b>P. E. Society's MODERN COLLEGE OF PHARMACY, NIGDI, PUNE-44 NSS REGULAR ACTIVITY REPORT 2021-22</b>	
1. Name of activity	Gender Sensitization Workshop
2. Date of activity	25.11.2021
3. Time	10.00 am-2.00pm
4. Total no students participated	100
5. Occasion of activity	SSPU activity
6. Inauguration by	Dr. P.D. Chaudhari
7. Place of activity	PES Modern College of Pharmacy, Nigdi,
8. Objectives of activity	<ul style="list-style-type: none"><li>• To increase awareness on gender equality amongst students.</li><li>• To promote peace with women's rights.</li><li>• To honor all the women and their achievements regardless of the division, whether national, ethnic, cultural or political.</li></ul>
9. Outcome of activity	<ul style="list-style-type: none"><li>• Students promoted peace with women's rights.</li><li>• Students understood the concept of gender sensitization.</li><li>• Promoted equality between genders.</li></ul>
10. Activity co-coordinator	Dr. A. S. Tapkir Prof.R.M.Gurav Prof.P.A.Pawar





  
Dr. A. S. Tapkir  
NSS Program Officer



  
Dr. P.D. Chaudhari  
Principal

Principal  
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Pune - 411 044.



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P.E. Society, Pune

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# Gender

(Academic year 2020-21)



STRIVING TOWARDS EXCELLENCE FOREVER





P. E. Society's  
Modern College of Pharmacy, Nigdi, Pune-44  
NSS REGULAR ACTIVITY REPORT  
2020-2021


1.	Name of activity	Gender Equality Program on occasion of World women's day
2.	Date of activity	08.03.2021
3.	Time	10.00 am -2.00pm
4.	Total no students participated	50
5.	Occasion of activity	World Women's day
6.	Inauguration by	Dr. P.D. Chaudhari
7.	Place of activity	PES Modern College of Pharmacy, Nigdi,
8.	Objectives of activity	To increase awareness on gender equality amongst students.To promote peace with women's rights, To honor all the women and their achievements regardless of the division, whether national, ethnic, cultural or political.
9.	Outcome of activity	Students celebrated women's day, Students understood the concept of gender equality.Promoted peace with women's rights.
10.	Activity co-coordinator	Dr. A. S. Tapkir





*Photos of activity*



  
Dr. A. S. Tapkir  
NSS Program Officer



  
Dr. P.D. Chaudhari  
Principal  
Principal  
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P.E. Society, Pune

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# Gender

(Academic year 2019-20)



STRIVING TOWARDS EXCELLENCE FOREVER



P. E. Society's  
Modern College of Pharmacy, Nigdi, Pune-44

NSS REGULAR ACTIVITY REPORT 2019-20

1.	Name of activity	Street play at JSPM college Tathawade, Pune
2.	Date of activity	29.01.2020
3.	Time	9.00am to 5.00 pm
4.	Total no students participate	12
5.	Occasion of activity	---
6.	Inauguration by	Principal JSPM college Tathawade, Pune
7.	Place of activity	JSPM college Tathawade, Pune
8.	Objectives of activity	<ul style="list-style-type: none"><li>• To promote the leadership skills of students.</li><li>• To promote the extracurricular activities in students for social service.</li></ul>
9.	Outcome of activity	<ul style="list-style-type: none"><li>• Awareness created in society and all students.</li><li>• Student's confidence build through this activity.</li></ul>
10.	Activity co-coordinator	Dr. A. S. Tapkir

Photos of activity







  
Dr. A. S. Tapkir  
Program officer



  
Dr. P. D. Chaudhari  
Principal

Principal  
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Prof. Dr. Gajanan R. Ekbote  
M.S., M.N.A.M.S.  
Chairman, Business Council  
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Date :

# Gender

(Academic year 2018-19)



STRIVING TOWARDS EXCELLENCE FOREVER



**P. E. Society's  
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**NSS REGULAR ACTIVITY REPORT 2018-2019**

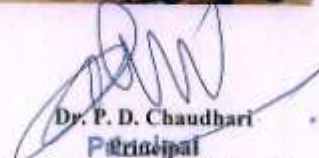
1.	Name of activity	World Women's Day
2.	Date of activity	8/03/2019.
3.	Time	10AM -12.PM
4.	Total no students participate	50
5.	Occasion of activity	Women Empowerment program
6.	Inauguration by	Dr. S.B. Jadhav
7.	Place of activity	Modern College of Pharmacy ,Yamuna Nagar Nigdi Pune Maharashtra 411044
8.	Objectives of activity	To Spread the awareness toward self-respect, self-realization and self-help in women's. To increase the development rate of women's and motivate women's for development of society.
9.	Outcome of activity	All the girls' and ladies faculty members has been inspired to become strong and motivated for self-development purpose.
10.	Activity co-coordinator	Dr. A. S. Tapkir

**Photos of activity**



  
**Dr. A. S. Tapkir**  
NSS Program officer



  
**Dr. P. D. Chaudhari**  
**Principal**  
P. E. S. Modern College of Pharmacy  
Sector No 21, Yamunanagar, Nigdi,  
Pune





**P. E. Society's  
Modern College of Pharmacy, Nigdi, Pune-44**

**NSS CAMP ACTIVITY REPORT 2018-2019**

1.	Name of activity	Self-defense training for girls
2.	Date of activity	18/01/2019
3.	Time	11.15 to 4.30
4.	Total no students participate	50
5.	Occasion of activity	NSS Camp
6.	Inauguration by	Dr. A. S. Tapkir
7.	Place of activity	At post Shirgaon Tal. Mawal, Dist Pune
8.	Objectives of activity	To train girls for handling troubleshooting situation if any sudden incidence happen with her. To improve self-confidence and courage of girls if she is suffering from any critical situation. To aware girls students regarding this basic life skill like self-defense.
9.	Outcome of activity	Girls understood the some tricks to handled troubleshooting situation if any sudden incidence happen with her. Girl's student's confidence has been buildup to face critical situation. Girl students were motivated and their confidence level is increased by knowing about life skill like self-defense.
10.	Activity co-coordinator	Dr. A. S. Tapkir.








Photos of activity





  
Dr. A. S. Tapkir  
NSS Program officer




  
Dr. P. D. Chaudhari  
Principal  
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Sector No.21, Yamunanagar, Nigdi,  
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## Co-curricular & Extracurricular Activity- Human Value

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Prof. Dr. P. D. Chaudhari M.Pharm., Ph.D. Principal	Prof. Dr. Gajanan R. Ekbote M.S., M.N.A.M.S. Chairman, Business Council P.E.Society, Pune
Ref :	Date :

### 1.3.1 Institution integrates crosscutting issues relevant to Human Values.



**STRIVING TOWARDS EXCELLENCE FOREVER**



## 1.3.1 Institution integrates crosscutting issues relevant to Human Values.

Academic Year	Activities Related To Human Values
2022-23	Har Ghar Tiranga
	Blood Donation Camp
	Youngsters Personality Development
	Love and snack of humanity (Diwali Activity)
	Run (National Unity Day)
	Hemoglobin checkup and ABHA card - DRIVE
	Water distribution activity for travelers Alandi Yatra ( Festival)
	New Voting Registration
	Constitution Day Celebration
	Health Checkup camp at NSS Residential camp.
	Workshop on Personality Development
	Interaction and Education to kids
	Ek Diwas Shetkari Raja Sathi
2021-22	Guest Lecture on Balancing our mind, health, through breathing practice and meditation.
	National Safety Week Celebration
	Discussion session on topic- Indian democracy and Election
2020-21	Donation of Regular and Warm Clothes
	Azadi ka Amrit Mohotsav
	Rehabilitation Program of jobless construction site workers in pandemic and preparation and distribution of mask and grocery in pandemic
	Blood Donation Camp
	Mahatma Gandhi Jayanti celebration
	SPPU COVID warriors-Training
	Jan Andolan COVID appropriate behavior campaign
	Yuva Sansad Youth Parliament elocution competition
	Azadi ka Amrut Mahotsav- Salute to freedom fighter
2020-21	Health Awareness - Yogasan demonstration online program
	Milaap-free crowd funding for Mayuri Gadekar (our B Pharm Alumni)



Principal

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	for her cancer treatment (Report)
2019-20	Tobacco pledge- Pledge was given to 100 students.
	Grocery kits, stationary and medicines are donated to flood affected villagers.
	Medicine & Glossary donation to needy Hansen's disease (laprosy) peoples.
	Debate competition
	Basic life Support Training
	Blood Donation Camp
	Marathi Matrubhasha Din celebration
	Cataract operations camp at Desai eye Hospital Mohomadwadi, Pune.
	Implementing government in Covid 19 Awareness
2018-19	Blood group detection and Hemoglobin checkup
	Guest lecture by Dr. Rashmi Kulkarni on Stress Management and Obesity
	Guest lecture by Shri Pradeep Kothawade, RTI officer, Pimpri Chinchwad Municipal Corporation Topic- Right To Information Act
	Blood Donation Camp at Thakare ground
	Elocution Competition
	District Youth Parliament Ceremony-Elocution Competition
	PCMC Visit – To know routine working of Hon. Commissioner and Hon. Joint Commissioner & Hon. Commissioner's guidance regarding responsibilities of PCMC
	Blood Donation Camp in college
	Elocution Competition - Lokshahi Niwadnuk Ani Sushasan
	Skill India Mission
	Tribute to Pulvama Attack Soldiers
	Three days University level Workshop on "Anibhuti Swah Chi Aani Utkarsha Jivanacha"
	Voter awareness one day district level workshop on performance of Pathnaty (Street Play)



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Principal

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M.S., M.N.A.M.S.  
Chairman, Business Council  
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Ref :

Date :

# Human Values

(Academic year 2022-23)



STRIVING TOWARDS EXCELLENCE FOREVER



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NSS REGULAR ACTIVITY REPORT 2022-2023

1.	Name of activity	Water distribution activity for travelers Alandi Yatra ( Festival)
2.	Date of activity	18-11-2022 to 19-11-2022
3.	Time	10AM – 6 PM
4.	Total no students participate	15
5.	Occasion of activity	Alandi Yatra
6.	Inauguration by	Mr. Rohit Gurav
7.	Place of activity	Shree Sant Dnyaneshwar Mandir Alandi Maharashtra – 412105.
8.	Objectives of activity	To distribute water to travelers. To make the students aware the our traditional festival Alandi Yatra. To help out temples staff.
9.	Outcome of activity	All the travelers were happy when such type of good activity has been conducted by MCOP Nigdi Pune. Students got idea regarding our traditional festival and their uniqueness all over the world.
10.	Activity co-coordinator	Ms. Priyanka Bagade Mr. R.M.Gurav.



Principal

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Photos of activity






  
Mr. R.M. Gurav  
NSS Program officer



  
Dr. P.D. Chaudhari  
Principal  
P.E.S. Modern College of Pharmacy  
Sector No 21, Yamunanagar, Nigdi,  
Pune - 411 044



  		
<p align="center"><b>P. E. Society's</b> <b>Modern College of Pharmacy, Nigdi, Pune-44</b></p>		
<p align="center"><b>NSS REGULAR ACTIVITY REPORT 2022-2023</b></p>		
1.	Name of activity	Guest Lecture on Balancing our mind, health, through breathing practice and meditation.
2.	Date of activity	21/01/2023
3.	Time	5 PM- 7PM
4.	Total no students participate	85
5.	Occasion of activity	National Service Scheme (NSS) special camp
6.	Guest Speaker name, designation and contact number.	Tushar Alhat Coordinator of Art of Living Kendra Pune, Maharashtra 411001 Contact: 9922074847
7.	Place of activity	21, Late Pro Shree Baghmade Marg, Scheme 4, A/P Jambhawade, Tal. Maval, Dist. Pune 410507.
8.	Objectives of activity	To make the students aware about the benefits of meditation and peace of mind.  To aware students regarding the benefits of concentration and meditation to achieve our set goal in life.  To aware students regarding which type of different exercise we have to perform by controlling breathing for appropriate time to get good health.  To know the students regarding various types of meditations required to get proper peace of mind.
9.	Outcome of activity	Students were realized the benefits of meditation and peace of mind.  Students realized the role of concentration and meditations regularity and practice to achieve goal in





		Students understood the different types of breathing exercise which will be beneficial to get good health. Students were happy when they were listened the different prospective of life related to peace of mind.
10.	Activity co-coordinator	Mr. R.M.Gurav, Ms. R.B.Mali, Ms. P.V.Bagade.



**Principal**

P. E. S. Modern College of Pharmacy  
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Photos of activity



Ms. P.V. Bagade  
NSS Program officer

Mr. R.M. Gurav  
NSS Program officer



Dr. P. D. Chaudhari  
Principal

Principal  
P. E. S. Modern College of Pharmacy  
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NSS REGULAR ACTIVITY REPORT 2022-2023

1.	Name of activity	National Safety Week Celebration
2.	Date of activity	09.03.2023
3.	Time	11 PM- 12 PM
4.	Total no students participate	75
5.	Occasion of activity	National Safety Week Celebration
6.	Inauguration by	Dr. Vitthal Chopade
7.	Place of activity	Yamuna Nagar Nigdi Pune Maharashtra 411044
8.	Objectives of activity	To highlight the safety measures for students to avoid work places accidents. To aware students regarding protocol of human, health and environments safety.
9.	Outcome of activity	Students were aware of how to handle any critical situation while any accident happens.  All the students understood the what kind of safety measure have to taken for human, health and environments safety.
10.	Activity co-coordinator	Ms. P.V.Bagade Dr. R.B.Mali Mr. R.M.Gurav.



Principal

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Photos of activity






  
Mr. R.M. Gurav  
NSS Program officer



  
Dr. P. D. Chaudhari  
Principal  
Principal  
Progressive Education Society's Modern College of Pharmacy  
Plot No 21, Yamunanagar, Nigdi,  
Pune - 411 044.








**P. E. Society's  
Modern College of Pharmacy, Nigdi, Pune-44**


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**NSS REGULAR ACTIVITY REPORT 2022-2023**


1.	Name of activity	New Voting Registration
2.	Date of activity	25.11.2022
3.	Time	10AM -4 PM
4.	Total no students participate	150
5.	Occasion of activity	NSS Activity
6.	Inauguration by	Ms. Priyanka Bagade
7.	Place of activity	Yamuna Nagar Nigdi Pune Maharashtra 411044
8.	Objectives of activity	To get voting card those who are eligible for voting.
9.	Outcome of activity	Total 150 students were getting voting card.
10.	Activity co-coordinator	Mr. R.M.Gurav. Ms. P.V.Bagade.

**Photos of activity**



  
**Ms. P.V. Bagade**  
NSS Program officer

  
**Mr. R.M. Gurav**  
NSS Program officer

  
**Dr. P. D. Chaudhari**  
Principal

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**P. E. Society's  
Modern College of Pharmacy, Nigdi, Pune-44**

**NSS REGULAR ACTIVITY REPORT 2022-2023**

1.	Name of activity	Run ( National Unity Day)
2.	Date of activity	31.10.2022
3.	Time	8 PM- 1PM
4.	Total no students participate	50
5.	Occasion of activity	Rashtriya Ekta Diwas ( National Unity Day)
6.	Inauguration by	MR. Somadatta Chaudhari
7.	Place of activity	Bhakati Shakati Nigadi to Appu Ghar -Durga Tekadi Nigdi Pune, Maharashtra 411044.
8.	Objectives of activity	<p>To make the students aware about the memories of Late Sardar Vallabhbhai Patel (First Prime Minister of India 1947-50).</p> <p>To aware students regarding unity and spirit of Rashtriya Ekta and Azadi ka Amrit Mahotsav throughout the India.</p> <p>To take Pledge of Rashtriya Ekta Diwas.</p> <p>To aware the students regarding benefits of Running and exercise.</p>
9.	Outcome of activity	Students were realized the importance of Rashtriya Ekta Diwas and the Sacrifice given by Late Sardar Vallabhbhai Patel for Nation.
10.	Activity co-coordinator	<p>Mr. R.M.Gurav.</p> <p>Ms. P.V.Bagade.</p>




**Principal**

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Photos of activity



  
Ms. P.V. Bagade  
NSS Program officer

  
Mr. R.M. Gurav  
NSS Program officer

  
Dr. P. D. Chaudhari  
Principal  
Principal  
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**P. E. Society's  
Modern College of Pharmacy, Nigdi, Pune-44**

**NSS REGULAR ACTIVITY REPORT 2022-2023**

1.	Name of activity	Love and snack of humanity ( Diwali Activity)
2.	Date of activity	12-10-2022 to 22-10-2022
3.	Time	10AM - 4PM
4.	Total no students participate	50
5.	Occasion of activity	Diwali Festival
6.	Inauguration by	Dr. P. D. Chaudhari
7.	Place of activity	Yamuna Nagar Nigdi Pune Maharashtra 411044. Morya Gosavi Mandir Pimpri Chinchwad Pune Maharashtra 411033
8.	Objectives of activity	To aware students regarding social activity to held for poor and needy peoples. To distribute diwali snacks and blankets to the needy and poor people near Pimpri Chinchwad area. To entertain the orphan childrens and old homes.
9.	Outcome of activity	Students understood the needs of poor peoples and their problems. Many needy people were got diwali snacks and blankets. Many orphan children's and old homes peoples being happy after conduction of entertainment programs.
10.	Activity co-coordinator	Mr. R.M.Gurav. Ms. P.V.Bagade.



**Principal**

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Photos of activity



  
Ms. P.V. Bagade  
NSS Program officer

  
Mr. R.M. Gurav  
NSS Program officer

  
Dr. P. D. Chaudhari  
Principal  
P.E.S. Modern College of Pharmacy  
Sector No.21, Yamunanagar, Nigdi,  
Pune - 411 044.





P. E. Society's  
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NSS REGULAR ACTIVITY REPORT 2022-2023

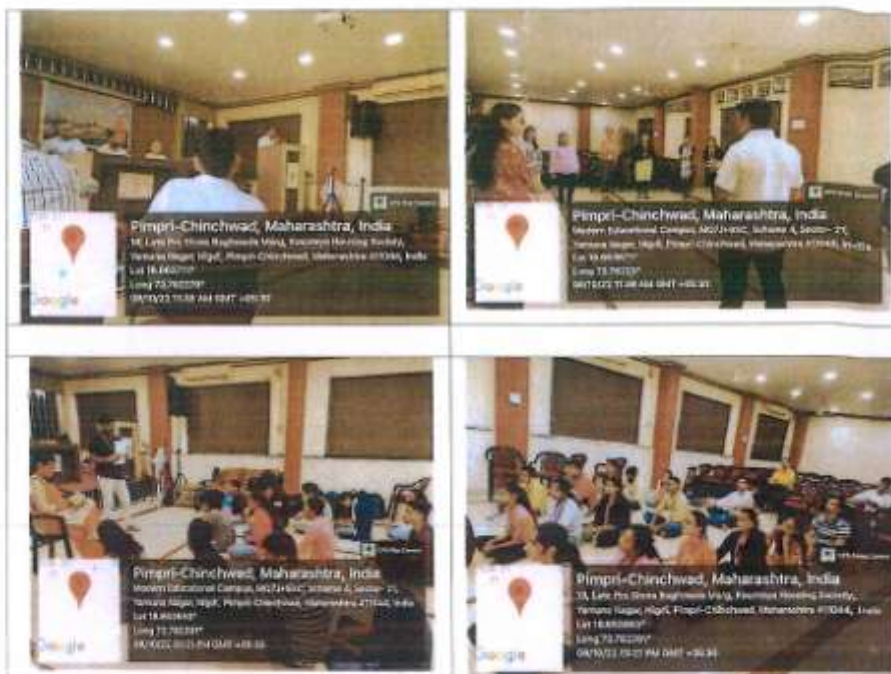
1.	Name of activity	Youngsters Personality Development
2.	Date of activity	8.10.2022
3.	Time	12 PM-3PM
4.	Total no students participate	50
5.	Occasion of activity	NSS Activity
6.	Inauguration by	Dr. Atul Pathak
7.	Place of activity	Yamuna Nagar Nigdi Pune Maharashtra 411044
8.	Objectives of activity	To develop students skills and overall behavior to face challenges. To encourage students for participation of extra-curricular activity. To develop students positive attitude and confidence to face examination.
9.	Outcome of activity	Students got idea regarding how to study difficult things by drawing map for memorization. Students are aware of importance of positive thinking. Students know the role of books, Yoga, meditation and healthy diet in our life.
10.	Activity co-coordinator	Ms. P.V.Bagade Mr. R.M. G...



Principal  
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Photos of activity



Mr. R.M. Gurav

NSS Program officer



Dr. P. D. Chaudhari

Principal

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Pune - 411 044.



**P. E. Society's  
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**NSS REGULAR ACTIVITY REPORT 2022-2023**

1.	Name of activity	NSS Day Celebration
2.	Date of activity	24.09.2022
3.	Time	11 PM- 1PM
4.	Total no students participate	75
5.	Occasion of activity	NSS Day
6.	Inauguration by	Dr. Vitthal Chopade
7.	Place of activity	Yamuna Nagar Nigdi Pune Maharashtra 411044
8.	Objectives of activity	To aware the students regarding role of NSS Volunteers. To aware students regarding history, logo, purpose of NSS unit, roles and responsibilities being as part of NSS.
9.	Outcome of activity	All the Students were understood the role history, logo, purpose of NSS unit.  All the students understood their roles and responsibilities as being NSS volunteers.
10.	Activity co-coordinator	Ms. P.V.Bagade Mr. R.M.Gurav.



**Principal**

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Photos of activity



  
Mr. R. M. Gurav  
NSS Program officer



  
Dr. P. D. Chaudhari  
Principal  
P. E. S. Modern College of Pharmacy  
Sector No.21, Yamunanagar, Nigdi,  
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NSS REGULAR ACTIVITY REPORT 2022-2023

1.	Name of activity	Har Ghar Tiranga
2.	Date of activity	12.08.2022 - 15-08-2022
3.	Time	12 PM-5PM
4.	Total no students participate	200
5.	Occasion of activity	Azadi ka Amrit Mahotsav
6.	Inauguration by	Dr. P.D. Chaudhari
7.	Place of activity	Yamuna Nagar Nigdi Pune Maharashtra 411044
8.	Objectives of activity	To celebrate and commemorate 75 years of independence. To inspire the students being as patriotic. To aware students regarding struggle of freedom fighter.
9.	Outcome of activity	By celebrating Azadi Ka Amrit Mahotsav it has been gives initiative of the Government of India to commemorate and celebrate the 75 years of independence and the glorious history of its people, culture and achievements
10.	Activity co-coordinator	Mr. A.S.Tapkir Mr. R.M.Gurav.



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Photos of activity



  
Mr. R.M. Gurav




NSS Program officer

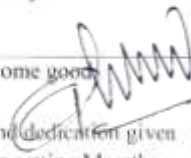


  
Dr. P. D. Chaudhari  
Principal

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<b>P. E. Society's</b> <b>Modern College of Pharmacy, Nigdi, Pune-44</b>		
<b>NSS REGULAR ACTIVITY REPORT 2022-2023</b>		
1.	Name of activity	Guest Lecture on Chhatrapati Shivaji Maharaj and Mavale
2.	Date of activity	20/01/2023
3.	Time	5 PM- 7PM
4.	Total no students participate	85
5.	Occasion of activity	National Service Scheme (NSS) special camp
6.	Guest Speaker name, designation and contact number.	Shubham Mote Motivational Speaker Pune, Maharashtra 411001 Contact: 9022150315
7.	Place of activity	Mahadev Mander, Sector 21, Late Pro Shree Baghmade Marg, Scheme 4, A/P Jambhawade, Tal. Maval, Dist. Pune 410507.
8.	Objectives of activity	<p>To make the students aware of Shivaji Maharaj's skills for being good administrative.</p> <p>To aware students regarding the actual work and dedication given by Shivaji Maharaj and Sambhaji Maharaj for getting Maratha samrajay.</p> <p>To aware students regarding which type though and critical conditions faced by Shivaji and Sambhaji Maharaj throughout their life.</p> <p>To know the students regarding the How to learn several management skill from history of Shivaji Maharaj.</p>
9.	Outcome of activity	<p>Students got different ideas to become good administrative.</p> <p>Students realized the hard work and dedication given by Shivaji and Sambhaji Maharaj for getting Maratha</p>

  
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		Samrajay. Students realized the own responsibility to become good leader for society and ideal son/daughter of own parents. Students got different ideas to become good leader same as that of Mavalas of Shivaji Maharaj and good management skill.
10.	Activity co-coordinator	Mr. R.M.Gurav. Ms. R.B.Mali. Ms. P.V.Bagade.

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Photos of activity



  
Ms. P.V. Bagade  
NSS Program officer

  
Mr. R.M. Gurav  
NSS Program officer

  
Dr. P.D. Chaudhari  
Principal

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Pune - 411 044



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NSS WINTER CAMP ACTIVITY REPORT 2022-2023

1.	Name of activity	Interaction and Education to kids
2.	Date of activity	20/01/2023
3.	Time	2pm to 4pm
4.	Total no students participate	70
5.	Occasion of activity	NSS Winter Camp
6.	Inauguration by	School Teachers
7.	Place of activity	Primary school, Jambawade Village, Tal. Maval, Dist. Pune
8.	Objectives of activity	It allows them to cooperate, communicate, engage, and work in groups with one another. Improve brain function, improves skills, motivate to learn new things.
9.	Outcome of activity	Improves the cognitive, physical, social, and emotional well being of children.
10.	Activity co-coordinator	R. M. Gurav, Dr. R. B. Mali, Priyanka Bagade



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Dr. R. B. Mali  
R. M. Gurav  
P. V. Bagade  
Program officer's



  
Dr. P. D. Chaudhari  
Principal

Principal  
P. E. S. Modern College of Pharmacy  
Sector No.2 I, Yashwanagar, Nigdi,  
Pune - 411 044.



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NSS CAMP GUEST LECTURE REPORT 2022-2023

1.	Name of activity	Guest Lecture on "Health is wealth".
2.	Date of activity	17.01.2023
3.	Time	5 PM- 6PM
4.	Total no students participate	85
5.	Occasion of activity	National Service Scheme (NSS) special camp
6.	Guest Speaker name, designation and contact number.	Mr. Bhushan Tarak Fitness Trainer Pune, Maharashtra 411001. Contact: 9890449334
7.	Place of activity	Sector 21, Late Pro Shree Baghmade Marg, Scheme 4, A/P Jambhawade, Tal. Maval, Dist. Pune 410507..
8.	Objectives of activity	To make the students aware about the maintenance of health for good wellbeing and mental peace.  To aware students regarding daily exercise and healthy diet.  To aware students regarding healthy physical, mental health mental wellbeing.  To aware the students regarding benefits of enjoy joy, compassion, hope and peace in life.
9.	Outcome of activity	Students were realized the importance of daily exercise, Yoga, cardiac exercise, concentration importance and healthy diet.  Students were understood the importance of enjoy, hope and peace in life.  Students were understood the different benefits of exercise when you are in student phase,



10.	Activity co-coordinator	Mr. R.M.Gurav. Ms. R.B.Mali Ms. P.V.Bagade.
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**Principal**

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Photos of activity



*P.V. Bagade*

Ms. P.V. Bagade  
NSS Program officer

*R.M. Gurav*

Mr. R.M. Gurav  
NSS Program officer

*P. D. Chaudhari*

Dr. P. D. Chaudhari  
Principal

Principal  
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Savitribai Phule Pune University, Pune & Approved under Section (2 (f) & 12 (B) of UGC Act, 1956

Sector No. 21, Yamunanagar, Nigdi, Pune - 411 044. (M.S.) Tel. : 020-27661314 / 15

E-mail : mcopnigdi44@gmail.com Website : www.mcop.org.in

Prof. Dr. P. D. Chaudhari  
M.Pharm., Ph.D.  
Principal

Prof. Dr. Gajanan R. Ekbote  
M.S., M.N.A.M.S.  
Chairman, Business Council  
P.E.Society, Pune

Ref :

Date :





# Human Values


(Academic year 2021-22)



STRIVING TOWARDS EXCELLENCE FOREVER



   	
<p align="center"><b>P. E. Society's</b> <b>MODERN COLLEGE OF PHARMACY, NIGDI, PUNE-44</b> <b>NSS REGULAR ACTIVITY REPORT</b> <b>2021-22</b></p>	
1. Name of activity	Election discussion session with election officer Maharashtra state
2. Date of activity	5.09.2021
3. Time	10.00 am to 2.00 pm
4. Total no students participated	1 Faculty 2 Students
5. Occasion of activity	--
6. Inauguration by	Hon. Shrikant Deshpande - election officer Maharashtra state Mr. Nagraj Manjule- Film Director
7. Place of activity	Savitribai Phule Pune University
8. Objectives of activity	To promote awareness of right to vote amongst students and society. To enable critical thinking on issues related to elections rights, electoral system and its process. To educate students about voter registration and related matters. To help students to understand value and their vote. To spread awareness regarding ethical voting.
9. Outcome of activity	Promoted awareness of right to vote amongst students and society. Students understood about voter registration and related matters. Students registered names in respective voting wards. Understood importance of vote and moto of election literacy.
10. Activity co-coordinator	Dr. A. S. Tapkir Prof. R. M. Gurav Prof. P. A. Pawar





  
Dr. A. S. Tapkir  
NSS Program Officer



  
Dr. P.D. Chaudhari  
Principal





**P. E. Society's  
MODERN COLLEGE OF PHARMACY, NIGDI, PUNE-44  
NSS REGULAR ACTIVITY REPORT  
2021-22**

1. Name of activity	Donation of regular and warm clothes for homeless and needy peoples
2. Date of activity	30.10.2021
3. Time	10.00 am to 2.00 pm
4. Total no students participated	100
5. Occasion of activity	Social activity
6. Inauguration by	Dr. P.D. Chaudhari
7. Place of activity	PES Modern College of Pharmacy, Nigdi, Pune
8. Objectives of activity	To donate warm and regular cloths to needy people by students and staff. To promote feeling of help to needy and poor people. To understand reality and poverty in society.
9. Outcome of activity	Students and staff donated warm and regular cloths to needy people. Students got importance of donation of cloths to needy people.
10. Activity co-coordinator	Dr. A. S. Tapkir Prof.R.M.Gurav Prof.P.A.Pawar





**Principal**  
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Sector No.21, Yamunanagar, Nigdi,  
Pune - 411 044.









  
Dr. A. S. Tapkir  
NSS Program Officer

  
Dr. P.D. Chaudhari  
Principal







   	
<b>P. E. Society's MODERN COLLEGE OF PHARMACY, NIGDI, PUNE-44 NSS REGULAR ACTIVITY REPORT 2021-22</b>	
1. Name of activity	Ministry of Culture, Government of India Demonstrative session for Various competitions for College students on occasion of Azadi ka Amrit Mohotstav
2. Date of activity	28.01.2022
3. Time	2.00 pm to 3.00 pm
4. Total no students participated	270
5. Occasion of activity	Azadi ka Amrit Mohotstav
6. Inauguration by	Dr. P.D. Chaudhari
7. Place of activity	PES Modern College of Pharmacy, Nigdi, Pune (Online)
8. Objectives of activity	<ul style="list-style-type: none"><li>• To Organize and participation in competitions like rangoli, patriotic song and Cradlesong writing competition.</li><li>• To grow and spreading of patriotism amongst students.</li><li>• To build art and encourage students.</li></ul>
9. Outcome of activity	<ul style="list-style-type: none"><li>• Organised and participated in competitions like rangoli, patriotic song and Cradlesong writing competition.</li><li>• The artistic approach develop in students by participating in such competitions.</li><li>• Students get encouraged by participating in activity.</li></ul>
10 Activity co-coordinator	Dr. A. S. Tapkir
 	













P. E. Society's  
Modern College of Pharmacy, Nigdi, Pune-44  
NSS REGULAR ACTIVITY REPORT  
2021-2022

1.	Name of activity	National integration camp 2022
2.	Date of activity	21 Feb to 27 Feb 2022
3.	Time	6.00 am to 10.00 pm
4.	Total no students participated	1(Giri Rutuja Vitthal)
5.	Occasion of activity	National Integration Camp
6.	Inauguration by	Dr. Suresh B. Itnal
7.	Place of activity	Karnatak University Dharwad
8.	Objectives of activity	<ul style="list-style-type: none"><li>• Exchange of Culture</li><li>• Culture Culture integration</li><li>• Youth Empowerment</li></ul>
9.	Outcome of activity	<ul style="list-style-type: none"><li>• Participant learn about team leadership, personality development, exchange of culture and humanity</li></ul>
10.	Activity co-coordinator	Dr. A. S. Tapkir Prof.R.M.Gurav Prof.P.A.Pawar







Photos of activity

NATIONAL INTEGRATION CAMP 2022







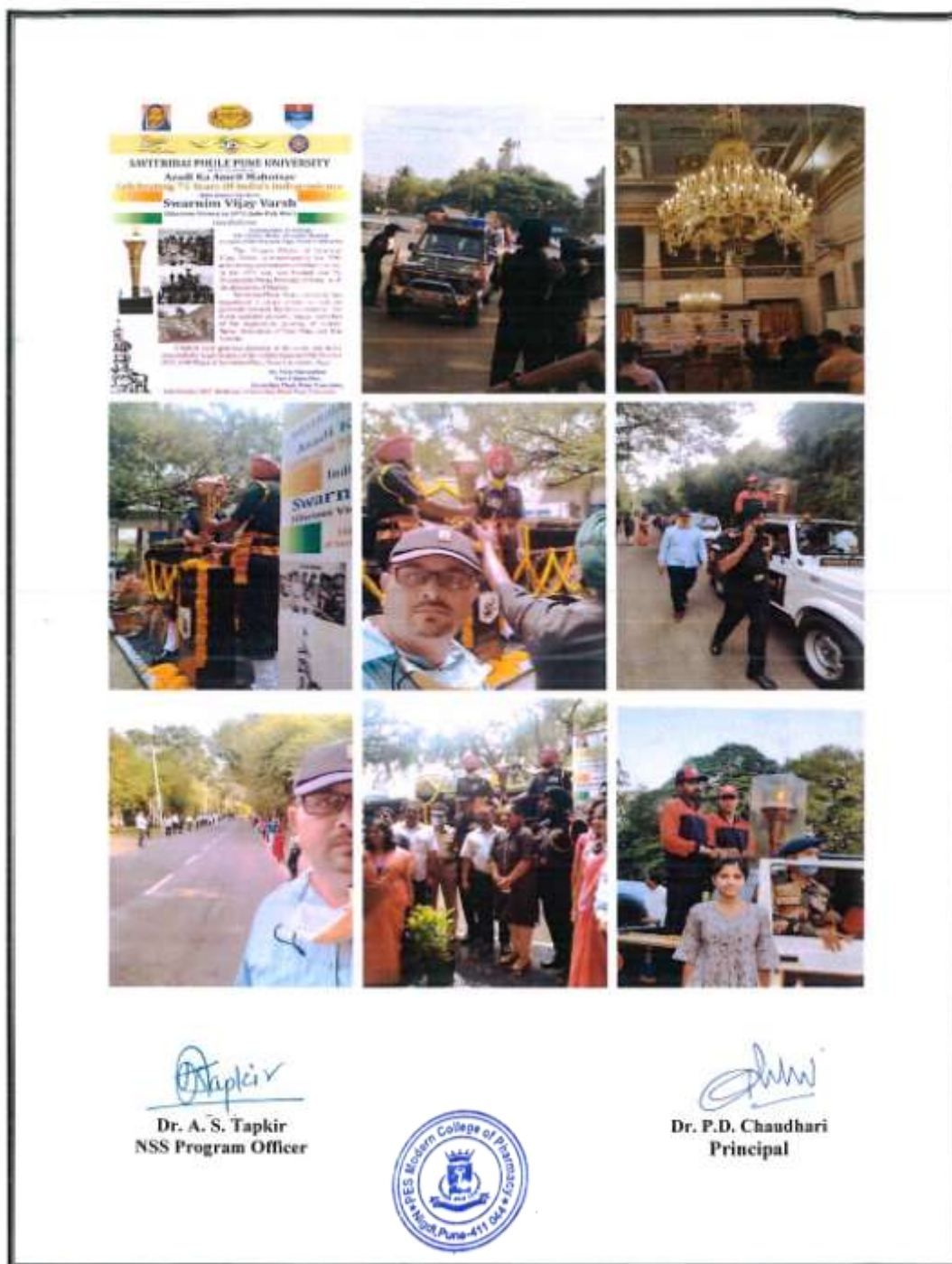
**P. E. Society's  
MODERN COLLEGE OF PHARMACY, NIGDI, PUNE-44  
NSS REGULAR ACTIVITY REPORT  
2021-22**

1.	Name of activity	Victory Flame
2.	Date of activity	14.11.2021
3.	Time	10 to 5 pm
4.	Total no students participated	50
5.	Occasion of activity	Independence Day
6.	Inauguration by	Dr. Prabhakar Desai
7.	Place of activity	SPPU
8.	Objectives of activity	To express gratitude towards soldier. To express the patriotism Youth Empowerment
9.	Outcome of activity	Participant learnt about parade and techniques, team leadership, personality development and patriotism.
10.	Activity co-coordinator	Dr. A. S. Tapkir Prof.R.M.Gurav Prof.P.A.Pawar



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Prof. Dr. P. D. Chaudhari  
M.Pharm., Ph.D.  
Principal

Prof. Dr. Gajanan R. Ekbote  
M.S., M.N.A.M.S.  
Chairman, Business Council  
P.E.Society, Pune

Ref :

Date :

# Human Values

(Academic year 2020-21)



STRIVING TOWARDS EXCELLENCE FOREVER



P. E. Society's  
Modern College of Pharmacy, Nigdi, Pune-44  
NSS REGULAR ACTIVITY REPORT  
2020-2021

1.	Name of activity	Rehabilitation Program of jobless construction site workers in pandemic (soft skills)
2.	Date of activity	05.06.2020
3.	Time	10.00 am to 2.00 pm
4.	Total no students participated	100
5.	Occasion of activity	Help to construction workers and mask distribution in pandemic
6.	Inauguration by	Dr. P. D. Chaudhari
7.	Place of activity	Native place of students and staff
8.	Objectives of activity	To give training of soft skills. To give counselling about work and earn money. To give food assistance to needy workers. To aware the society for learning skills and ways of earning money.
9.	Outcome of activity	Workers were got the importance of learning soft skills and to earn money from it. Donated food to needy workers. As a pharmacist discussed and counseled regarding health of workers.
10.	Activity co-coordinator	Dr. A. S. Tapkir



Principal  
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Photos of activity







  
Dr. A. S. Tapkir  
NSS Program Officer




  
Dr. P. D. Chaudhari  
Principal  
Principal  
P. E. S. Modern College of Pharmacy  
Sector No 21, Yashwanagar, Nigdi,  
Pune - 411 044.









**P. E. Society's  
MODERN COLLEGE OF PHARMACY, NIGDI, PUNE-44  
NSS REGULAR ACTIVITY REPORT  
2020-2021**

1.	Name of activity	Blood Donation
2.	Date of activity	14.09.2020, 10.00 am to 2.00 pm
3.	Total no students participated	10
4.	Occasion of activity	Blood Donation
5.	Inauguration by	Dr. P.D. Chaudhari
6.	Place of activity	Red plus blood bank Bhosri, Pune
7.	Objectives of activity	<p>To encourage students to donate blood and saving life.</p> <p>To aware students about importance and need of blood donation.</p> <p>To cultivate a caring attitude towards community who need a blood donor.</p> <p>To collect the blood for blood banks.</p>
8.	Outcome of activity	<p>Encouraged students to donate blood and saving life.</p> <p>Students understood importance and need of blood donation.</p> <p>Collected blood for blood bank.</p> <p>As a pharmacist importance and need of blood were understood.</p>
9.	Activity co-coordinator	Dr. A. S. Tapkir



**Dr. A. S. Tapkir**  
NSS Program Officer



**Dr. P.D. Chaudhari**  
Principal

**Principal**  
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**P. E. Society's  
Modern College of Pharmacy, Nigdi, Pune-44  
NSS REGULAR ACTIVITY REPORT  
2020-2021**

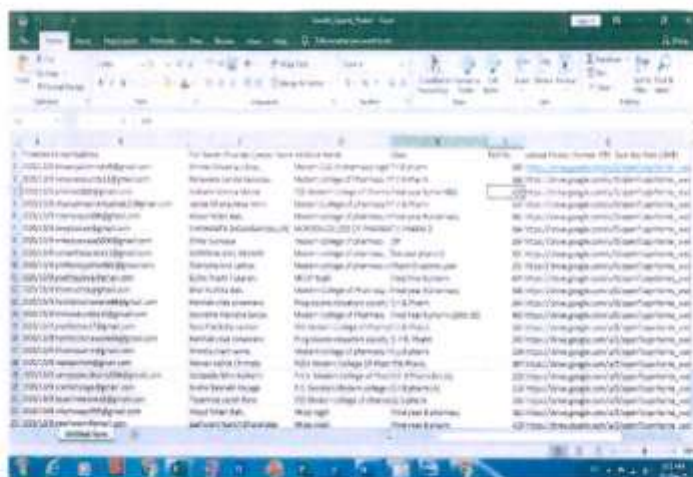
1.	Name of activity	Mahatma Gandhi Jayanti celebration
2.	Date of activity	02.10.2020
3.	Time	10.00 am to 2.00 pm
4.	Total no students participated	100
5.	Occasion of activity	Mahatma Gandhi Jayanti
6.	Inauguration by	Dr. P.D. Chaudhari
7.	Place of activity	PES Modern College of Pharmacy, Nigdi, (Online)
8.	Objectives of activity	To celebrate Gandhi Jayanti To remember our freedom fighter Mahatma Gandhi and their sacrifice for our freedom. To learn his thoughts and ideology the way of nonviolence.
9.	Outcome of activity	Students celebrated Gandhi Jayanti Students learnt his thoughts and ideology the way of nonviolence. Students actively participated in poster presentation on occasion of Mahatma Gandhi.
10.	Activity co-coordinator	Dr. A. S. Tapkir



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Photos of activity



  
Dr. A. S. Tapkir  
NSS Program Officer



  
Dr. P.D. Chaudhari  
Principal

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P. E. Society's  
Modern College of Pharmacy, Nigdi, Pune-44  
NSS REGULAR ACTIVITY REPORT  
2020-2021

1.	Name of activity	SPPU COVID warriors (Life skills, yoga, physical fitness, health and hygiene)
2.	Date of activity	05.10.2020
3.	Time	10.00 am to 2.00 pm
4.	Total no students participated	100
5.	Occasion of activity	COVID-19 Disaster management training
6.	Inauguration by	Dr. P.D. Chaudhari
7.	Place of activity	PES Modern College of Pharmacy, Nigdi, Pune(Online)
8.	Objectives of activity	To learn Life skills like yoga, physical fitness, health and hygiene to fight against COVID-19. To aware the society for good health. To spread the knowledge regarding immunity. To develop mental and physical strength.
9.	Outcome of activity	Students understood and learn different life skills like yoga, physical fitness, health and hygiene to fight against COVID-19. They awarded the society for good health. And acquired knowledge regarding immunity. As a pharmacist students got their role in prevention and in counselling to patients.
10.	Activity co-coordinator	Dr. A. S. Tapkir

Dr. A. S. Tapkir  
NSS Program Officer



Dr. P. D. Chaudhari  
Principal

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P. E. Society's  
Modern College of Pharmacy, Nigdi, Pune-44  
NSS REGULAR ACTIVITY REPORT  
2020-2021

1.	Name of activity	Jan Andolan campaign
2.	Date of activity	11.10.2020
3.	Time	10.00 am to 2.00 pm
4.	Total no students participated	100
5.	Occasion of activity	Jan Andolan
6.	Inauguration by	Dr. P.D. Chaudhari
7.	Place of activity	PES Modern College of Pharmacy, Nigdi, Pune (Online)
8.	Objectives of activity	To build recognition across society. To mobilize multiple sectors nudges. To build knowledge, attitude and behavioral intent. To join Jan Andolan to keep the pandemic away.
9.	Outcome of activity	Students took pledge online Students understood various precautions regarding pandemic management. Took knowledge, attitude and behavioural intent. Understood moto of Jan andolan
10.	Activity co-coordinator	Dr. A. S. Tapkir



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Photos of activity



  
Dr. A. S. Tapkir  
NSS Program Officer



  
Dr. P. D. Chaudhari  
Principal  
Principal  
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**P. E. Society's  
Modern College of Pharmacy, Nigdi, Pune-44  
NSS REGULAR ACTIVITY REPORT  
2020-2021**

1.	Name of activity	Yuva Sansad Youth Parliament elocution competition
2.	Date of activity	28.12.2020
3.	Time	10.00 am to 2.00 pm
4.	Total no students participated	05
5.	Occasion of activity	Consumerization and finance literacy
6.	Inauguration by	Dr. P.D. Chaudhari
7.	Place of activity	PES Modern College of Pharmacy, Nigdi, Pune (Online)
8.	Objectives of activity	To educate students about democratic values. To spread awareness of parliamentary system amongst students and society. To participate and being proactive in solving grass root problems. A drive to be change agents to lead society.
9.	Outcome of activity	Students get educated about democratic values. Students get aware regarding political and administrative system. Students were participated in institute level student council elections.
10.	Activity co-coordinator	Dr. A. S. Tapkir



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## Photos of activity



## नेहरु युवा केन्द्र, पुणे

### NEHRU YUVA KENDRA, PUNE

OFFICE OF THE DISTRICT YOUTH CO-ORDINATOR

स्वायत्तकारी संस्था  
युवा कार्यक्रम एचएच सीएल मंत्रालय  
भारत सरकार

An Autonomous Body Under the  
Ministry of Youth Affairs & Sports  
Government of India

गैपूके-पुणे / 115 / 2020-21

दिनांक 20.12.2020

घोषणा पत्र

क्रिडाक्रीडा युवा संवाद पुणे दिनांक 28.12.2020 का परिचय खेळीत

बहिष्कार

पंजीत क्रिडा काला हे जी पर दिनांक 22.12.2020 मुठानाक अवधीनमूला तथा मा. राज्य निदेशक, मुंबई अवधीनमूला तथा मा. क्षेत्रीय निदेशक राष्ट्रीय सेवा योजना कार्यालय, पुणे वार्डनरून तथा सायनेस से मा. कार्यक्रम अधिकारी, राष्ट्रीय सेवा योजना, तथा संवादाक पोखरी इस्टीमेट ऑफ पोलीटीक्स तथा इन्फर्मेसन, पुणे की संयुक्त व्यवस्थापन ने काल दूय बंद, पुणे अवधीनमूला की ओर दिनांक 28.12.2020 को सुबह 10.30 बजे क्रिडाक्रीडा युवा संवाद का अवधीनमूला क्रिडा काला है।

इस क्रिडाक्रीडा युवा संवाद में निम्नानुसार कुलमों का प्रथम द्वितीय क्रमांक प्राप्त हुआ

क्र.सं.	क्रिडाक्रीडा का नाम	परी कालाक	प्रथम क्रमांक	द्वितीय क्रमांक
1	अवधीनमूला निदेशक निदेशक	7004343818	483	प्रथम
2	रुपुला विदेशक मंत्री	8805452888	489	द्वितीय

राज्यक्रीडा युवा संवाद का अवधीनमूला दिनांक 04.01.2021 को पोखरी इस्टीमेट ऑफ पोलीटीक्स तथा इन्फर्मेसन, पुणे में सुबह 10.30 बजे से अवधीनमूला क्रिडा काला है।

पंजीत  
युवा कार्यक्रम  
निदेशक युवा अधिकारी

प्रतिनिधि-

मा. राज्य निदेशक, नैपुलस अवधीनमूला पोखरी इस्टीमेट ऑफ पोलीटीक्स  
मा. क्षेत्रीय निदेशक राष्ट्रीय सेवा योजना पुणे वार्डनरून तथा सायनेस से  
मा. कार्यक्रम अधिकारी, एन्फर्मेसन, पोखरी इस्टीमेट ऑफ पोलीटीक्स तथा इन्फर्मेसन, पुणे वार्डनरून  
आवधीनमूला है। काला अवधीनमूला करने हेतु अधिकारी सादर

आवधीनमूला : 11/1, भोवला रोड, मांडवी, पोखरी इस्टीमेट ऑफ पोलीटीक्स, पोखरी रोड, पुणे 411 011 (महाराष्ट्र) टेलीफोन : 220-2444444  
Office : 29/2, Sarwar Path, "Sharif Kari", Sarwar Lodge Building, Nagarkar Rd, Pune 411 011, (Maharashtra) Tel: 220-2444444  
Email : dyt.pune@gmail.com

Dr. A. S. Tapkir  
NSS Program Officer



Dr. P. D. Chaudhari  
Principal  
Principal  
P. E. S. Modern College of Pharmacy  
Sector 10.21, Yamunanagar, Nigdi,  
Pune - 411 044.



P. E. Society's  
Modern College of Pharmacy, Nigdi, Pune-44  
NSS REGULAR ACTIVITY REPORT  
2020-2021

1. Name of activity	Azadi ka Amrut Mahotsav- Salute to freedom fighter
2. Date of activity	24.03.2021
3. Time	10.00 am to 2.00 pm
4. Total no students participated	100
5. Occasion of activity	75 <sup>th</sup> Independence day
6. Inauguration by	Dr. P.D. Chaudhari
7. Place of activity	PES Modern College of Pharmacy, Nigdi, (Online)
8. Objectives of activity	To celebrate 75 years of independence To remember our freedom fighters and their sacrifice for our freedom To give lessons of nationality and patriotism to students.
9. Outcome of activity	Students got information and struggle of Freedom fighters Students watched biography of Indian freedom fighters and got chance to know them briefly
10. Activity co-coordinator	Dr. A. S. Tapkir



Principal


P. E. S. Modern College of Pharmacy  
Sector No.21, Yamunanagar, Nigdi,  
Pune - 411 044.





  
Dr. A. S. Tapkir  
NSS Program Officer



  
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Principal  
P. E. S. Modern College of Pharmacy  
Sector No.21, Yamunanagar, Nigdi,  
Pune - 411 044.



P. E. Society's  
Modern College of Pharmacy, Nigdi, Pune-44  
NSS REGULAR ACTIVITY REPORT  
2020-2021

1. Name of activity	Health Awareness - Yogasan
2. Date of activity	28.03.2021
3. Time	10.00 am to 2.00 pm
4. Total no students participated	100
5. Occasion of activity	Yogasan demonstration and healthy lifestyle
6. Inauguration by	Dr. P.D. Chaudhari
7. Place of activity	PES Modern College of Pharmacy, Nigdi, Pune (Online)
8. Objectives of activity	To maintain and promote different Indian yoga traditions.To enable students to have good health To practice mental hygiene To attain higher level of consciousness. To bring certain amount of self-discipline in students.A develop attentiveness and concentration.
9. Outcome of activity	Students understood different Indian yoga traditions.Students get importance of good health and healthy breathing styles to increase concentration. Students get knowledge about lifestyle and diet.
10. Activity co-coordinator	Dr. A. S. Tapkir



Principal  
P. E. S. Modern College of Pharmacy  
Sector No.21, Yamunanagar, Nigdi,  
Pune - 411 044.



Photos of activity



  
Dr. A. S. Tupkir  
NSS Program Officer



  
Dr. P.D. Chaudhari  
Principal

Principal  
P. E. S. Modern College of Pharmacy  
Sector No.21, Yamunanagar, Nigdi,  
Pune - 411 044.



P. E. Society's  
Modern College of Pharmacy, Nigdi, Pune-44  
NSS REGULAR ACTIVITY REPORT  
2020-2021

1. Name of activity	Milaap-free crowd funding for Mayuri Gadekar (our BPharm Alumni) for her cancer treatment
2. Date of activity	01.08.2020
3. Time	-
4. Total no students participated	More than 100
5. Occasion of activity	For cancer treatment of Mayuri Gadekar
6. Inauguration by	-
7. Place of activity	PES Modern College of Pharmacy, Nigdi, (Online)
8. Objectives of activity	To raise the fund for cancer treatment of Mayuri Gadekar small contribution from college.
9. Outcome of activity	Satisfactory amount of fund was raised by using milaap asocial site to help Mayuri Gadekar
10. Activity co-coordinator	Dr. A. S. Tapkir



Principal


P. E. S. Modern College of Pharmacy  
Sector No.21, Yamunanagar, Nigdi,  
Pune - 411 044.





*Photos of activity*



  
Dr. A. S. Tapkir  
NSS Program Officer



  
Dr. P.D. Chaudhari  
Principal

Principal  
P. E. S. Modern College of Pharmacy  
Sector No 21, Yamunanagar, Nigdi,  
Pune - 411 044.



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Approved by All India Council for Technical Education, New Delhi, Pharmacy Council of India, New Delhi,  
Directorate of Technical Education, Mumbai (MS), Permanently affiliated to  
Savitribai Phule Pune University, Pune & Approved under Section (2 (f) & 12 (B) of UGC Act, 1956

Sector No. 21, Yamunanagar, Nigdi, Pune - 411 044. (M.S.) Tel. : 020-27661314 / 15

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Prof. Dr. P. D. Chaudhari  
M.Pharm., Ph.D.  
Principal

Prof. Dr. Gajanan R. Ekbote  
M.S., M.N.A.M.S.  
Chairman, Business Council  
P.E.Society, Pune

Ref :

Date :

# Human Values

(Academic year 2019-20)

STRIVING TOWARDS EXCELLENCE FOREVER



P. E. Society's  
Modern College of Pharmacy, Nigdi, Pune-44

NSS REGULAR ACTIVITY REPORT 2019-20

1.	Name of activity	Tobacco pledge
2.	Date of activity	11.07.2019
3.	Time	10.00 to 10.30
4.	Total no students participate	100
5.	Occasion of activity	No Tobacco day
6.	Inauguration by	Dr. P. D. Chaudhari, principal, modern college of pharmacy, Nigdi, Pune.
7.	Place of activity	Modern College of Pharmacy, Nigdi, Pune.
8.	Objectives of activity	To draw global attention to the tobacco epidemic and the preventable death and disease it causes.
9.	Outcome of activity	Pledge was given to 100 students
10.	Activity co-coordinator	Dr. A. S. Tapkir



**Principal**  
P. E. S. Modern College of Pharmacy  
Sector No.21, Yamunanagar, Nigdi,  
Pune - 411 044.



Photos of activity










  
Dr. A. S. Tapkir  
Program officer



  
Dr. P. D. Chaudhari  
Principal

Principal  
P.E.S. Modern College of Pharmacy  
Sector No 21, Yashwanagar, Nigdi,  
Pune - 411 044







**P. E. Society's  
Modern College of Pharmacy, Nigdi, Pune-44**

**NSS REGULAR ACTIVITY REPORT 2019-20**

1.	Name of activity	Small help of 500 grocery kits, stationary for 200 students and medicines are donated to flood affected villagers at sangali, kolhapur
2.	Date of activity	21.08.2019
3.	Time	4.00 am to 9.00 pm
4.	Total no students participate	100
5.	Inauguration by	Dr. P. D. Chaudhari, principal, PES, Modern college of Pharmacy, Nigdi, Pune.
6.	Place of activity	A/P Khochi, Kolhapur, Maharashtra, India
7.	Objectives of activity	Help to flood affected villagers
8.	Outcome of activity	Small help of 500 grocery kits, stationary for 200 students and medicines are donated to flood affected villagers at sangali, kolhapur
9.	Activity co-coordinator	Dr. A. S. Tapkir

**Photos of activity**







  
Dr. A. S. Tapkir  
Program officer



  
Dr. P. D. Chaudhari  
Principal  
P. E. S. Modern College of Pharmacy  
Sector No.21, Yamunanagar, Nigdi,  
Pune - 411 004.



P. E. Society's  
Modern College of Pharmacy, Nigdi, Pune-44

NSS REGULAR ACTIVITY REPORT 2019-20

NSS REGULAR ACTIVITY REPORT 2019-20


1.	Name of activity	Medicine & Glossary donation to needy Hansen's disease (laprosy) peoples at Anand Ashram Alandi
2.	Date of activity	29/08/2019
3.	Time	5pm to 6pm
4.	Total no students participate	7
5.	Occasion of activity	-
6.	Inauguration by	-
7.	Place of activity	Anand gram
8.	Objectives of activity	Help to needy hansens disease (laprosy) peoples
9.	Outcome of activity	Help to needy hansens disease (laprosy) peoples
10.	Activity co-coordinator	Dr. A. S. Tapkir

Photos of activity







  
Dr. A. S. Tapkir  
Program officer



  
Dr. P. D. Chaudhari  
Principal

Principal  
P. E. S. Modern College of Pharmacy  
Sector No.21, Yamunanagar, Nigdi,  
Pune - 411 044.

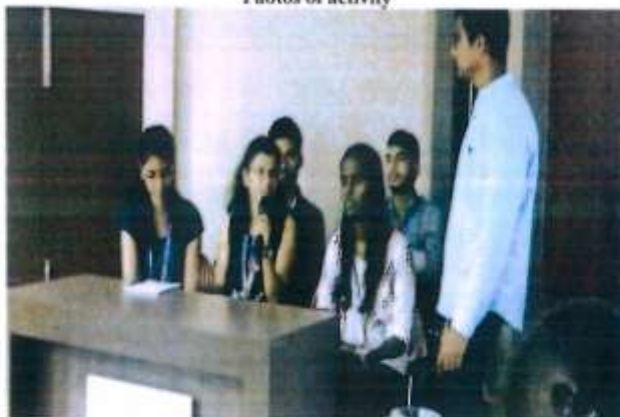


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NSS REGULAR ACTIVITY REPORT 2019-20

1.	Name of activity	Debate competition
2.	Date of activity	24.09.2019
3.	Time	2 pm to 6 pm
4.	Total no students participate	100
5.	Occasion of activity	NSS day
6.	Inauguration by	Dr. P. D. Chaudhari, principal, Modern College of Pharmacy, Nigdi, Pune.
7.	Place of activity	Modern College of Pharmacy, Nigdi, Pune.
8.	Objectives of activity	To develop leadership quality To develop communication skill To enrich the knowledge of pharmacy and their related fields
9.	Outcome of activity	Leadership quality, communication skill is developed in NSS volunteers
10.	Activity co-coordinator	Dr. A. S. Tapkir

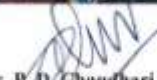
Photos of activity





  
Dr. A. S. Tapkir  
Program officer



  
Dr. P. D. Chaudhari  
Principal

Principal  
P. E. S. Modern College of Pharmacy  
Sector No.21, Yamunanagar, Nigdi,  
Pune - 411 044.



P. E. Society's Modern College of Pharmacy, Nigdi, Pune-44		
NSS REGULAR ACTIVITY REPORT 2019-20		
1.	Name of activity	Basic life Support Training
2.	Date of activity	04/10/2019
3.	Time	10am to 12pm
4.	Total no students participate	100
5.	Occasion of activity	-
6.	Inauguration by	Dr. P. D. Chaudhari, Principal, PES, Modern College of Pharmacy, Nigdi, Pune.
7.	Place of activity	Modern College of Pharmacy, Nigdi, Pune.
8.	Objectives of activity	To give basic life support training To aware about healthy heart
9.	Outcome of activity	Basic life support training given to 100 NSS volunteers
10.	Activity co-coordinator	Prof. Mr. A. S. Tapkir

Photos of activity

The international association of lions clubs  
DISTRICT 332402 ZONE I  
LIONS CLUB POONA-NIGDI,  
LIONS CLUB TALAWADE PRIDE  
JOINTLY ORGANIZED,  
Basic life support training & lecture on 'HEALTHY HEART'  
by  
Lion Rajkumar Raut  
(Dist. Chairperson on Healthy Heart)

WELCOME YOU ALL  
MODERN COLLEGE OF PHARMACY  
NIGDI, PUNE 44  
(NSS DEPARTMENT)

Date: 04<sup>th</sup> October 2019  
Venue: Seminar Hall, Modern College of Pharmacy, Nigdi-44









  
Dr. A. S. Tapkir  
Program officer




  
Dr. P. D. Chaudhari  
Principal



  		
<b>P. E. Society's Modern College of Pharmacy, Nigdi, Pune-44</b>		
<b>NSS REGULAR ACTIVITY REPORT 2019-20</b>		
1.	Name of activity	Blood Donation Camp
2.	Date of activity	23.01.2020
3.	Time	09.00am to 4.00pm
4.	Total no students participate	100
5.	Occasion of activity	Shree Shankarrao Kanitkar Smriti Din
6.	Inauguration by	Dr. P. D. Chaudhari, Principal, Modern College of Pharmacy, Nigdi, Pune.
7.	Place of activity	PES, Modern College of Pharmacy, Nigdi, Pune.
8.	Objectives of activity	<ul style="list-style-type: none"><li>• Encouraging existing voluntary donors to give blood regularly</li><li>• Encouraging new people to donate their blood on a voluntary unpaid basis</li></ul>
9.	Outcome of activity	<ul style="list-style-type: none"><li>• Total 103 Students donated blood.</li></ul>
10.	Activity co-coordinator	Dr. A. S. Tapkir

  
**Principal**  
P. E. S. Modern College of Pharmacy  
Sector No.21, Yamunanagar, Nigdi  
Pune - 411 044.





Photos of activity








  
Dr. A. S. Tapkir  
Program officer



  
Dr. P. D. Chaudhari  
Principal



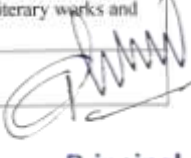







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NSS REGULAR ACTIVITY REPORT 2019-20

1.	Name of activity	Marathi Matrubhasha Din (Day) celebration
2.	Date of activity	22/02/2020
3.	Time	12.00 noon -100pm
4.	Total no students participate	10
5.	Occasion of activity	Marathi Matrubhasha Din
6.	Inauguration by	Dr. P. D. Chaudhari, principal, modern college of pharmacy, Nigdi, Pune.
7.	Place of activity	Audio visual room in library
8.	Objectives of activity	1. Language is the root map of our culture and we have to make an efforts to preserve our root languages, thus to eradicate the language barrier this day is celebrated. 2. To take pride in the language of the state and not be weary of marking the day.
9.	Outcome of activity	1. It not only makes students aware of the history of the language, but also enlightens them about the literary works available in the language. 2. It proved the fact that Science and Literature go hand in hand. 3. It encourages students to learn the state language as well read and understand literary works and communicate in it.
10.	Activity co-coordinator	Dr. A. S. Tapkir

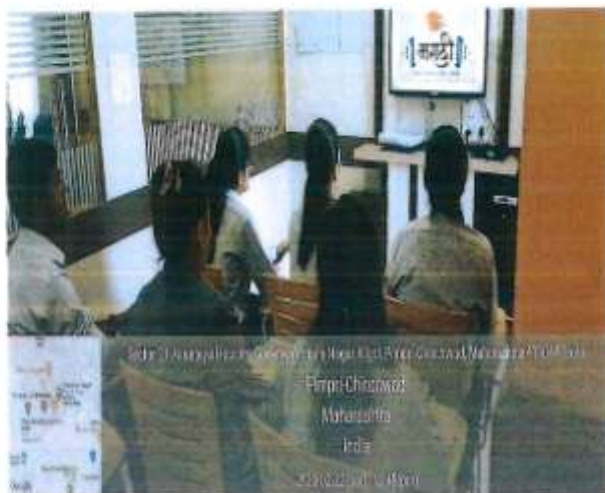
  
**Principal**  
 P. E. S. Modern College of Pharmacy  
 Sector No.21, Yamunanagar, Nigdi,  
 Pune - 411 044.





Photos of activity





Dr. A. S. Tapkir  
Program officer



Dr. P. D. Chaudhari  
Principal

Principal  
P. E. S. Modern College of Pharmacy  
Sector No. 21, Yamunanagar, Nigdi,  
Pune - 411 044.





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Modern College of Pharmacy, Nigdi, Pune-44

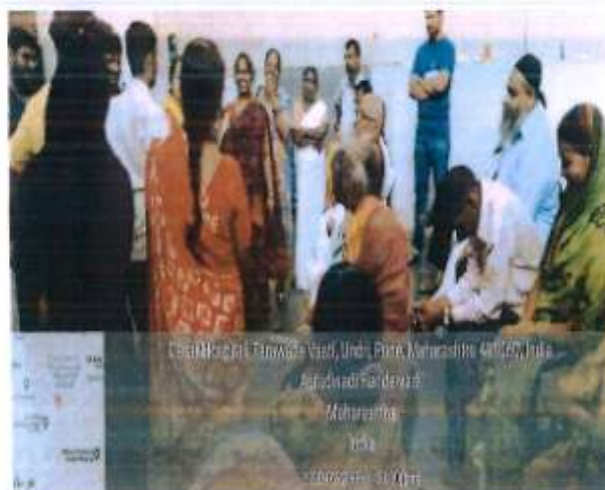
NSS REGULAR ACTIVITY REPORT 2019-20

1.	Name of activity	Cataract operation
2.	Date of activity	28.02.2020, 29.02.2020
3.	Time	11 am to 3pm
4.	Total no students participate	10
5.	Occasion of activity	----
6.	Inauguration by	----
7.	Place of activity	Desai eye Hospital mohomadwadi
8.	Objectives of activity	Cataract operation of villagers
9.	Outcome of activity	18 villagers cataract operation was done successfully
10.	Activity co-coordinator	Dr. A. S. Tapkir

Photos of activity







  
Dr. A. S. Tapkir  
Program officer



  
Dr. P. D. Chaudhari  
Principal

Principal  
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Sector No.21, Yamunanagar, Nigdi,  
Pune - 411 044.



P. E. Society's  
Modern College of Pharmacy, Nigdi, Pune-44  
NSS REGULAR ACTIVITY REPORT  
2019-2020

1. Name of activity	Implementing Government Apps like Aargya Setu and I gotetc. in Covid 19 Awareness
2. Date of activity	19.4.2020
3. Time	10.00 am to 2.00 pm
4. Total no students participated	100
5. Occasion of activity	COVID-19 Awareness
6. Inauguration by	Dr. P.D. Chaudhari
7. Place of activity	PES Modern College of Pharmacy, Nigdi, Pune (Online)
8. Objectives of activity	To aware students regarding Government Apps like AargyaSetu regarding COVID-19 management. To inform users about the precautionary measures. To alert user when in high risk areas or in proximity to aCOVID positive person. To give updated list of ICMR approved labs for diagnosis.
9. Outcome of activity	Students got about Aargya Setu app and its precautionary measures. They were used the app and got knowledge about management of COVID-19 As a pharmacist students got their role in prevention and counselling to patients. Students were aware and educated from videos.
10. Activity co-coordinator	Dr. A. S. Tapkir



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Directorate of Technical Education, Mumbai (MS), Permanently affiliated to  
Savitribai Phule Pune University, Pune & Approved under Section (2 (f) & 12 (B) of UGC Act, 1956

Sector No. 21, Yamunanagar, Nigdi, Pune - 411 044. (M.S.) Tel. : 020-27661314 / 15

E-mail : mcpnigdi44@gmail.com Website : www.mcop.org.in

Prof. Dr. P. D. Chaudhari  
M.Pharm., Ph.D.  
Principal

Prof. Dr. Gajanan R. Ekbote  
M.S., M.N.A.M.S.  
Chairman, Business Council  
P.E.Society, Pune

Ref :

Date :

# Human Values

(Academic year 2018-19)

STRIVING TOWARDS EXCELLENCE FOREVER





**P. E. Society's  
Modern College of Pharmacy, Nigdi, Pune-44**

**NSS REGULAR ACTIVITY REPORT 2018 -2019**

1.	Name of activity	Blood group detection and Hemoglobin checkup camp
2.	Date of activity	21/07/2018
3.	Time	09AM -11AM
4.	Total no students participate	20
5.	Occasion of activity	Blood group detection and Hemoglobin checkup camp
6.	Inauguration by	Mr. Bhaskar Bhoje (Kartavya Foundation, Dehu)
7.	Place of activity	A.P. Yelwadi (Z. P. School), near to Dehugaon Tal. Haveli, Dist Pune,
8.	Objectives of activity	To detect the Blood group and to check the hemoglobin of students. To give contribution to society in the form of health checkup activity to small children's.
9.	Outcome of activity	All the students' Blood group detection and hemoglobin testing from Z. P. School of Yelwadi is completed. Many peoples from Yelwadi take advantage of this camp to know the Hb and blood group.
10.	Activity co-coordinator	Dr. A. S. Tapkir

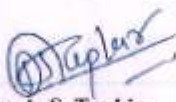


**Principal**  
P. E. S. Modern College of Pharmacy  
Sector No.21, Yamunanagar, Nigdi,  
Pune - 411 044.




Photos of activity



  
Dr. A. S. Tapkir  
NSS Program officer



  
Dr. P. D. Chaudhari  
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Sector No.21, Yamunanagar, Nigdi,  
Pune - 411 044



**P. E. Society's  
Modern College of Pharmacy, Nigdi, Pune-44**

**NSS REGULAR ACTIVITY REPORT 2018-2019**

1.	Name of activity	State and national Republic day felicitation period ceremony's participants selection camp (NRD SRD PRE SELECTION)
2.	Date of activity	31/08/2018
3.	Time	8:00 am to 2:00 pm
4.	Total no students participate	02 (Ms. Richardson Charmini & Ms. Tiwari Shruti A.)
02	Occasion of activity	NSS Activity for celebrating Republic Day
03	Inauguration by	Dr. Prabhakar Desai
04	Place of activity	Savitribai Phule Pune University.
05	Objectives of activity	To develop students skills and overall behavior and approach being as Indian citizen. To aware students about Patriotism.
06	Outcome of activity	Students got idea regarding facing different selection process based on performance. Students has been aware for participating in extra-curricular activity.
07	Activity co-coordinator	Dr. A. S. Tapkir

**Photos of Activity**



**Dr. A. S. Tapkir**  
NSS Program officer



**Dr. P. D. Chaudhari**  
**Principal**  
P. E. S. Modern College of Pharmacy  
Sector No 21, Yashwantrao Chavan Nagar, Nigdi





**P. E. Society's  
Modern College of Pharmacy, Nigdi, Pune-44**

**NSS REGULAR ACTIVITY REPORT 2018-2019**

1.	Name of activity	Guest Lecture on Stress management and Obesity
2.	Date of activity	03/10/2018
3.	Time	3 PM- 4 PM
4.	Total no students participate	100
5.	Occasion of activity	National Service Scheme (NSS) activity
6.	Place of activity	Modern college of Pharmacy, Nigdi
7.	Objectives of activity	To make the students aware about the benefits of meditation and peace of mind to relive stress. To aware students regarding the benefits exercise and diet for weight management. To aware students regarding which type of different exercise we have to perform by controlling breathing for appropriate time to get good health.
8.	Outcome of activity	Students were realized the benefits of meditation and peace of mind. Students realized the role of exercise and diet to achieve health goal in life. Students understood the different types of breathing exercise which will be beneficial to get good health.
9.	Activity co-coordinator	Dr. A. S. Tapkir




**Principal**  
P. E. S. Modern College of Pharmacy  
Sector No.21, Yamunanagar, Nigdi,  
Pune - 411 044.






Photos of activity






  
Dr. A. S. Tapkir  
NSS Program officer



  
Dr. P. D. Chaudhari  
Principal  
P. E. S. Modern College of Pharmacy  
Sector No 21, Yamunanagar, Nigdi.





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Modern College of Pharmacy, Nigdi, Pune-44**


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**NSS REGULAR ACTIVITY REPORT 2018-2019**


1.	Name of activity	Guest lecture on Right to Information Act
2.	Speaker	Shri. Pradeep Kothawade
3.	Date of activity	12/10/2018
4.	Time	3 pm- 4 pm
5.	Total no students participate	50
6.	Occasion of activity	National Service Scheme (NSS) regular activity
7.	Place of activity	PES, Modern college of Pharmacy, Nigdi 411044
8.	Objectives of activity	To make the students aware about the Right to Information To empower the citizens, promote transparency and accountability of any system or organization.
9.	Outcome of activity	Students were realized the benefits of Right to Information Students realized the role RTI clauses to improve any system or organization.
10.	Activity co-coordinator	Dr. A. S. Tapkir

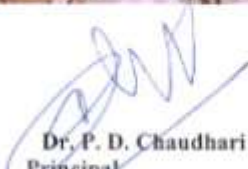
**Photos of activity**



**Dr. A. S. Tapkir**  
NSS Program officer





**Dr. P. D. Chaudhari**  
Principal

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Pune - 411 044



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**NSS REGULAR ACTIVITY REPORT 2018-2019**

1.	Name of activity	Blood Donation Camp
2.	Date of activity	28/10/2018
3.	Time	10AM - 4PM
4.	Total no students participate	15
5.	Occasion of activity	MCOP activity in collaboration with PimpriChinchwad Blood Bank Organized by- PCMC
6.	Place of activity	Thakare ground, Yamuna Nagar Nigdi Pune Maharashtra 411044
7.	Objectives of activity	To aware students regarding social activity like blood donation camp. To save the lives of people who are in need of blood. To support governments schemes for blood donation camp.
8.	Outcome of activity	Students understood the value of blood donation to society. Many people's life may be save due to blood donation activity. Students getting different experience being as blood donor.
9.	Activity co-coordinator	Dr. A. S. Tapkir



**Principal**

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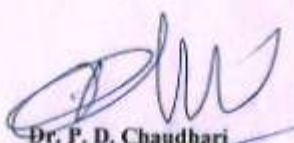


Photos of activity



  
Dr. A. S. Tapkir  
NSS Program officer



  
Dr. P. D. Chaudhari  
Principal  
P. E. S. Modern College of Pharmacy  
Sector No 21, Yamunanagar, Nigdi,  
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**NSS REGULAR ACTIVITY REPORT 2018-2019**

1.	Name of activity	Elocution competition
2.	Date of activity	29.08.2018
3.	Time	10:00 am to 2:00 pm
4.	Total no students participate	01 (Mr. RohitWaghmare)
5.	Occasion of activity	NSS Activity
6.	Inauguration by	Prof. MukundTapkir
7.	Place of activity	SavitribaiPhule Pune University
8.	Objectives of activity	To develop students skills and overall behavior to face elocution competition. To encourage students for participation of extra-co-curricular activity.
9.	Outcome of activity	Students got idea regarding facing Elocution competition. Students were aware for participating in extra-co-curricular activity.
10.	Activity co-coordinator	Dr. A. S. Tapkir




**Principal**

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Photos of activity



  
Dr. A. S. Tapkir  
NSS Program officer



  
Dr. P. D. Chaudhari  
Principal  
P. E. S. Modern College of Pharmacy  
Sector No 21, Yamunanagar, Nigdi,  
Pune-411044



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NSS REGULAR ACTIVITY REPORT 2018-2019

1.	Name of activity	Elocution competition
2.	Date of activity	19/01/2019.
3.	Time	10:00 am to 2:00 pm
4.	Total no students participate	10
5.	Occasion of activity	Youth Parliament Ceremony 2019
6.	Inauguration by	Dr Prabhakar Desai
7.	Place of activity	Dnyaneshwar Hall (Savitribai Phule Pune University).
8.	Objectives of activity	To develop students skills and overall behavior to face elocution competition. To encourage students for participation of extra-co curricular activity.
9.	Outcome of activity	Students got idea regarding facing Elocution competition. Students has been aware for participating in extra-co-curricular activity.
10.	Activity co-coordinator	Dr. A. S. Tapkir



Principal

P. E. S. Modern College of Pharmacy  
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Pune - 411 044.




The collage consists of three photographs:

- Top Left:** A certificate from the National Youth Parliament Festival 2019. It is titled "समर्पण पत्रिका" (Samarpan Patrika) and is awarded to "विद्या सुख सिंग" (Vidya Sukh Singh). The certificate includes the festival's logo and some text in Hindi.
- Top Right:** A large grid document, possibly a schedule or roster, with many columns and rows containing text and numbers.
- Bottom:** Another large grid document, similar to the one above, with multiple columns and rows of information.

  
Dr. A. S. Tapkir  
NSS Program officer



  
Dr. P. D. Chaudhari  
Principal  
P. E. S. Modern College of Pharmacy  
Sector No.21, Yamunanagar, Nigdi,  
Pune - 411 044





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**NSS REGULAR ACTIVITY REPORT 2018-2019**

1.	Name of activity	Guidance session on Election Awareness
2.	Date of activity	31/01/2019.
3.	Time	2:00 pm to 3:00 pm
4.	Total no students participate	50
5.	Occasion of activity	Election Awareness Program
6.	Place of activity	PimpriChinchwad Municipal Corporation office, Pune.
7.	Objectives of activity	To make the students aware about the voting importance for Indian Democracy. To aware students about role of municipal corporation.
8.	Outcome of activity	Students were realized the importance of voting for Indian Democracy. Students understood the importance of role of municipal corporation.
9.	Activity co-coordinator	Dr. A. S. Tapkir

**Photos of activity**



**Dr. A. S. Tapkir**  
NSS Program officer



**Dr. P. D. Chaudhari**  
Principal  
P. E. S. Modern College of Pharmacy  
Sector No 21, Yamunanagar, Nigdi,  
Pune - 411 044.



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**NSS REGULAR ACTIVITY REPORT 2018-2019**

1.	Name of activity	Blood Donation Camp
2.	Date of activity	01/02/2019
3.	Time	10AM - 4PM
4.	Total no students participate	54
5.	Occasion of activity	NSS activity
6.	Inauguration by	Dr. A. S. Tapkir
7.	Place of activity	Modern college of Pharmacy ,Yamuna Nagar Nigdi Pune Maharashtra 411044
8.	Objectives of activity	To aware students regarding social activity like blood donation camp. To save the lives of people who are in need of blood. To support governments schemes for blood donation camp.
9.	Outcome of activity	Students understood the value of blood donation to society. Many people's life may be save due to blood donation activity. Students getting different experience being as blood donor.
10.	Activity co-coordinator	Dr. A. S. Tapkir



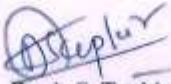
**Principal**

P. E. S. Modern College of Pharmacy  
Sector No.21, Yamunanagar, Nigdi,  
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Photos of activity



  
Dr. A. S. Tapkir  
NSS Program officer



  
Dr. P. D. Chandhari  
Principal  
P. E. S. Modern College of Pharmacy  
Sector No.21, Yamunanagar, Nigdi,  
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**NSS REGULAR ACTIVITY REPORT 2018-2019**

1.	Name of activity	Elocution Competition
2.	Collaborative Agency	Pimpri Chinchwad Municipal Corporation, Pimpri, Pune and Maharashtra State Election Commission.
3.	Date of activity	08/02/2019
4.	Time	2.00 pm to 5.00 pm
5.	Total no students participate	25
6.	Occasion of activity	Democratic election and good governance
7.	Inauguration by	Dr. P. D. Chaudhari Sir
8.	Place of activity	Savitribai Phule Pune University
9.	Objectives of activity	To develop students skills and overall behavior to face elocution competition. To encourage students for participation of extra-curricular activity. To understand the process of democratic election and good governance
10.	Outcome of activity	Students got idea regarding facing Elocution competition. Students were aware for participating in extra-curricular activity. Students were aware about democratic election and good governance
11.	Activity co-coordinator	Dr. A. S. Tapkir



*AS*





Photos of activity



  
Dr. A. S. Tapkir  
NSS Program officer



  
Dr. P. D. Chaudhari  
Principal  
Principal  
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**NSS REGULAR ACTIVITY REPORT 2018-2019**

1.	Name of activity	Skill India
2.	Date of activity	15/02/2019
3.	Time	11:00 am to 12:00 pm
4.	Total no students participate	100
5.	Occasion of activity	Promoting the talents of youths and creating job
6.	Inauguration by	Dr. A. S. Tapkir
7.	Place of activity	Modern college of Pharmacy, Nigdi Class room no: 2
8.	Objectives of activity	To aware students to empower India's youth by offering necessary skills and training to increase their chances of getting jobs in various sectors. To aware students for boosting healthy competition in Indian businesses.
9.	Outcome of activity	Students understood the importance of Skill India mission. Students understood the healthy competition in Indian businesses.
10.	Activity co-coordinator	Dr. A. S. Tapkir

**Photos of activity**



**Dr. A. S. Tapkir**  
NSS Program officer



**Dr. P. D. Chaudhari**  
**Principal**  
P. E. S. Modern College of Pharmacy  
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Pune - 411 044



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**NSS REGULAR ACTIVITY REPORT 2018-2019**

1.	Name of activity	Tribute to Pulvama Attack Soldiers
2.	Date of activity	15/02/2019
3.	Time	10:00 am to 10:15 am
4.	Total no students participate	50
5.	Occasion of activity	Pulvama Attack Soldiers
6.	Inauguration by	Dr. A. S. Tapkir
7.	Place of activity	Modern college of Pharmacy, NigdiClass room no: 2
8.	Objectives of activity	To aware students for contribution of soldiers for our country. To develop students patriotic approach toward our nation.
9.	Outcome of activity	Students understood the contribution of soldiers for our country. Patriotism increased among the students.
10.	Activity co-coordinator	Dr. A. S. Tapkir

**Photos of activity**



**Dr. A. S. Tapkir**  
NSS Program officer



**Dr. P. D. Chaudhari**  
**Principal**  
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Pune - 411 044





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**NSS REGULAR ACTIVITY REPORT 2018-2019**

1.	Name of activity	" Anibhutiswah chi anniutkarshajivanacha"
2.	Date of activity	05 <sup>th</sup> to 8 <sup>th</sup> March 2019
3.	Time	10:00 am to 5:00 pm
4.	Total no students participate	2
5.	Occasion of activity	Three days University level Workshop
6.	Inauguration by	Prof. Dr. RavindrasinhParadese (Principal of Fergusson College)
7.	Place of activity	DyandarshanDharmashala, Alandi, Pune
8.	Objectives of activity	To make the students aware about the benefits of meditation and peace of mind and spiritual development. To aware students regarding the benefits of concentration and mediation to achieve our set goal in life.
9.	Outcome of activity	Students were realized the benefits of meditation ,peace of mind Students realized the role of concentration and mediations regularity and practice to achieve goal in life.
10.	Activity co-coordinator	Dr. A. S. Tapkir



**Principal**

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Photos of activity



  
Dr. A. S. Tapkir  
NSS Program officer



  
Dr. P. D. Chaudhari  
Principal  
P. E. S. Modern College of Pharmacy  
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**NSS REGULAR ACTIVITY REPORT 2018-2019**

1.	Name of activity	Voter awareness one day district level workshop on performance of Pathnaty (Street Play)
2.	Date of activity	08/04/2019
3.	Time	10:00 am to 4:00 pm
4.	Total no students participate	12
5.	Occasion of activity	Voting awareness
6.	Place of activity	SavitribaiPhule Pune University, Ganeshkhind Road Pune 411007.
7.	Objectives of activity	To make the students and people aware about the voting importance for Indian Democracy. To aware students regarding voting to right leader. .
8.	Outcome of activity	Students were realized the importance of voting for Indian Democracy. Students understood the importance of giving the voting to right leader.
9.	Activity co-coordinator	Dr. A. S. Tapkir



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Photos of activity



  
Dr. A. S. Tapkir  
NSS Program officer





  
Dr. P. D. Chaudhari  
Principal  
P.E. S. Modern College of Pharmacy  
Sector No.21, Yamunanagar, Nigdi,  
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## Co-curricular & Extracurricular Activity- Environment & Sustainability

	<p>Progressive Education Society's <b>MODERN COLLEGE OF PHARMACY</b> Accredited by NAAC &amp; NBA DST FIST Funded College 'Best College Award' by Savitribai Phule Pune University</p>	
<p>Approved by All India Council for Technical Education, New Delhi, Pharmacy Council of India, New Delhi, Directorate of Technical Education, Mumbai (MS), Permanently affiliated to Savitribai Phule Pune University, Pune &amp; Approved under Section (2 (f) &amp; 12 (B) of UGC Act, 1956</p>		
<p>Sector No. 21, Yamunanagar, Nigdi, Pune - 411 044. (M.S.) Tel. : 020-27661314 / 15 E-mail : mcopnigdi44@gmail.com Website : www.mcop.org.in</p>		
<p>Prof. Dr. P. D. Chaudhari M.Pharm., Ph.D. Principal</p>		<p>Prof. Dr. Gajanan R. Ekbote M.S., M.N.A.M.S. Chairman, Business Council P.E. Society, Pune</p>
Ref :		Date :

**1.3.1 Institution integrates crosscutting issues relevant to Environment and Sustainability.**

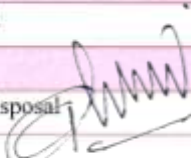
STRIVING TOWARDS EXCELLENCE FOREVER





1.3.1 Institution integrates crosscutting issues relevant to Environment and Sustainability.

Academic Year	Activities Related To Environment and Sustainability
2022-23	Alandi River cleaning Drive
	Tree Plantation activity on Bhandara Hills.
	Tree Plantation on the occasion of Pharmacist Day
	Plastic collection- drive
	Tree plantation and cleaning activity
	Public awareness rally and swachh Bharat Abhiyan
	Ecofriendly Ganesha and Nirmalya Abhiyan
	Energy audit
	Environmental audit
	Green audit
2021-22	Biomedical waste disposal
	Swachhata Pakhwada- swachh bharat abhiyan
	National Level Webinar on Catch the Rain
	Mazi Vasundhara Abhiyaan
	University Level Clean India Camp (Report)
	Energy audit
	Environmental audit
	Green audit
2020-21	Biomedical waste disposal
	Tree Plantation
	Swachh Bharat Abhiyan-Cleaning campaign
	Mazi Vasundhara e-pledge
	Energy audit
	Environmental audit
	Green audit

  
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2019-20	Guinness World Records (saplings of neem).
	Swachha Wari-Swastha Wari-Nirmal Wari-Hareet Wari Abhiyan
	Swachta Pakhawada
	Donation of Ganpati bappa idols
	Tree Plantation
	Swachh bharat abhiyan Cleaning campaign
	Ek Bharat Shreshtha Bharat (Waghapur)
	Swacha bharat Abhiyan
	Sinhgad Fort Cleaning Camp and conservation of fort
	Biomedical Waste Disposal
2018-19	Tree Plantation Programme
	State level "Nadi-Parikrama Shibir
	Save Water Save Environment Camp
2018-19	State Level Continuous Contour Trenches (CCT) And Watershed Management Training Camp
	Gram swachata Abhiyan
	Plastic free India, Samarth bharat abhiyan, saksham yuva abhiyan
2018-19	Biomedical waste disposal



Principal

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## Co-curricular & Extracurricular Activity- Environment and Sustainability




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<p>Sector No. 21, Yamunanagar, Nigdi, Pune - 411 044. (M.S.) Tel. : 020-27661314 / 15 E-mail : mcpnigdi44@gmail.com Website : www.mcop.org.in</p>		
<p>Prof. Dr. P. D. Chaudhari M.Pharm., Ph.D. Principal</p>		<p>Prof. Dr. Gajanan R. Ekbote M.S., M.N.A.M.S. Chairman, Business Council P.E.Society, Pune</p>
Ref :		Date :



### Environment and Sustainability

(Academic year 2022-23)





  		
<b>P. E. Society's Modern College of Pharmacy, Nigdi, Pune-44</b>		
<b>NSS REGULAR ACTIVITY REPORT 2022-2023</b>		
1.	Name of activity	PLASTIC COLLECTION- DRIVE
2.	Date of activity	19.10.2022
3.	Time	4PM-5PM
4.	Total no students participate	25
5.	Occasion of activity	MEGA-CLEANLINESS DRIVE –PLASTIC COLLECTION
6.	Inauguration by	Ms. Priyanka Bagade
7.	Place of activity	Yamuna Nagar Nigdi Pune Maharashtra 411044
8.	Objectives of activity	To clean the premises or Destruction of plastic from premises. To make the students aware about use of cloth bags instead of plastic
9.	Outcome of activity	Premises is free from plastic and students got idea regarding hazards effect of plastic on environment.
10.	Activity co-coordinator	Mr. R.M.Gurav, Ms. P.V.Bagade.



**Principal**  
P. E. S. Modern College of Pharmacy  
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Pune - 411 044.



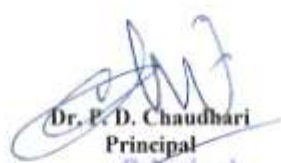


Photos of activity






  
Ms. P.V. Bagade  
NSS Program officer


  
Mr. R.M. Gurav  
NSS Program officer

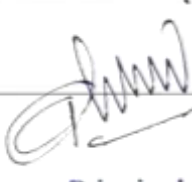
  
Dr. P. D. Chaudhari  
Principal  
Principal  
P. E. S. Modern College of Pharmacy  
Sector No.21, Yamunanagar, Nigdi,  
Pune - 411 044.





  		
<p align="center"><b>P. E. Society's Modern College of Pharmacy, Nigdi, Pune-44</b></p>		
<p align="center"><b>NSS REGULAR ACTIVITY REPORT 2022-2023</b></p>		
1.	Name of activity	Tree Plantation on the occasion of Pharmacist Day
2.	Date of activity	25.09.2022
3.	Time	10 AM - 1PM
4.	Total no students participate	50
5.	Occasion of activity	Pharmacist Day
6.	Inauguration by	Dr. Vitthal Chopade
7.	Place of activity	Bhukati Shakuti- Durga Tekadi Nigdi Pune, Maharashtra 411044.
8.	Objectives of activity	To clean the durga hills premises or Destruction of unwanted weeds and to row the seeds for plant growth. To make the students aware about the tree plantation on hills. To make the premises green.
9.	Outcome of activity	Premises of durga hills is free from unwanted weeds and students got idea how to do tree plantation and importance of tree plantation for our foresteco system.
10.	Activity co-coordinator	Mr. R.M.Gurav. Ms. P.V.Bagade.




  
**Principal**  
P. E. S. Modern College of Pharmacy  
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Photos of activity



  
Ms. P.V. Bagade  
NSS Program officer

  
Mr. R.M. Gurav  
NSS Program officer



  
Dr. P. D. Chaudhari  
Principal  
P. E. S. Modern College of Pharmacy  
Sector No.21, Yamunanagar, Nigdi,  
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**P. E. Society's  
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**NSS REGULAR ACTIVITY REPORT 2022-2023**

1.	Name of activity	Tree Plantation activity on Bhandara Hills.
2.	Date of activity	22.07.2022
3.	Time	10AM - 5PM
4.	Total no students participate	35
5.	Occasion of activity	NSS activity
6.	Inauguration by	Mr. Amit Tapkir
7.	Place of activity	Bhanara Hills Dehe Pune Maharashtra 410507.
8.	Objectives of activity	To clean the Bhandara hill premises or Destruction of unwanted weeds and to row the seeds for plant growth. To make the students aware about the tree plantation on hills. To make the premises green.
9.	Outcome of activity	Premises of Bhandara hills is free from unwanted weeds and students got idea how to do tree plantation and importance of tree plantation for our foresteco system.
10.	Activity co-coordinator	Mr. Amit Tapkir. Mr. R.M.Gurav.



**Principal**  
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Pune - 411 044.





Photos of activity



  
Mr. R.M. Gurav  
NSS Program officer



  
Dr. P. B. Chaudhari  
Principal  
P. E. S. Modern College of Pharmacy  
Sector No.21, Yamunanagar, Nigdi,  
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NSS REGULAR ACTIVITY REPORT 2022-2023

1.	Name of activity	Alandi River cleaning Drive
2.	Date of activity	22.06.2022
3.	Time	10AM -1 PM
4.	Total no students participate	30
5.	Occasion of activity	Alandi Yatra
6.	Inauguration by	Mr. Amit Tapkir
7.	Place of activity	Shree Sant Dnyaneshwar Mandir Alandi Maharashtra – 412105.
8.	Objectives of activity	To clean the premises of Alandi. To make the students aware about the clean environments importance near temple premises. To help out temples sweepers
9.	Outcome of activity	Alandi Premises has been free from unwanted dusty materials and students got idea regarding importance of cleaning activity to keep good environment.
10.	Activity co-coordinator	Mr. Amit Tapkir Mr. R.M.Gurav.



Principal  
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Photos of activity



  
Mr. R.M. Gade  
NSS Program officer



  
Dr. J. D. Chaudhari  
Principal  
P.E.S. Modern College of Pharmacy  
Sector No.21, Yemunanagar, Nigdi,  
Pune - 411 044



**P. E. Society's  
Modern College of Pharmacy, Nigdi, Pune-44**

**NSS REGULAR ACTIVITY REPORT 2022-23**

1.	Name of activity	Ek Diwas Shetkari Raja Sathi
2.	Date of activity	21.01.2023
3.	Time	10am to 2pm
4.	Total no students participate	70
5.	Occasion of activity	NSS Camp
6.	Inauguration by	Mr. Agrawal
7.	Place of activity	Jambwade Gaon
8.	Objectives of activity	To improve and clean farm and, assisted the farmer by planting, and cleaned an animal shelter.
9.	Outcome of activity	Hasten the cleaning of agricultural land, assisted the farmer by planting, and maintained an animal refuge.
10.	Activity co-coordinator	R.M. Gurav, Priyanka Bagade ,Dr. R.B.Mali

**Photos of activity**



**Principal**

P. E. S. Modern College of Pharmacy  
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Pune - 411 044.





**Principal**  
P. E. S. Modern College of Pharmacy  
Sector No.21, Yamunanagar, Nigdi,  
Pune - 411 044.



**Principal**

P. E. S. Modern College of Pharmacy  
Sector No.21, Yamunanagar, Nigdi,  
Pune - 411 044.








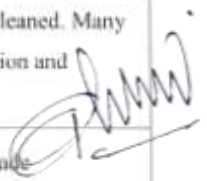
R.M. Gurav  
Priyanka Bagade  
Dr.R.B.Mali  
Programme Officer's



Principal  
P. E. S. Modern College of Pharmacy  
Sector No.21, Yamunanagar, Nigdi,  
Pune - 411 044.





  		
<b>P. E. Society's Modern College of Pharmacy, Nigdi, Pune-44</b>		
<b>NSS WINTER CAMP ACTIVITY REPORT 2022-2023</b>		
1.	Name of activity	Public awareness rally and Swachh Bharat Abhiyan.
2.	Date of activity	19.01.2023
3.	Time	9.00 am to 1.00 pm
4.	Total no students participate	75
5.	Occasion of activity	NSS Residential Camp
6.	Inauguration by	Mrs. Rupali Jinturkar and Mrs. Suvama Vadje
7.	Place of activity	MahadevMandir , Tal. Jambhavad
8.	Objectives of activity	To aware people about personal hygiene. Awareness regarding cleanliness of the surrounding and its importance. Some measures to utilize water correctly and avoiding its wastage. To make girls and their parents aware about the education for girls. Encouraging girls and women to speak for their rights. To make people aware of the importance of trees and the self hygiene and of the environment.
9.	Outcome of activity	Around 80 villagers were made aware regarding all the all the points mentioned above. A rally along with different slogans was held to make people aware. In Swachh Bharat Abhiyan, the complete residential area of the villagers was cleaned. Many students were engaged in tree plantation and cleanliness drive.
10.	Activity co-coordinator	R. M. Chinnave, Dr. R. B. Mali, P.V.Bagade
		 <b>Principal</b> P. E. S. Modern College of Pharmacy Sector No.21, Yamunanagar, Nigdi, Pune - 411 044.





Photos of activity





*[Signature]*

**Principal**  
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Sector No.21, Yamunanagar, Nigdi  
Pune - 411 044.





  
Dr. R. B. Mali  
R.M.Gurav  
P.V.Bagade  
Program officer's



  
Dr. P. D. Chaudhari  
Principal

Principal  
P. E. S. Modern College of Pharmacy  
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Pune - 411 044.



P. E. Society's  
Modern College of Pharmacy, Nigdi, Pune-44

NSS WINTER CAMP ACTIVITY REPORT 2022-2023

1.	Name of activity	Tree plantation and cleaning activity
2.	Date of activity	18/01/2023
3.	Time	10am to 2pm
4.	Total no students participate	75
5.	Occasion of activity	Tree Plantation
6.	Inauguration by	-
7.	Place of activity	Jambawade Village, Tal. Maval, Dist. Pune
8.	Objectives of activity	To Protect Our Ozone Layer To Increase Natural Oxygen To Conserve Bio-Diversity To Protect or Preserve Soil
9.	Outcome of activity	Planting and Caring of Tree Dig a proper planting hole Mulching Fertilizing
10.	Activity co-coordinator	Dr. R. B. Mali , R. M. Gurav

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Dr. R. B. Mali  
R. M. Gurav  
P. V. Bagade  
Program officer's



  
Dr. P. D. Chaudhari  
Principal

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Progressive Education Society's  
**MODERN COLLEGE OF PHARMACY**

Accredited by NAAC & NBA  
DST FIST Funded College

'Best College Award' by Savitribai Phule Pune University



Approved by All India Council for Technical Education, New Delhi, Pharmacy Council of India, New Delhi,  
Directorate of Technical Education, Mumbai (MS), Permanently affiliated to  
Savitribai Phule Pune University, Pune & Approved under Section (2 (f) & 12 (B) of UGC Act, 1956

Sector No. 21, Yamunanagar, Nigdi, Pune - 411 044. (M.S.) Tel. : 020-27661314 / 15

E-mail : mcopnigdi44@gmail.com Website : www.mcop.org.in

Prof. Dr. P. D. Chaudhari  
M.Pharm., Ph.D.  
Principal

Prof. Dr. Gajanan R. Ekbote  
M.S., M.N.A.M.S.  
Chairman, Business Council  
P.E.Society, Pune

Ref :

Date :


# Environment and Sustainability (Academic year 2021-22)












P. E. Society's MODERN COLLEGE OF PHARMACY, NIGDI, PUNE-44 NSS REGULAR ACTIVITY REPORT 2021-22	
1. Name of Activity	Swachhata Pakhwada
2. Date of activity	01.08.2021
3. Time	10.00 am to 6.00 pm
4. Total no students participated	100
5. Occasion of activity	Swatchha Bharat Abhiyan
6. Inauguration by	Dr. P.D. Chaudhari
7. Place of activity	PES Modern College of Pharmacy, Nigdi, Pune-44
8. Objectives of activity	To generate awareness about sanitation and its links to public health. To aware about waste management. To spread awareness about how to clean the premises. To maintain public health with the help of cleaning.
9. Outcome of activity	Generated awareness in students and society regarding Swatchh bharat Abhiyan. Students understood how to do management of solid waste. As a pharmacist discussed and counseled regarding health and cleanliness and its relation in causing various diseases.
10. Activity co-coordinator	Dr. A. S. Tapkir Prof. R. M. Gurav Prof. P. A. Pawar



  
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Sector No.24, Yamunanagar, Nigdi,  
Pune - 411 044.









   	
<b>P. E. Society's MODERN COLLEGE OF PHARMACY, NIGDI, PUNE-44 NSS REGULAR ACTIVITY REPORT 2021-22</b>	
1. Name of activity	Mazi Vasundhara Abhiyaan
2. Date of activity	09.10.2021
3. Time	10.00 am to 5.00 pm
4. Total no students participated	68
5. Occasion of activity	Mazi Vasundhara campaign
6. Inauguration by	Dr. P.D. Chaudhari
7. Place of activity	PES Modern College of Pharmacy Nigdi and student home town
8. Objectives of activity	<ul style="list-style-type: none"><li>• To make the region green.</li><li>• To help in decrease in global warming</li><li>• To improve water and air quality</li><li>• To increase green spaces in cities.</li><li>• To conserve biodiversity.</li></ul>
9. Outcome of activity	<ul style="list-style-type: none"><li>• Students planted various saplings at different regions.</li><li>• Students get exposed to nature and understood importance of conservation of nature and biodiversity.</li><li>• Student get aware about proper scientific techniques of plantation.</li></ul>
10. Activity co-coordinator	Dr. A. S. Tapkir Prof.R.M.Gurav Prof.P.A.Pawar










   	
<b>P. E. Society's MODERN COLLEGE OF PHARMACY, NIGDI, PUNE-44 NSS REGULAR ACTIVITY REPORT 2021-22</b>	
1. Name of activity	Mazi Vasundhara Abhiyaan
2. Date of activity	09.10.2021
3. Time	10.00 am to 5.00 pm
4. Total no students participated	50
5. Occasion of activity	Mazi Vasundhara campaign
6. Inauguration by	Dr. P.D. Chaudhari
7. Place of activity	PES Modern College of Pharmacy Nigdi and student home town
8. Objectives of activity	<ul style="list-style-type: none"><li>• To make the region green.</li><li>• To help in decrease in global warming</li><li>• To improve water and air quality</li><li>• To increase green spaces in cities.</li><li>• To conserve biodiversity.</li></ul>
9. Outcome of activity	<ul style="list-style-type: none"><li>• Students planted various saplings at different regions.</li><li>• Students get exposed to nature and understood importance of conservation of nature and biodiversity.</li><li>• Student get aware about proper scientific techniques of plantation.</li></ul>
10. Activity co-coordinator	Dr. A. S. Tapkir Prof. R.M. Gurav Prof. P. A. Pawar







P. E. Society's  
Modern College of Pharmacy, Nigdi, Pune-44  
NSS REGULAR ACTIVITY REPORT  
2021-2022

1. Name of activity	University level Nature Conservation Camp
2. Date of activity	27 Feb to 05 Mar 2022
3. Time	6.00 am to 10.00 pm
4. Total no students participated	1(Ganesh Shelke)
5. Occasion of activity	Nature Conservation Camp
6. Inauguration by	Dr. Prabhakar Desai
7. Place of activity	Kalsubai Shikhar
8. Objectives of activity	<ul style="list-style-type: none"><li>• Awareness about Nature</li><li>• To take part in nature conservation</li><li>• Nature Empowerment</li></ul>
9. Outcome of activity	<ul style="list-style-type: none"><li>• Participant learn about social values and activities related to nature conservation, development, exchange of culture and humanity</li></ul>
10. Activity co-coordinator	Dr. A. S. Tapkir Prof. R. M. Gurav

Photos of activity


















   	
<b>P. E. Society's MODERN COLLEGE OF PHARMACY, NIGDI, PUNE-44 NSS REGULAR ACTIVITY REPORT 2021-22</b>	
1. Name of activity	National Level Webinar on Catch the Rain
2. Date of activity	23.08.2021
3. Time	11.00 am to 1.00 pm
4. Total no students participated	1344
5. Occasion of activity	Azadi ka Amrit Mahotsav
6. Inauguration by	Dr. P. D. Chaudhari
7. Place of activity	PES Modern College of Pharmacy Nigdi, Pune (Online)
8. Objectives of activity	To spread awareness and knowledge regarding water use and methods of rain water storage. To help in decrease in global warming To improve water and air quality To increase green spaces in cities. To conserve water and biodiversity.
9. Outcome of activity	Participants got the importance of water and its use. Students got exposed to nature and understood importance of conservation of nature and biodiversity. Student get aware about proper scientific techniques of water and raining.
10. Activity co-coordinator	Dr. A. S. Tapkir Prof. R. M. Gurav Prof. P. A. Pawar









## ENERGY AUDIT REPORT

of  
Progressive Education Society's  
Modern College of Pharmacy,  
Sector 21, Yamuna Nagar, Nigdi, Pune 411 044



Year: 2021-22

Prepared by:

### ENGRESS SERVICES

Yashashree, 26, Nirmal Bag Society,  
Near Mukhtangan English School, Parvati, Pune 411009  
Phone: 09890444795, Email: [engress123@gmail.com](mailto:engress123@gmail.com)

Principal

P. E. S. Modern College of Pharmacy  
Sector No.21, Yamunanagar, Nigdi,  
Pune - 411 044.





Energy Audit Report: Progressive Education Society's Modern College of Pharmacy, Nigdi: 2021-22

MAHARASHTRA ENERGY DEVELOPMENT AGENCY

**Maharashtra Energy Development Agency**  
(Government of Maharashtra Institution)  
Aundh Road, Opposite Spicer College Road, Near Commissionerate of Animal Husbandry,  
Aundh, Pune, Maharashtra 411067  
Ph No: 920-35000450  
Email: [ecg@mahaerda.com](mailto:ecg@mahaerda.com), Web: [www.mahaerda.com](http://www.mahaerda.com)

ECN/2022-23/CR-43/1784 10<sup>th</sup> May, 2022

**CERTIFICATE OF REGISTRATION  
FOR CLASS 'A'**

We hereby certify that, the firm having following particulars is registered with  
**MAHARASHTRA ENERGY DEVELOPMENT AGENCY (MEDA)** under given category as  
"Energy Planner & Energy Auditor" in Maharashtra for Energy Conservation Programme of  
MEDA.

**Name and Address of the firm** : M/s Engress Services  
Yashwantrao, 26, Nirmal Bag Society,  
Near Mukteshwar English School,  
Pune - 411 009

**Registration Category** : Enrolled Consultant for Energy Conservation  
Programme for Class 'A'

**Registration Number** : MEDA/ECN/2022-23/Class A/EA-32

- Energy Conservation Programme intends to identify areas where wasteful use of energy occurs and to evaluate the scope for Energy Conservation and take concrete steps to achieve the evaluated energy savings.
- MEDA reserves the right to visit at any time without giving prior information to verify quarterly activities performed by the firm and canceling the registration, if the information is found incorrect.
- This empanelment is valid till **09<sup>th</sup> May, 2024** from the date of registration, to carry out energy audits under the Energy Conservation Programme
- The Director General, MEDA reserves the right to cancel the registration at any time without assigning any reasons thereof.

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Sector No.21, Yamunanagar, Nigdi,  
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Energy Audit Report: Progressive Education Society's Modern College of Pharmacy, Nigdi: 2021-22

## ENGRESS SERVICES

Yashashree, 26, Nirmal Bag Society,  
Near Mukhtangan English School, Parvati, Pune 411 009  
Tel: 09890444795 Email: [engress123@gmail.com](mailto:engress123@gmail.com)

Ref: ES/MCOP/21-22/01

Date: 11/6/2022

### CERTIFICATE

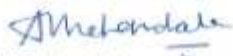
This is to certify that we have conducted Energy Audit at Progressive Education Society's Modern College of Pharmacy, Nigdi, Pune, in the Academic year 2021-22.

The College has adopted following Energy Efficient Practices:

- Usage of Energy Efficient LED Fittings
- Usage of BEE STAR Rated Energy Efficient Equipment
- Maximum usage of Day Lighting
- Installation of 10 kWp Roof Top Solar PV Plant

We appreciate the support of Management, involvement of faculty members and students in the process of making the Campus Energy Efficient.

For Engress Services,

  
A Y Mehendale,  
Certified Energy Auditor  
EA-8192



Principal

P. E. S. Modern College of Pharmacy  
Sector No.21, Yamunanagar, Nigdi,  
Pune - 411 044.

Engress Services, Pune

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Energy Audit Report: Progressive Education Society's Modern College of Pharmacy, Nigdi: 2021-22

### INDEX

Sr. No	Particulars	Page No
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II	Executive Summary	6
III	Abbreviations	7
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2	Study of Connected Load	9
3	Study of Present Energy Consumption	11
4	Study of Carbon Foot Printing	13
5	Study of Usage of Alternate Energy	14
6	Study of LED Lighting	15

**Principal**

P. E. S. Modern College of Pharmacy  
Sector No.21, Yamunanagar, Nigdi,  
Pune - 411 044.



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Energy Audit Report: Progressive Education Society's Modern College of Pharmacy, Nigdi: 2021-22

### ACKNOWLEDGEMENT

We Engress Services, Pune, express our sincere gratitude to the management of Progressive Education Society's Modern College Of Pharmacy, Nigdi Pune 411044, for awarding us the assignment of Energy Audit of their Campus for the Academic Year: 21-22.

We are thankful to all the Staff members for helping us during the field study.

**Principal**

P. E. S. Modern College of Pharmacy  
Sector No.21, Yamunanagar, Nigdi,  
Pune - 411 044.



Engress Services, Pune



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Energy Audit Report: Progressive Education Society's Modern College of Pharmacy, Nigdi: 2021-22

### EXECUTIVE SUMMARY

1. Progressive Education Society's Modern College of Pharmacy, Nigdi consumes Energy in the form of **Electrical Energy and LPG** used for various Electrical Equipment, office & other facilities.

#### 2. Present Energy Consumption & CO<sub>2</sub> Emission:

No	Parameter/ Value	Energy Purchased, kWh	LPG Consumed, Kg	CO <sub>2</sub> Emissions, MT
1	Total	66881	266	60.91
2	Maximum	6541	38	5.94
3	Minimum	4622	4	4.21
4	Average	5573.42	22.17	5.08

#### 3. Energy Conservation projects already installed:

- Usage of Energy Efficient LED fittings
- Maximum Usage of Day Lighting
- Installation of **10 kWp** Roof Top Solar PV Plant

#### 4. Usage of Alternate Energy:

- The College has installed Roof Top Solar PV Plant of Capacity **10 kWp**.
- Energy purchased from MSEDCL is **66881 kWh**.
- Energy generated by Roof Top Solar PV Plant is **12000 kWh**.
- The Annual Energy Demand of the College is: **78881 kWh**.
- The percentage of Usage of Alternate Energy to Annual Energy Demand is **15.21 %**.

#### 5. Usage of LED Lighting:

- The Total Lighting Load of the College is **16.90 kW**.
- The Total LED Lighting Load of the College is **2.16 kW**.
- The percentage of LED Lighting to Total Lighting Load is **15.45 %**.

#### 6. Assumptions:

1. 1 kWh of Electrical Energy releases **0.9 Kg of CO<sub>2</sub>** into atmosphere
2. **1 Kg of LPG** releases **2.68 Kg of CO<sub>2</sub>** into atmosphere
3. **1 kWp Roof Top Solar PV** Plant generates **4 kWh** of Electrical Energy per Day.
4. Annual Solar Energy Generation Days: **300 Nos.**

#### 7. References:

- For CO<sub>2</sub> Emissions: [www.tatapower.com](http://www.tatapower.com)

For Roof Top Solar PV Plant Energy generation: [www.solarrooftop.gov.in](http://www.solarrooftop.gov.in)

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Sector No.21, Yamunanagar, Nigdi,  
Pune - 411 044.



Progress Services, Pune



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Energy Audit Report: Progressive Education Society's Modern College of Pharmacy, Nigdi: 2021-22

### ABBREVIATIONS

LED	: Light Emitting Diode
MSEDCL	: Maharashtra State Electricity Distribution Company Limited
IQAC	: Internal Quality Assurance Cell
BEE	: Bureau of Energy Efficiency
FTL	: Fluorescent Tube Light
CFL	: Compact Fluorescent Light
PV	: Photo Voltaic
Kg	: Kilo Gram
kWh	: kilo-Watt Hour
CO <sub>2</sub>	: Carbon Di Oxide
MT	: Metric Ton

**Principal**

P. E. S. Modern College of Pharmacy  
Sector No.21, Yamunanagar, Nigdi,  
Pune - 411 044.



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Energy Audit Report: Progressive Education Society's Modern College of Pharmacy, Nigdi: 2021-22

## CHAPTER-I INTRODUCTION

### 1.1 Objectives:

1. To study Connected Load and Present Energy Consumption
2. To Study the present CO<sub>2</sub> emissions
3. To study usage of Alternate Energy
4. To study usage of LED Lighting

### 1.2 Table No 1: General Details of the College:

No	Head	Particulars
1	Name of Institution	Progressive Education Society's Modern College of Pharmacy
2	Address	Sector 21, Yamuna Nagar, Nigdi 411 044
3	Year of Establishment	1998
4	Affiliation	Savitribai Phule Pune University

### 1.3 Google Earth Image:



College  
Campus



*[Signature]*

Principal

P. E. S. Modern College of Pharmacy  
Engrss Services, Page  
Sector No.21, Yamunanagar, Nigdi,  
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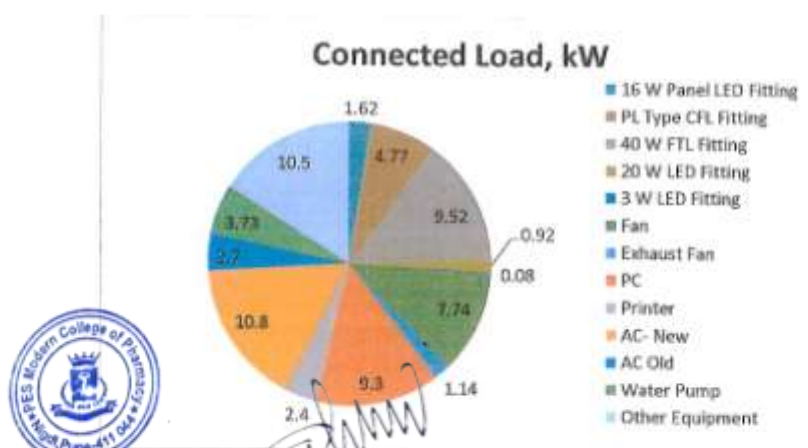
## CHAPTER-II STUDY OF CONNECTED LOAD

The major contributors to the connected load of the College include:

Table No 2: Study of Equipment wise Connected Load:

No	Equipment	Qty	Load, W/Unit	Load, kW
1	16 W Panel LED Fitting	101	16	1.62
2	PL Type CFL Fitting	149	32	4.77
3	40 W FTL Fitting	238	40	9.52
4	20 W LED Fitting	46	20	0.92
5	3 W LED Fitting	25	3	0.08
6	Fan	119	65	7.74
7	Exhaust Fan	22	52	1.14
8	PC	62	150	9.30
9	Printer	16	150	2.40
10	AC- New	6	1800	10.80
11	AC Old	1	2700	2.70
12	Water Pump	1	3730	3.73
13	Other Equipment	70	150	10.50
14	Total			65.21

Chart No 1: Study of Connected Load:



*[Signature]*

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Energy Audit Report: Progressive Education Society's Modern College of Pharmacy, Nigdi: 2021-22

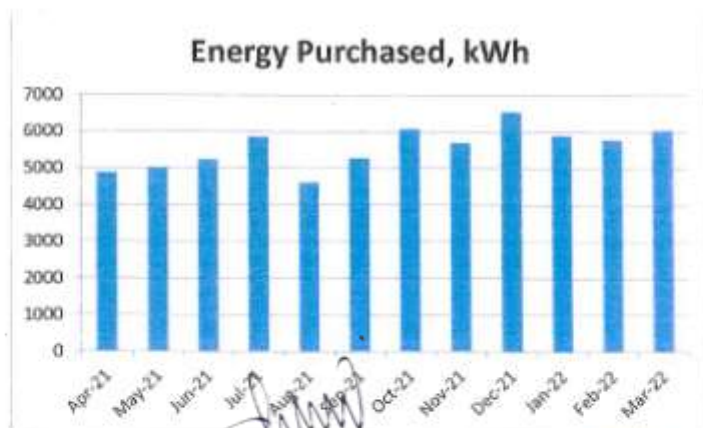
### CHAPTER-III STUDY OF PRESENT ENERGY CONSUMPTION

In this chapter, we present the analysis of Electrical Energy & LPG Consumption.

Table No 3: Electrical Energy & LPG Consumption Analysis- 2021-22:

No	Month	Energy Purchased, kWh	LPG Consumed, Kg
1	Apr-21	4872	4
2	May-21	5000	8
3	Jun-21	5233	14
4	Jul-21	5855	12
5	Aug-21	4622	19
6	Sep-21	5274	38
7	Oct-21	6074	38
8	Nov-21	5695	19
9	Dec-21	6541	19
10	Jan-22	5891	19
11	Feb-22	5782	38
12	Mar-22	6042	38
13	Total	66881	266
14	Maximum	6541	38
15	Minimum	4622	4
16	Average	5573.42	22.17

Chart No 2: Variation in Monthly Energy Consumption:



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Pune - 411 044.



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Energy Audit Report: Progressive Education Society's Modern College of Pharmacy, Nigdi: 2021-22

Chart No 3: Variation in Monthly LPG Consumption:

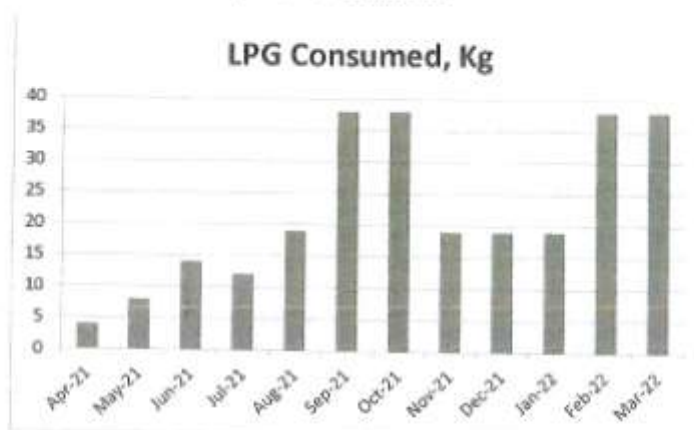


Table No 4: Variation in Important Parameters:

No	Parameter/ Value	Energy Purchased, kWh	LPG Consumed, Kg
1	Total	66881	266
2	Maximum	6541	38
3	Minimum	4622	4
4	Average	5573.42	22.17

**Principal**

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Energy Audit Report: Progressive Education Society's Modern College of Pharmacy, Nigdi: 2021-22

#### CHAPTER-IV STUDY OF CARBON FOOTPRINTING

A Carbon Foot print is defined as the Total Greenhouse Gas emissions, emitted due to various activities.

In this we compute the emissions of Carbon-Di-Oxide, by usage of the various forms of Energy used by the College for performing its day to day activities

The College uses Electrical Energy and LPG as the Energy Source.

Basis for computation of CO<sub>2</sub> Emissions:

- 1 kWh of Electrical Energy releases 0.9 Kg of CO<sub>2</sub> into atmosphere
- 1 Kg of LPG releases 2.68 Kg of CO<sub>2</sub> into atmosphere

Based on the above Data we compute the CO<sub>2</sub> emissions which are being released in to the atmosphere by the College due to its Day to Day operations

Table No 5: Month wise CO<sub>2</sub> Emissions:

No	Month	Energy Purchased, kWh	LPG Consumed, Kg	CO <sub>2</sub> Emissions, MT
1	Apr-21	4872	4	4.40
2	May-21	5000	8	4.52
3	Jun-21	5233	14	4.75
4	Jul-21	5855	12	5.30
5	Aug-21	4622	19	4.21
6	Sep-21	5274	38	4.85
7	Oct-21	6074	38	5.57
8	Nov-21	5695	19	5.18
9	Dec-21	6541	19	5.94
10	Jan-22	5891	19	5.35
11	Feb-22	5782	38	5.31
12	Mar-22	6042	38	5.54
13	Total	66881	266	60.91
14	Maximum	6541	38	5.94
	Minimum	4622	4	4.21
	Average	5573.42	22.17	5.08



*[Signature]*

Principal

Engress Services, Pune

P. E. S. Modern College of Pharmacy  
Sector No.21, Yamunanagar, Nigdi,  
Pune - 411 044.



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Energy Audit Report: Progressive Education Society's Modern College of Pharmacy, Nigdi: 2021-22

Chart No 4: Month wise CO<sub>2</sub>Emissions:

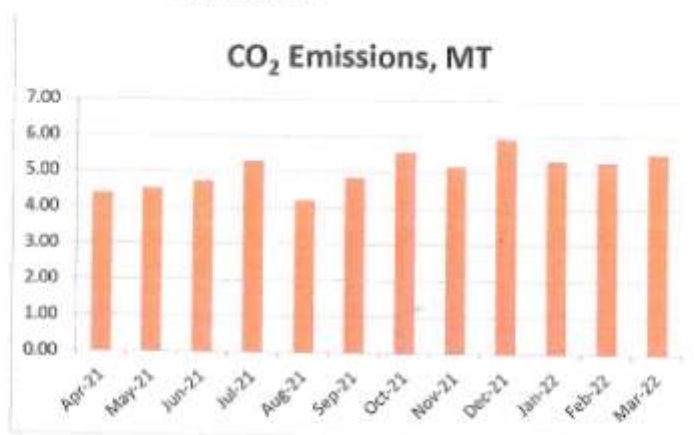


Table No 6: Important Parameters:

No	Parameter/ Value	Energy Purchased, kWh	LPG Consumed, Kg	CO <sub>2</sub> Emissions, MT
1	Total	66881	266	60.91
2	Maximum	6541	38	5.94
3	Minimum	4622	4	4.21
4	Average	5573.42	22.17	5.08



**Principal**

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Sector No.21, Yamunanagar, Nigdi,  
Pune - 411 044.





Energy Audit Report: Progressive Education Society's Modern College of Pharmacy, Nigdi: 2021-22

## CHAPTER-V STUDY OF USAGE OF ALTERNATE ENERGY

The College has installed Roof Top Solar PV Plant of Capacity 10 kWp.

In the following Table, we compute the percentage of Usage of Alternate Energy to Annual Energy Demand of the College.

Table No 7: Computation of % Annual Energy Demand met by Alternate Energy:

No	Particulars	Value	Unit
1	Energy Purchased from MSEDCL	57606	kWh
2	Installed Roof Top Solar PV Plant Capacity	10	kWp
3	Average Daily Energy Generated	4	kWh/kWp
4	Annual Generation Days	300	Nos
5	Annual Solar Energy Generated	12000	kWh
6	Total Energy Demand = (1) + (5)	69606	kWh
7	% of Usage of Alternate Energy to Total Annual Energy Demand = (5)*100/ (6)	17.24	%

Photograph of Roof Top Solar PV Plant:



*[Signature]*  
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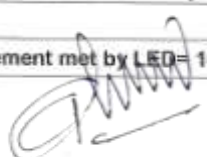
## CHAPTER VI STUDY OF USAGE OF LED LIGHTING

In this chapter, we compute the percentage of usage of LED Lighting to Total Lighting Load.

Table No 8: Usage of LED Lighting to Total Lighting Load:

No	Particulars	Value	Unit
1	No of 40 W FTL Fittings	238	Nos
2	Demand of 40 W FTL Fitting	40	W/Unit
3	Total Electrical Load of 40 W FTL Fittings	9.52	kW
4	No of 20 W LED Tube Lights	46	Nos
5	Demand of 20 W LED Tube Light	20	W/Unit
6	Total Electrical Load of 20 W LED Fittings	0.92	kW
7	No of 16 W Panel LED Fittings	101	Nos
8	Demand of 16 W Panel LED Fittings	16	W/Unit
9	Total Electrical Load of 16 W Panel LED Fittings	1.62	kW
10	No of 3 W LED Fittings	25	Nos
11	Demand of 3 W LED Fittings	3	W/Unit
12	Total Electrical Load of 3 W LED Fittings	0.075	kW
13	No of PL Type 32 W CFL Fittings	149	Nos
14	Demand of PL Type 32 W CFL Fittings	32	W/Unit
15	Total Electrical Load of PL Type 32 W CFL Fittings	4.768	kW
16	Total LED Lighting Load= 6+9+12	2.61	kW
17	Total Lighting Load=3+6+9+12+15	16.90	kW
18	Annual Lighting Requirement met by LED= $16 \times 100 / 17$	15.45	%



  
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## ENVIRONMENTAL AUDIT REPORT

of  
Progressive Education Society's  
Modern College of Pharmacy,  
Sector 21, Yamuna Nagar, Nigdi 411 044



Year: 2021-22



Prepared by:

### ENGRESS SERVICES

Yashashree, 26, Nirmal Bag Society,  
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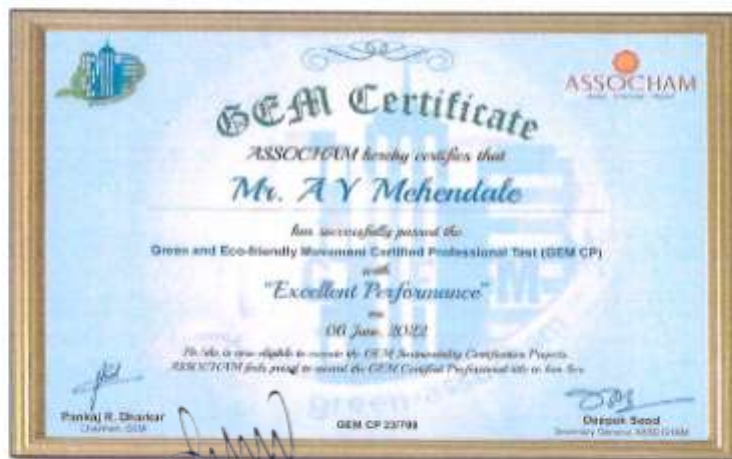


  
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*[Signature]*

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Ref: ES/MCOP/21-22/03

Date: 11/6/2022

### CERTIFICATE

This is to certify that we have conducted Environmental Audit at Progressive Education Society's Modern College of Pharmacy, Nigdi, Pune, in the Academic year 2021-22.

The College has adopted following Environment Friendly Initiatives:

- Usage of Energy Efficient LED Light Fitting
- Usage of BEE STAR Rated Energy Efficient Equipment
- Maximum Usage of Day Lighting
- Installation of Roof Top Solar PV Plant of Capacity 10 kWp
- Segregation of Waste at Source
- Provision of Sanitary Waste Incinerator for Sanitary Waste Disposal
- Implementation of Rain Water Harvesting Project
- Tree Plantation in the campus
- Creation of Awareness on Resource Conservation, by Display of Posters

We appreciate the support of Management, involvement of faculty members and students in the process of Energy Conservation & making the campus Environment Friendly.

For Engress Services,

A Y Mehendale,  
Certified Energy Auditor, EA-8192  
ASSOCHAM GEM Certified Professional: GEM: 22/788



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### ACKNOWLEDGEMENT

We Engress Services, Pune, express our sincere gratitude to the management of Progressive Education Society's Modern College of Pharmacy, Nigdi Pune 411044, for awarding us the assignment of Environmental Audit of their Campus for the Academic Year: 21-22.

We are thankful to all the Staff members for helping us during the field study.

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### EXECUTIVE SUMMARY

1. Progressive Education Society's Modern College of Pharmacy, Nigdi consumes Energy in the form of **Electrical Energy and LPG** used for various Electrical Equipment, office & other facilities.

#### 2. Pollution due to College Activities:

- **Air pollution:** Mainly CO<sub>2</sub> on account of Electricity Consumption
- **Solid Waste:** Bio degradable Garden Waste
- **Liquid Waste:** Human liquid waste

#### 3. Present Energy Consumption & CO<sub>2</sub> Emission:

No	Parameter/Value	Energy Purchased, kWh	LPG Consumed, Kg	CO <sub>2</sub> Emissions, MT
1	Total	57606	100	52.11
2	Maximum	5233	14	4.75
3	Minimum	3906	2	3.52
4	Average	8862.46	15.38	8.02

#### 4. Various initiatives taken for Energy Conservation:

- Usage of Energy Efficient LED Lighting
- Maximum Usage of Day Lighting
- Installation of Roof Top Solar PV Plant of Capacity **10kWp**.

#### 5. Usage of Renewable Energy & Reduction in CO<sub>2</sub> Emission:

- The College has installed Roof Top Solar PV Plant of Capacity **10 kWp**.
- The Electrical Energy generated in 21-22 is **12000 kWh**.
- Reduction in CO<sub>2</sub> Emissions in 21-22 is **10.8MT**.

#### 6. Indoor Air Quality Parameters:

No	Parameter/Value	AQI	PM-2.5	PM-10
1	Maximum	124	68	86
2	Minimum	100	60	

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#### 7. Environmental Parameters for Comfort Conditions:

No	Parameter/Value	Temperature, °C	Humidity, %	Lux Level	Noise Level, dB
1	Maximum	29.2	41	587	45
2	Minimum	28.8	40	147	36.9

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#### 8. Waste Management:

##### 8.1 Segregation of Waste at Source:

The Waste is segregated at source and the recyclable waste, like paper waste is handed over to Authorized Agency for further action.

##### 8.2 Organic Waste Management:

It is recommended to install Bio Composting Unit to convert the Bio degradable Waste into Bio compost, which can be used in the internal garden.

##### 8.3 Sanitary Waste Management:

The College has installed Sanitary Waste Incinerator, for disposal of Sanitary Waste.

##### 8.4 Bio Medical Waste Management:

The College has entered a Memorandum of understanding with M/s. PASCO, for disposal of Bio Medical Waste.

##### 8.5 Chemical Laboratory Waste Management:

The College is following the concept of Green Synthesis; hence, no Chemical Laboratory Waste is generated.

##### 8.6 E-Waste Management:

It is recommended to dispose of the E Waste through Authorized Agency

#### 9. Rain Water Harvesting:

The College has installed the Rainwater harvesting project, the rain water falling on the terrace is collected and is used for recharging the bore well.

#### 10. Green & Sustainable Initiatives

- Good Internal Road
- Tree Plantation & Medicinal Plant Garden
- Provision of Ramp for Divyangajan
- Creation of Awareness by Display of Posters on Resource Conservation
- Tree Plantation and Cleanliness Drive Events, under National Service Scheme

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#### 11. Notes & Assumptions:

1. 1 kWh of Electrical Energy releases 0.9 Kg of CO<sub>2</sub> into atmosphere
2. 1 Kg of LPG releases 2.68 Kg of CO<sub>2</sub> into atmosphere
3. 1 kWp Roof Top Solar PV Plant releases 4 kWh of Electrical Energy per Day.
4. Annual Solar Energy Generation Days: 300 Nos.



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12. References:

- For CO<sub>2</sub> Emissions: [www.tatapower.com](http://www.tatapower.com)
- For Solar PV Energy Generation: [www.solarrooftop.gov.in](http://www.solarrooftop.gov.in)
- For Various Indoor Air Parameters: [www.ishrae.com](http://www.ishrae.com)
- For AQI & Water Quality Standards: [www.cpcb.com](http://www.cpcb.com)

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### ABBREVIATIONS

Kg	: Kilo Gram
MSEDCL	: Maharashtra State Distribution Company Limited
MT	: Metric Ton
kWh	: kilo-Watt Hour
LPD	: Liters per Day
LED	: Light Emitting Diode
AQI	: Air Quality Index
PM-2.5	: Particulate Matter of Size 2.5 Micron
PM-10	: Particulate Matter of Size 10 Micron
CPCB	: Central Pollution Control Board
ISHRAE	: The Indian Society of Heating & Refrigerating & Air Conditioning Engineers

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## CHAPTER-I INTRODUCTION

### 1. Important Definitions:

#### 1.1.1 Environment: Definition as per environment Protection Act: 1986

Environment includes water, air and land and the inter-relationship which exists among and between Water, Air, Land and Human beings, other living creatures, plants microorganism and property

#### 1.1.2. Environmental Audit: Definition:

An audit which aims at verification and validation to ensure that various environmental laws are complied with and adequate care has been taken towards environmental protection and preservation

According to UNEP, 1990, "Environmental audit can be defined as a management tool comprising systematic, documented and periodic evaluation of how well environmental organization management and equipment are performing with an aim of helping to regularize the environment

**1.1.3. Environmental Pollutant:** means any solid, liquid and gaseous substance present in the concentration as may be, or tend to be, injurious to Environment.

#### 1.1.4. Relevant Environmental Laws in India: Table No-1:

1927	The Indian Forest Act
1972	The Wildlife Protection Act
1974	The Water (Prevention and Control of Pollution) Act
1977	The Water (Prevention & Control of Pollution) Cess Act
1980	The Forest (Conservation) Act
1981	The Air (Prevention and Control of Pollution) Act
1986	The Environment Protection Act
1991	The Public Liability Insurance Act
2002	The Biological Diversity Act
2010	The National Green Tribunal Act

#### 1.1.5. Some Important Environmental Rules in India: Table No-2:

1989	Hazardous Waste (Management and Handling) Rules
1989	Manufacture, Storage and Import of Hazardous Chemical Rules
2000	Municipal Solid Waste (Management and Handling) Rules
1998	The Biomedical Waste (Management and Handling) Rules
1999	The Environment (Siting for Industrial Projects) Rules
2000	Noise Pollution (Regulation and Control) Rules
2000	Ozone Depleting Substances (Regulation and Control) Rules
2011	E-waste (Management and Handling) Rules



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2011	National Green Tribunal (Practices and Procedure) Rules
2011	Plastic Waste (Management and Handling) Rules

**1.1.6 National Environmental Plans & Policy Documents: Table No-3:**

1.	National Forest Policy, 1988
2.	National Water Policy, 2002
3.	National Environment Policy or NEP (2006)
4.	National Conservation Strategy and Policy Statement on Environment and Development, 1992
5.	Policy Statement for Abatement of Pollution (1992)
6.	National Action Plan on Climate Change
7.	Vision Statement on Environment and Human Health
8.	Technology Vision 2030 (The Energy Research Institute)
9.	Addressing Energy Security and Climate Change (MoEF and Bureau of Energy Efficiency)
10.	The Road to Copenhagen, India's Position on Climate Change Issues (MoEF)

**1.2 Objectives:**

1. To study Resource Consumption & CO<sub>2</sub> Emissions
2. To Study CO<sub>2</sub> Emission Reduction
3. To study Indoor Air Quality Parameters
4. To study Indoor Comfort Condition Parameters
5. To Study of Waste Management
6. To Study of Rain Water Harvesting
7. To Study of Environment Friendly Initiatives

**1.3 General Details of College: Table No 4:**

No	Head	Particulars
1	Name of Institution	Progressive Education Society's Modern College of Pharmacy
2	Address	Nigdi, Pune-411044
3	Year of Establishment	1998
4	Affiliation	Savitribai Phule Pune University

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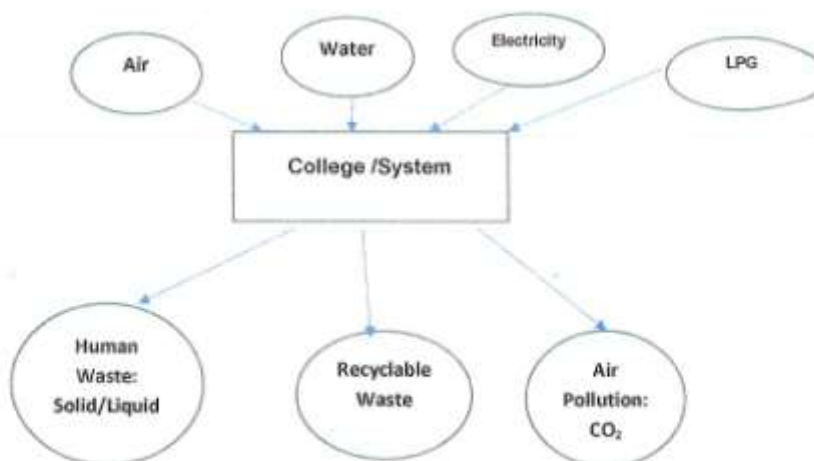
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## CHAPTER-II STUDY OF CONSUMPTION OF RECOURCES & CO<sub>2</sub> EMISSION

The Institute consumes following basic/derived Resources:

1. Air
2. Water
3. Electrical Energy

We try to draw a schematic diagram for the College System & Environment as under.  
Chart No 1: Representation of College as System & Study of Resources & Waste



Now we compute the Generation of CO<sub>2</sub> on account of consumption of Electrical Energy.  
The basis of Calculation for CO<sub>2</sub> emissions due to LPG & Electrical Energy are as under

- 1 kWh of Electrical Energy releases 0.9 Kg of CO<sub>2</sub> into atmosphere
- 1 Kg of LPG releases 2.68 Kg of CO<sub>2</sub> into atmosphere

Table No 5: Study of Consumption of Electrical Energy, LPG & CO<sub>2</sub> Emissions: 21-22:

No	Month	Energy Purchased, kWh	LPG Consumed, Kg	CO <sub>2</sub> Emissions, MT
1	Apr-21	4872	4	4.40
2	May-21	5000	8	4.52
3	Jun-21	5233	14	4.75
4	Jul-21	5855	12	5.30
5	Aug-21	4822	19	4.21



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6	Sep-21	5274	38	4.85
7	Oct-21	6074	38	5.57
8	Nov-21	5695	19	5.18
9	Dec-21	6541	19	5.94
10	Jan-22	5891	19	5.35
11	Feb-22	5782	38	5.31
12	Mar-22	6042	38	5.54
13	Total	66881	266	60.91
14	Maximum	6541	38	5.94
15	Minimum	4622	4	4.21
16	Average	5573.42	22.17	5.08

Chart No 2: Month wise CO<sub>2</sub>Emissions:

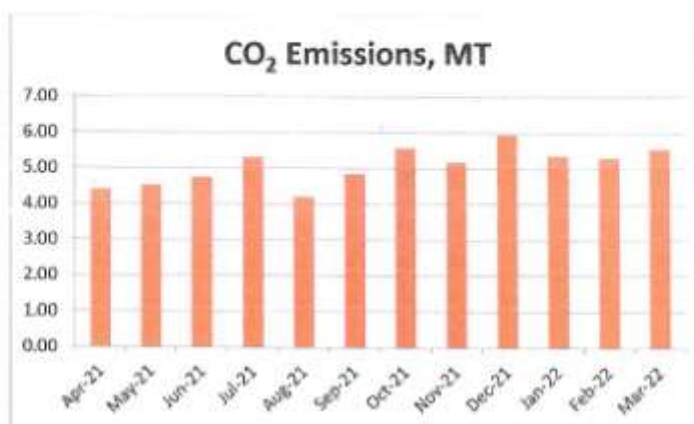


Table No 6: Important Parameters:

No	Parameter/ Value	Energy Purchased, kWh	LPG Consumed, Kg	CO <sub>2</sub> Emissions, MT
1	Total	66881	266	60.91
2	Maximum	6541	38	5.94
3	Minimum	4622	4	4.21
4	Average	5573.42	22.17	5.08



*[Signature]*

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### CHAPTER III STUDY OF CO<sub>2</sub> EMISSION REDUCTION

The College has installed Roof Top Solar PV Plant of Capacity 10 kWp.

In the following Table, we compute the Annual Reduction in CO<sub>2</sub> Emissions due to installation of Roof Top Solar PV Plant.

Table No 7: Computation of Annual Reduction in CO<sub>2</sub> Emissions:

No	Particulars	Value	Unit
1	Installed Capacity of Roof Top Solar PV Plant Capacity	10	kWp
2	Energy Generated in per kWp	4	4 kWh/kWp
3	Annual Solar Energy generation Days	300	Nos
4	Energy Generated in the Year: 21-22	12000	kWh
5	1 kWh of Electrical Energy saves	0.9	Kg/kWh
6	Qty of CO <sub>2</sub> Saved by Solar PV Plant $= (4) \times (5) / 1000$	10.8	MT of CO <sub>2</sub>

Photograph of Roof Top Solar PV Plant:



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## CHAPTER IV

### STUDY OF INDOOR AIR QUALITY

#### 4.1 Importance of Air Quality:

**Air:** The common name given to the atmospheric gases used in breathing and photosynthesis.

By volume, Dry Air contains 78.09% Nitrogen, 20.95% Oxygen, 0.93% Argon, 0.039% carbon dioxide, and small amounts of other gases.

On average, a person inhales about **14,000 liters** of air every day. Therefore, poor air quality may affect the quality of life now and for future generations by affecting the health, the environment, the economy and the city's livability.

Rapid urbanization and industrialization has added other elements/compounds to the pure air and thus caused the increase in pollution. In order to prevent, control and abate air pollution, the Air (Prevention and Control of Pollution) Act was enacted in 1981.

**Air quality** is a measure of the suitability of air for breathing by people, plants and animals.

According to Section 2(b) of Air (Prevention and control of pollution) Act, 1981 'air pollution' has been defined as 'the presence in the atmosphere of any air pollutant.'

#### 4.2 Air Quality Index:

An Air Quality Index (AQI) is a number used by government agencies to measure the air pollution levels and communicate it to the population. As the AQI increases, it means that a large percentage of the population will experience severe adverse health effects. The measurement of the AQI requires an air monitor and an air pollutant concentration over a specified averaging period.

We present herewith following important Parameters.

1. AQI- Air Quality Index
2. PM-2.5- Particulate Matter of Size 2.5 micron
3. PM-10- Particulate Matter of Size 10micron

**Table No 8: Indoor Air Quality Parameters:**

No	Location	AQI	PM-2.5	PM-10
	Ground Floor			
1	Store Room	103	61	81
2	Industry Lab	100	60	76
3	Animal House	100	61	78
4	GYM	106	62	82
	Stilt Floor			
1	Pharma Chem Lab	110	64	81
2	Instrumental Room	113	64	85



*[Signature]*  
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3	NSS Office	112	64	84
4	Faculty Room	120	66	85
	First Floor			
1	Classroom-I	123	67	86
2	Tutorial Room-I	115	66	85
3	exam section	112	64	82
4	Library	118	67	85
	Second Floor			
1	Board Room	113	63	80
2	Departmental office	113	64	82
3	Phy. Lab	110	66	81
4	Pharmaceutics Lab	120	67	81
	Third Floor			
1	Tutorial Room-III	124	68	81
2	Pharma Research Lab	116	65	82
3	IQAC Room	115	63	84
4	Faculty Room	113	64	82
	Maximum	124	68	86
	Minimum	100	60	76



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## CHAPTER V STUDY OF INDOOR COMFORT CONDITION PARAMETERS

In this Chapter, we present the various Indoor Comfort Parameters measured during the Audit. The Parameters include:

1. Temperature
2. Humidity
3. Lux Level
4. Noise Level.

Table No 9: Study of Indoor Comfort Condition Parameters:

No	Location	Temperature, °C	Humidity, %	Lux Level	Noise Level, dB
<b>Ground Floor</b>					
1	Store Room	29.2	40	587	45
2	Industry Lab	29.1	41	541	44.6
3	Animal House	29.2	41	498	44.9
4	GYM	29.1	41	213	42
<b>Stilt Floor</b>					
1	Pharma Chem Lab	29.2	41	201	39.8
2	Instrumental Room	28.9	41	236	39.4
3	NSS Office	28.9	40	245	38.9
4	Faculty Room	28.9	41	312	39
<b>First Floor</b>					
1	Classroom-I	29.1	40	547	42.6
2	Tutorial Room-I	29	41	512	41.2
3	exam section	29.1	41	496	44.1
4	Library	29.1	41	451	41.3
<b>Second Floor</b>					
1	Board Room	29.2	40	149	42.3
2	Departmental office	28.9	40	189	41.6
3	Phy Lab	28.8	40	198	45
4	Pharmaceutics Lab	28.9	41	197	36.9
<b>Third Floor</b>					
1	Tutorial Room-III	29	41	187	36.9
2	Pharma Research Lab	29	41	147	38.5
	QCAC Room	29.1	40	163	41.3
	Faculty Room	28.9	41	209	42
	Maximum	29.2	41	587	45
	Minimum	28.8	40	147	36.9

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## CHAPTER VI STUDY OF WASTE MANAGEMENT

### 6.1 Segregation of Waste at Source:

The Waste is segregated at source and the recyclable waste, like paper waste is handed over to Authorized Agency for further action.

Photograph of Waste Collection Bins:



### 6.2 Organic Waste Management:

It is recommended to install Bio Composting Unit to convert the Bio degradable Waste into Bio compost, which can be used in the internal garden.

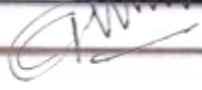
### 6.3 Sanitary Waste Management:

The College has installed Sanitary Waste Incinerator, for disposal of Sanitary Waste.

Photograph of Sanitary Waste Incinerator:



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**6.4 Bio Medical Waste Management:**

The College has entered a Memorandum of understanding with M/s. PASCO, for disposal of Bio Medical Waste.

**6.5 Chemical Laboratory Waste Management:**

The College is following the concept of Green Synthesis; hence, no Chemical Laboratory Waste is generated.

**6.6 E-Waste Management:**

It is recommended to dispose of the E Waste through Authorized Agency.

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## CHAPTER-VII STUDY OF RAIN WATER HARVESTING

The College has implemented the Rain Water Harvesting Project. The College has installed pipes from the terrace and the Rain water falling on the terrace is gathered and is used to recharge the bore well.

Photograph of Rain water Harvesting Pipe:



Rain Water  
Collecting Pipe

Photograph of Rain water Harvesting Recharging Well Section:



Recharge Point



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## CHAPTER-VIII STUDY OF ENVIRONMENT FRIENDLY INITIATIVES

### 8.1 Internal Tree Plantation:

The College has well maintained landscaped garden in the campus.

Photograph of Tree plantation:



### 8.2 Creation of Awareness about Resource Conservation:

The College has displayed posters emphasizing on importance of Energy Conservation.

Photograph of Poster on Resource Conservation:



*[Signature]*

Principal

P.E. S. Modern College of Pharmacy  
Sector No.21, Yamunanagar, Nigdi,  
Pune - 411 044.



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Environmental Audit Report: Progressive Education Society's Modern College of Pharmacy, Nigdi: 2021-22

### 8.3 Tree Plantation Program, under Mazi Vasundhara Abhiyan:

The College, under the NSS, conducted Mazi Vasundhara Program. Tree Plantation was done.

Photograph of Tree Plantation under Mazi Vasundhara Abhiyan:



### 8.4 Cleanliness Drive Program:

Under, NSS, Cleanliness Drive was conducted in the Village: Jamavade, in Taluka: Maval of Pune District.

Photograph of Cleanliness Drive Event:



*[Signature]*

Principal

Engress Services, Pune P. E. S. Modern College of Pharmacy  
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Pune - 411 044.



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Environmental Audit Report: Progressive Education Society's Modern College of Pharmacy, Nigdi: 2021-22

**ANNEXURE-I:  
VARIOUS AIR QUALITY, WATER QUALITY, NOISE & INDOOR  
COMFORT STANDARDS:**

**1. Category Wise Air Quality Index Values & Concentration of PM 2.5 & PM10:**

No	Category	AQI Value	Concentration Range, PM 2.5	Concentration Range, PM 10
1	Good	0 to 50	0 to 30	0 to 50
2	Satisfactory	51 to 100	31 to 60	51 to 100
3	Moderately Polluted	101 to 200	61 to 90	101 to 250
4	Poor	201 to 300	91 to 120	251 to 350
5	Very Poor	301 to 400	121 to 250	351 to 430
6	Severe	401 to 500	250 +	430 +

**2. Recommended Water Quality Standards:**

No	Designated Best Use	Criteria
1	Drinking Water Source without conventional Treatment but after disinfection	pH between 6.5 to 8.5 Dissolved Oxygen 6 mg/l or more
2	Drinking water source after conventional treatment and disinfection	pH between 6 to 9 Dissolved Oxygen 4 mg/l or more
3	Outdoor Bathing (Organized)	pH between 6.5 to 8.5 Dissolved Oxygen 5 mg/l or more
4	Controlled Waste Disposal	pH between 6 to 8.5



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**3. Recommended Noise Level Standards:**

No	Location	Noise Level dB
1	Auditoriums	20-25
2	Outdoor Playground	55
3	Occupied Class Room	40-45
4	Un occupied Class Room	35
5	Apartment, Homes	35-40
6	Offices	45-50
7	Libraries	35-40
8	Restaurants	50-55

**4. Thermal Comfort Conditions: For Non-conditioned Buildings:**

No	Parameter	Value
1	Temperature	Less Than 33°C
2	Humidity	Less Than 70%



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**GREEN AUDIT REPORT**  
of  
Progressive Education Society's  
**MODERN COLLEGE OF PHARMACY,**  
Sector 21, Yamuna Nagar, Nigdi, Pune 411 044



Year: 2021-22



**Principal**

P. E. S. Modern College of Pharmacy  
Sector No.21, Yamunanagar, Nigdi,  
Pune - 411 044.

Prepared by:

**ENGRESS SERVICES**

Yashashree, 26, Nirmal Bag Society,  
Near Mukhtangan English School, Parvati, Pune 411009  
Phone: 09890444795, Email: [engress123@gmail.com](mailto:engress123@gmail.com)









Green Audit Report: Progressive Education Society's Modern College of Pharmacy, Nigdi: 2021-22

## ENGRESS SERVICES

Yashashree, 26, Nirmal Bag Society,  
Near Mukhtangan English School, Parvati, Pune 411 009  
Tel: 09890444795 Email: [engress123@gmail.com](mailto:engress123@gmail.com)

Ref: ES/MCOP/21-22/02

Date: 11/6/2022

### CERTIFICATE

This is to certify that we have conducted Green Audit at Progressive Education Society's Modern College of Pharmacy, Nigdi, Pune, in the Academic year 2021-22.

The College has adopted following Green Initiatives:

- Usage of Energy Efficient LED Light Fitting
- Usage of BEE STAR Rated Energy Efficient Equipment
- Maximum Usage of Day Lighting
- Installation of Roof Top Solar PV Plant of Capacity 10 kWp
- Segregation of Waste at Source
- Provision of Sanitary Waste Incinerator for Sanitary Waste Disposal
- Implementation of Rain Water Harvesting Project
- Maintenance of Good Internal Road
- Tree Plantation in the campus
- Provision of Ramp for Divyangajan
- Creation of Awareness on Resource Conservation, by Display of Posters

We appreciate the support of Management, involvement of faculty members and students in the process of Energy Conservation & making the campus Green.

For Engress Services,

A Y Mehendale,  
Certified Energy Auditor, EA-8192  
ASSOCHAM GEM Certified Professional GEM C2798



Principal

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Green Audit Report: Progressive Education Society's Modern College of Pharmacy, Nigdi: 2021-22

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4	Study of Usage of Renewable Energy	14
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Pune - 411 044.



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Green Audit Report: Progressive Education Society's Modern College of Pharmacy, Nigdi: 2021-22

### ACKNOWLEDGEMENT

We Engress Services, Pune, express our sincere gratitude to the management of Progressive Education Society's Modern College of Pharmacy, Nigdi Pune 411044, for awarding us the assignment of Green Audit of their Campus for the Academic Year: 21-22.

We are thankful to all the Staff members for helping us during the field study.

**Principal**

P. E. S. Modern College of Pharmacy  
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Green Audit Report: Progressive Education Society's Modern College of Pharmacy, Nigdi: 2021-22

### EXECUTIVE SUMMARY

1. Progressive Education Society's Modern College of Pharmacy, Nigdi consumes Energy in the form of Electrical Energy and LPG used for various Electrical Equipment, office & other facilities.

#### 2. Present Energy Consumption & CO<sub>2</sub> Emissions:

No	Parameter/ Value	Energy Purchased, kWh	LPG Consumed, Kg	CO <sub>2</sub> Emissions, MT
1	Total	66881	266	60.91
2	Maximum	6541	38	5.94
3	Minimum	4622	4	4.21
4	Average	5573.42	22.17	5.08

#### 3. Various Initiatives taken for Energy Conservation:

- Usage of Energy Efficient BEE STAR Rated Equipment.
- Usage of Energy Efficient LED Lighting
- Maximum Usage of Day Lighting
- Installation of Roof Top Solar PV Plant of Capacity 10 kWp.

#### 4. Usage of Renewable Energy & CO<sub>2</sub> Emission Reduction:

- The College has installed Roof Top Solar PV Plant of Capacity 10kWp.
- The Electrical Energy generated in 21-22 is 12000 kWh.
- Reduction in CO<sub>2</sub> Emissions in 21-22 is 10.8 MT.

#### 5. Waste Management:

##### 5.1 Segregation of Waste at Source:

The Waste is segregated at source and the recyclable waste, like paper waste is handed over to Authorized Agency for further action.

##### 5.2 Organic Waste Management:

It is recommended to install Bio Composting Unit to convert the Bio degradable Waste into Bio compost, which can be used in the internal garden.

##### 5.3 Sanitary Waste Management:

The College has installed Sanitary Waste Incinerator, for disposal of Sanitary Waste.

##### 5.4 Bio Medical Waste Management:

The College has entered a Memorandum of Understanding with M/s. PASCO, for disposal of Bio Medical Waste.

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#### 5.5 Chemical Laboratory Waste Management:

The College is following the concept of Green Synthesis; hence, no Chemical Laboratory Waste is generated.

#### 5.6 E-Waste Management:

It is recommended to dispose of the E Waste through Authorized Agency

#### 6. Rain Water Harvesting:

The College has installed the Rainwater harvesting project, the rain water falling on the terrace is collected and is used for recharging the bore well.

#### 7. Green & Sustainable Initiatives

- Good Internal Road
- Tree Plantation & Medicinal Plant Garden
- Provision of Ramp for Divyangajan
- Creation of Awareness by Display of Posters on Resource Conservation
- Tree Plantation & Cleanliness Drive, under National Service Scheme

#### 8. Notes & Assumptions:

1. 1 kWh of Electrical Energy releases 0.9 Kg of CO<sub>2</sub> into atmosphere
2. 1 Kg of LPG releases 2.68 Kg of CO<sub>2</sub> into atmosphere
3. 1 kWp Roof Top Solar PV Plant releases 4 kWh of Electrical Energy per Day.
4. Annual Solar Energy Generation Days: 300 Nos.

#### 9. References:

- For CO<sub>2</sub> Emissions: [www.tatapower.com](http://www.tatapower.com)
- For Roof Top Solar Energy generation: [www.solarrooftop.gov.in](http://www.solarrooftop.gov.in)



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### ABBREVIATIONS

BEE	Bureau of Energy Efficiency
kWh	Kilo Watt Hour
LPD	Liters Per Day
Kg	Kilo Gram
MT	Metric Ton
CO <sub>2</sub>	Carbon Di Oxide
Qty	Quantity

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Green Audit Report: Progressive Education Society's Modern College of Pharmacy, Nigdi: 2021-22

## CHAPTER-I INTRODUCTION

### 1.1 Objectives:

1. To study Present Energy Consumption
2. To Study CO<sub>2</sub> emissions
3. To study usage of Renewable Energy
4. Study of Waste Management
5. Study of Rain Water Harvesting
6. Study of Green & Sustainable Practices

### 1.2 General Details of College: Table No 1:

No	Head	Particulars
1	Name of Institution	Progressive Education Society's Modern College of Pharmacy
2	Address	Sector 21, Yamuna Nagar, Nigdi 411 044
3	Year of Establishment	1998
4	Affiliation	Savitribai Phule Pune University

### 1.3 Google Earth Image:



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*[Handwritten Signature]*

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## CHAPTER-II STUDY OF PRESENT ENERGY CONSUMPTION

In this chapter, we present the analysis of Electrical Energy & LPG Consumption.

Table No 2: Electrical Energy & LPG Consumption Analysis- 2021-22:

No	Month	Energy Purchased, kWh	LPG Consumed, Kg
1	Apr-21	4872	4
2	May-21	5000	8
3	Jun-21	5233	14
4	Jul-21	5855	12
5	Aug-21	4622	19
6	Sep-21	5274	38
7	Oct-21	6074	38
8	Nov-21	5695	19
9	Dec-21	6541	19
10	Jan-22	5891	19
11	Feb-22	5782	38
12	Mar-22	6042	38
13	Total	66881	266
14	Maximum	6541	38
15	Minimum	4622	4
16	Average	5573.42	22.17

Chart No 1: Variation in Monthly Energy Purchased:



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Chart No 2: Variation in Variation in Monthly LPG Consumption:

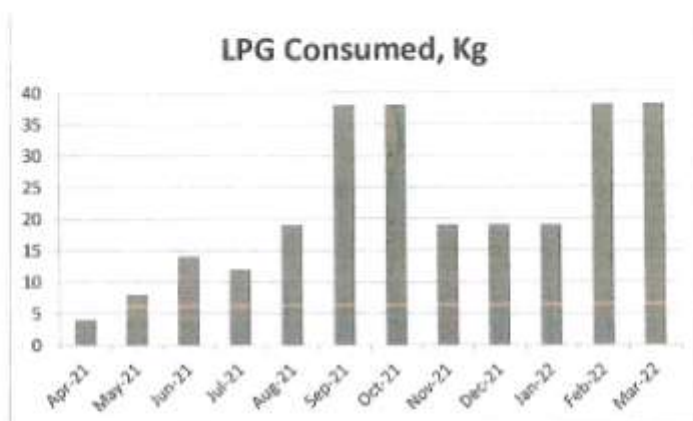


Table No 3: Variation in Important Parameters:

No	Parameter/ Value	Energy Purchased, kWh	LPG Consumed, Kg
1	Total	66881	266
2	Maximum	6541	38
3	Minimum	4622	4
4	Average	5573.42	22.17

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### CHAPTER III STUDY OF CARBON FOOTPRINTING

A Carbon Foot print is defined as the Total Greenhouse Gas emissions, emitted due to various activities.

In this we compute the emissions of Carbon-Di-Oxide, by usage of the various forms of Energy used by the College for performing its day to day activities

The College uses Electrical Energy and LPG as the Energy Source.

Basis for computation of CO<sub>2</sub> Emissions:

- 1 kWh of Electrical Energy releases 0.9 Kg of CO<sub>2</sub> into atmosphere
- 1 Kg of LPG releases 2.68 Kg of CO<sub>2</sub> into atmosphere

Based on the above Data we compute the CO<sub>2</sub> emissions which are being released in to the atmosphere by the College due to its Day to Day operations

Table No 4: Month wise CO<sub>2</sub> Emissions:

No	Month	Energy Purchased, kWh	LPG Consumed, Kg	CO <sub>2</sub> Emissions, MT
1	Apr-21	4872	4	4.40
2	May-21	5000	8	4.52
3	Jun-21	5233	14	4.75
4	Jul-21	5855	12	5.30
5	Aug-21	4622	19	4.21
6	Sep-21	5274	38	4.85
7	Oct-21	6074	38	5.57
8	Nov-21	5695	19	5.18
9	Dec-21	6541	19	5.94
10	Jan-22	5891	19	5.35
11	Feb-22	5782	38	5.31
12	Mar-22	6042	38	5.54
13	Total	66881	266	60.91
14	Maximum	6541	38	5.94
15	Minimum	4622	4	4.21
16	Average	5573.42	22.17	5.08

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Chart No 3: Month wise CO<sub>2</sub>Emissions:

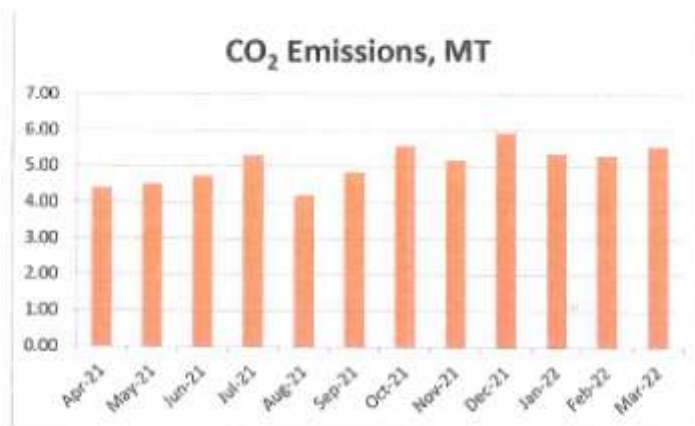


Table No 5: Important Parameters:

No	Parameter/ Value	Energy Purchased, kWh	LPG Consumed, Kg	CO <sub>2</sub> Emissions, MT
1	Total	68881	266	60.91
2	Maximum	6541	38	5.94
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4	Average	5573.42	22.17	5.08



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#### CHAPTER IV STUDY OF USAGE OF RENEWABLE ENERGY

The College has installed Roof Top Solar PV Plant of Capacity 10 kWp.

In the following Table, we compute the Annual Reduction in CO<sub>2</sub> Emissions due to installation of Roof Top Solar PV Plant.

Table No6: Computation of Annual Reduction in CO<sub>2</sub> Emissions:

No	Particulars	Value	Unit
1	Installed Capacity of Roof Top Solar PV Plant Capacity	10	kWp
2	Energy Generated in per kWp	4	4 kWh/kWp
3	Annual Solar Energy generation Days	300	Nos
4	Energy Generated in the Year: 21-22	12000	kWh
5	1 kWh of Electrical Energy saves	0.9	Kg/kWh
6	Qty of CO <sub>2</sub> Saved by Solar PV Plant $\approx (4) \times (5) / 1000$	10.8	MT of CO <sub>2</sub>

Photograph of Roof Top Solar PV Plant:



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## CHAPTER V STUDY OF WASTE MANAGEMENT

### 5.1 Segregation of Waste at Source:

The Waste is segregated at source and the recyclable waste, like paper waste is handed over to Authorized Agency for further action.

Photograph of Waste Collection Bins:



### 5.2 Organic Waste Management:

It is recommended to install Bio Composting Unit to convert the Bio degradable Waste into Bio compost, which can be used in the internal garden.

### 5.3 Sanitary Waste Management:

The College has installed Sanitary Waste Incinerator, for disposal of Sanitary Waste.

Photograph of Sanitary Waste Incinerator:



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**5.4 Bio Medical Waste Management:**

The College has entered a Memorandum of understanding with M/s. PASCO, for disposal of Bio Medical Waste.

**5.5 Chemical Laboratory Waste Management:**

The College is following the concept of Green Synthesis; hence, no Chemical Laboratory Waste is generated.

**5.6 E-Waste Management:**

It is recommended to dispose of the E Waste through Authorized Agency.

**Principal**

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## CHAPTER-VI STUDY OF RAIN WATER HARVESTING

The College has implemented the Rain Water Harvesting Project. The College has installed Pipes from the terrace and the Rain water falling on the terrace is gathered and is used to recharge the bore well.

Photograph of Rain water Harvesting Pipe:



Rain Water  
Collecting Pipe

Photograph of Rain water Harvesting Recharging Well Section:



Recharge Point

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## CHAPTER-VII STUDY OF GREEN & SUSTAINABLE PRACTICES

### 7.1 Pedestrian Friendly Roads:

The College has well maintained internal road to facilitate the easy movement of the students within the campus.

Photograph of Internal Road:



### 7.2 Internal Tree Plantation:

The College has well maintained Tree Plantation in the campus.

Photograph of Tree plantation:



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### 7.3 Provision of Ramp:

For easy movement of Divyangajan, the College has made provision of Ramp.

Photograph of Ramp:



### 7.4 Creation of Awareness about Energy Conservation:

The College has displayed posters emphasizing on importance of Resource Conservation.

Photograph of Poster on Water Conservation:



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#### 7.5 Tree Plantation Program under Mazi Vasundhara Abhiyan:

The College, under the NSS, conducted Mazi Vasundhara Program. Tree Plantation was done.

Photograph of Tree Plantation under Mazi Vasundhara Abhiyan:



#### 7.6 Cleanliness Drive Program:

Under, NSS, Cleanliness Drive was conducted in the Village: Jamavade, in Taluka: Maval of Pune District.

Photograph of Cleanliness Drive Event:



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**ANNEXURE-1:**

**DETAILS OF TREES& PLANTS:**

**1. List of Trees:**

No	Common Name Of Tree	Qty
1	Palm	130
2	Audumbar	2
3	Ficus	10
4	Pimpal	1
5	Palas	1
6	Ashoka	2
7	Sonchampa	2
8	Christmas	3
9	Mango	1
10	Chikoo	1
11	Rubber	1
12	Umbrell Palm	5
13	Ticoma	2
14	Papaya	1
15	Shevri	1
16	Tagar	1
17	Ixzora	4
18	Kadunim	3
19	Total	171

**2. List of Ornamental Plants:**

No	Common Name
1	Coleus
2	Drecena
3	Song Of India
4	Hibiscus
5	Gokarna
6	Cactus
7	Tulsi
8	Rose
9	Jai

**Principal**

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Engrs Services, Pune Sector No.21, Yamunanagar, Nigdi,  
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Green Audit Report: Progressive Education Society's Modern College of Pharmacy, Nigdi. 2021-22

## 3. List of Medicinal Plants:

No.	Botanical Name	No.	Botanical Name
1.	<i>Adhatodavasica</i>	29.	<i>Lawsoniainermis</i>
2.	<i>Aegle marmelos</i>	30.	<i>Magnolia champaca</i>
3.	<i>Aloe barbadensis</i>	31.	<i>Mangifera indica</i>
4.	<i>Andrographis paniculata</i> Nees.	32.	<i>Mimosa pudica</i>
5.	<i>Annona reticulata</i> L.	33.	<i>Musa acuminata</i>
6.	<i>Asparagus racemosus</i> Willd.	34.	<i>Myristica fragrans</i>
7.	<i>Azadirachta indica</i>	35.	<i>Pimentadioca</i>
8.	<i>Bergerakoenigii</i>	36.	<i>Piper betel</i>
9.	<i>Butea monosperma</i>	37.	<i>Piper longum</i>
10.	<i>Cassia angustifolia</i>	38.	<i>Piper nigrum</i>
11.	<i>Catharanthus roseus</i>	39.	<i>Pongamia pinnata</i>
12.	<i>Centella asiatica</i>	40.	<i>Pterocarpus santalum</i>
13.	<i>Chrysalidocarpus lutescens</i>	41.	<i>Ricinus communis</i>
14.	<i>Cinnamomum zeylanicum</i> Breyn.	42.	<i>Rutegraveolens</i>
15.	<i>Citrus limon</i>	43.	<i>Sapindus mukorossi</i>
16.	<i>Costus igneus</i>	44.	<i>Saraca asoca</i>
17.	<i>Curcuma amada</i>	45.	<i>Syzygium aromaticum</i>
18.	<i>Curcuma longa</i>	46.	<i>Syzygium cumini</i>
19.	<i>Cymbopogon citratus</i>	47.	<i>Tamarindus indica</i>
20.	<i>Elettaria cardamomum</i>	48.	<i>Terminalia arjuna</i>
21.	<i>Eucalyptus globules</i>	49.	<i>Terminalia bellirica</i>
22.	<i>Ficus glomerata</i>	50.	<i>Terminalia chebula</i>
23.	<i>Ficus racemosa</i>	51.	<i>Tinospora cordifolia</i>
24.	<i>Gymnema sylvestre</i>	52.	<i>Trachyspermum ammi</i>
25.	<i>Helicteres isora</i>	53.	<i>Vitex negundo</i> L.
26.	<i>Hemidesmus indicus</i>	54.	<i>Withania somnifera</i>
27.	<i>Hibiscus rosa-sinensis</i>	55.	<i>Eleocarpus ganitrus</i>
28.	<i>Kalanchoe pinnata</i>	56.	<i>Cinnamomum camphora</i>
29.	<i>Bryophyllum pinnatum</i>		

Principal

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**ICS** **IAS-ANZ** **PASSCO**

QMS ISO 9001:2015  
EMS ISO 14001:2015  
Reg. No. R2943494

## Certificate

Division: PCMC Registered Date: 26-07-2021

This is to certify that **PES'S MODERN COLLEGE OF PHARMACY(A00726)** is registered with us for Scientific Disposal of BMW generated at their Health Care Establishment from 01.04.2021 to 31.03.2022.

Registration No. A00726

PCSWL Code	Name & Address of Occupier	Category	No. Of Beds
ML000002	DR. P. D. CHOUDHARI ML000002-PES'S MODERN COLLEGE OF PHARMACY(A00726) SEC. NO. 21, YAMUNA NAGAR, NIGDI PUNE-411044	Medical College Laboratory	0

As per The Biomedical Waste Management Rules, 2016 and The Bio-Medical Waste Management (Amendment) Rules, 2018 and MPCB norms, proper segregation & disposal of the waste by delivering the waste to the CSWTF vehicle at designated point is the responsibility of individual generator.

Compliance as per MPCB rules as under to be ensured from your end -

1	Proper Segregation and Handing over the waste to us
2	Waste sharps, needles, metals as per schedule I- Category White ) of Biomedical Waste Management Rules, 2016 and The Bio-Medical Waste Management (Amendment) Rules, 2018 to be handed in puncture-proof, leak-proof, tamper-proof container with white barcode
3	Glass material and metallic body implants after disinfection by soaking washed glassware after cleaning with detergent and Sodium Hypochlorite treatment or through autoclaving or microwaving or hydroclaving as per schedule I Category (a) & (b) Blue of Biomedical Waste Management Rules, 2016 and The Bio-Medical Waste Management (Amendment) Rules, 2018 to be handed over in puncture-proof, leak-proof, tamper-proof container with blue barcode
4	Ensure Delivery of biomedical waste in Red bag, Yellow bag and white barcode container, blue barcode container to collection vehicle
5	No untreated bio-medical waste should be kept stored a period of 48 hours

**We hereby certify that the Bio Medical Waste received at our end is disposed off as per the norms laid down by MPCB from time to time**

For Passco Environmental Solutions Pvt. Ltd.

*Authorized Signatory*

**PMPR, PUNE-18**

*Principal*

**PES'S Modern College of Pharmacy**  
Sector No. 21, Yamunanagar, Nigdi,  
Pune - 411 044

**PASSCO ENVIRONMENTAL SOLUTIONS PVT. LTD.**

**Operator Common Bio-Medical Waste Treatment Facility for P.M.C./P.C.M.C. Area**

Regd. Office: "Paripart" 34/1, Erandwane, Behind Eken Pharmaceuticals, Pune-411 004. India. Telex: +91 20-6602 4765, 7545 7095

P.M.C. Site Office: Kalash Crematorium Compound, Next to Rashtriya Hospital, Pune - 411 007

P.C.M.C. Site Office: S. No. 172, 173, 174, Y.C.M. Hospital, Ground Floor, Sant Tukaram Nagar, Pune-411 018. Tel.: +91 20 2742 0095, 6731 2149

• Email: [helpdesk@passco.in](mailto:helpdesk@passco.in) • Website: [www.passco.in](http://www.passco.in)

CIN : U33129PN2005PTC020340



Progressive Education Society's  
**MODERN COLLEGE OF PHARMACY**

Accredited by NAAC & NBA

DST FIST Funded College

'Best College Award' by Savitribai Phule Pune University



Approved by All India Council for Technical Education, New Delhi, Pharmacy Council of India, New Delhi,  
Directorate of Technical Education, Mumbai (MS), Permanently affiliated to  
Savitribai Phule Pune University, Pune & Approved under Section (2 (f) & 12 (B) of UGC Act, 1956

Sector No. 21, Yamunanagar, Nigdi, Pune - 411 044. (M.S.) Tel. : 020-27661314 / 15

E-mail : mcopnigdi44@gmail.com Website : www.mcop.org.in

Prof. Dr. P. D. Chaudhari  
M.Pharm., Ph.D.  
Principal

Prof. Dr. Gajanan R. Ekbote  
M.S., M.N.A.M.S.  
Chairman, Business Council  
P.E.Society, Pune

Ref :

Date :

## Environment and Sustainability (Academic year 2020-21)



P. E. Society's  
Modern College of Pharmacy, Nigdi, Pune-44  
NSS REGULAR ACTIVITY REPORT  
2020-2021

1.	Name of activity	Tree Plantation-Swatchh bharat Abhiyan
2.	Date of activity	03.07.2020
3.	Time	10.00 am to 2.00 pm
4.	Total no students participated	50
5.	Occasion of activity	Tree Plantation
6.	Inauguration by	Dr. P.D. Chaudhari
7.	Place of activity	PES Modern College of Pharmacy, Nigdi, and student home town
8.	Objectives of activity	To make the region green. To help in decrease in global warming To improve water and air quality To increase green spaces in cities. To conserve biodiversity.
9.	Outcome of activity	Students planted various saplings at different regions. Students get exposed to nature and understood importance of conservation of nature and biodiversity. Student get aware about proper scientific techniques of plantation.
10.	Activity co-coordinator	Dr. A. S. Tapkir




Principal  
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Pune - 411 044.





Photos of activity



  
Dr. A. S. Tapkir  
NSS Program Officer



  
Dr. P.D. Chaudhari  
Principal  
Principal  
P. E. S. Modern College of Pharmacy  
Sector No.21, Yamunanagar, Nigdi,  
Pune - 411044





P. E. Society's  
Modern College of Pharmacy, Nigdi, Pune-44  
NSS REGULAR ACTIVITY REPORT  
2020-2021

1.	Name of activity	Swachh Bharat Abhiyan
2.	Date of activity	04.07.2020
3.	Time	10.00 am to 2.00 pm
4.	Total no students participated	25
5.	Occasion of activity	Cleaning activity on occasion of swachh wari sunder wari haritwari
6.	Inauguration by	Dr. P.D. Chaudhari
7.	Place of activity	PES Modern College of Pharmacy, Nigdi, Pune-44
8.	Objectives of activity	To generate awareness about sanitation and its links to public health. To aware about waste management. To spread awareness about how to clean the premises. To maintain public health with the help of cleaning.
9.	Outcome of activity	Generated awareness in students and society regarding Swachh Bharat Abhiyan. Students understood how to do management of solid waste. As a pharmacist discussed and counseled regarding health and cleanliness and its relation in causing various diseases.
10.	Activity co-coordinator	Dr. A. S. Tapkir




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Pune - 411 044.




*Photos of activity*



  
Dr. A. S. Tapkir  
NSS Program Officer



  
Dr. P.D. Chaudhari  
Principal  
Principal  
P. E. S. Modern College of Pharmacy  
Sector No.21, Yamunanagar, Nigdi,  
Pune - 411 044.



**P. E. Society's  
Modern College of Pharmacy, Nigdi, Pune-44  
NSS REGULAR ACTIVITY REPORT  
2020-2021**

1.	Name of activity	Mazi Vasundhara Abhiyan
2.	Date of activity	14.01.2021
3.	Time	10.00 am to 2.00 pm
4.	Total no students participated	50
5.	Occasion of activity	
6.	Inauguration by	
7.	Place of activity	PES Modern College of Pharmacy, Nigdi, Pune
8.	Objectives of activity	To save environment. Prevent global warming. Awareness regarding pollution control
9.	Outcome of activity	Students get importance of pollution control Student taken pledge to protect environment
10.	Activity co-coordinator	Dr. A. S. Tapkir



**Principal**  
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Sector No.21, Yamunanagar, Nigdi,  
Pune - 411 044



डॉ. प्रभाकर टेपकीर  
मुख्य, क्षेत्रीय  
संयोजक

### सावित्रीबाई फुले पुणे विद्यापीठ

(पुणे वसुंधरा)

#### राष्ट्रीय सेवा योजना

सावित्रीबाई फुले - २०१९-२०२०



कायदेशरक क्र. २०२०-२०२१/२०२०  
२०२०-२०२१/२०२०  
२०२०-२०२१/२०२०  
२०२०-२०२१/२०२०

अवधि : सप्टेंबर - २०२० - २०२१

दि. २९ - ०९ - २०२१

पति

सा. प्रभाकर, संयोजक, विभागाध्यक्ष  
राष्ट्रीय सेवा योजना, विभाग, पत्रिका  
सावित्रीबाई फुले पुणे विद्यापीठ  
पुणे, महाराष्ट्र, भारत

विषय : आजी वसुंधरा अभियानासाठी दि. २०२० साली दिलेले आदेश  
(Epledge) कालावधीत

आदेश : १. या वी अभियानासाठी, आजी वसुंधरा अभियानासाठी आदेशासाठी आदेशासाठी आदेशासाठी  
आदेश दि. २०२०-२०२१ सालीत पर  
२. अभियान : २०२०-२०२१ साली वसुंधरा अभियानासाठी दि. २०२०-२०२१

संयोजक

आदेशासाठी आदेशासाठी आदेशासाठी आदेशासाठी आदेशासाठी आदेशासाठी आदेशासाठी आदेशासाठी  
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Dr. A. S. Tapkir  
NSS Program Officer

  
Dr. P.D. Chaudhari  
Principal  
Principal  
P. E. S. Modern College of Pharmacy  
Sector No.21, Yamunanagar, Nigdi,  
Pune - 411 044.





## ENERGY AUDIT REPORT

of  
Progressive Education Society's  
Modern College of Pharmacy,  
Sector 21, Yamuna Nagar, Nigdi, Pune 411 044



Year: 2020-21



Principal

P. E. S. Modern College of Pharmacy  
Sector No.21, Yamunanagar, Nigdi,  
Pune - 411 044.

Prepared by:

**Enrich Consultants**

Yashashree, 26, Nirmal Bag Society,  
Near Mukhtangan English School, Parvati, Pune 411009  
Phone: 09890444795 Email: [enrichcons@gmail.com](mailto:enrichcons@gmail.com)





Energy Audit Report: Progressive Education Society's Modern College of Pharmacy, Nigdi: 2020-21

**MAHARASHTRA ENERGY DEVELOPMENT AGENCY**

Reg. (EC/2001) 2021 Reg. no. EC/41/2002



**Maharashtra Energy Development Agency**

(Government of Maharashtra Institution)

Asadi Road, Opposite Spicer College Road, Near Commissionerate of Animal Husbandry,

Aundh, Pune, Maharashtra 411007

Ph No: 020-35000450

Email: [ee@maharaja.com](mailto:ee@maharaja.com), Web: [www.maharaja.com](http://www.maharaja.com)

ECN/2021-22/CR-14/1577

22<sup>nd</sup> April, 2021

**CERTIFICATE OF REGISTRATION  
FOR CLASS 'A'**

We hereby certify that, the firm having following particulars is registered with **MAHARASHTRA ENERGY DEVELOPMENT AGENCY (MEDA)** under given category as "Energy Planner & Energy Auditor" in Maharashtra for Energy Conservation Programme of MEDA.

Name and Address of the firm : **M/s Enrich Consultants**  
Yashwantrao, Plot No. 26, Nirmai Bag Society,  
Near Mukundan English School, Parvati,  
Pune - 411009.

Registration Category : **Empanelled Consultant for Energy Conservation Programme for Class 'A'**

Registration Number : **MEDA/ECN/2021-22/Class A/EA-03**

- Energy Conservation Programme intends to identify areas where wasteful use of energy occurs and to evaluate the scope for Energy Conservation and take concrete steps to achieve the evaluated energy savings.
- MEDA reserves the right to visit at any time without giving prior information to verify quarterly activities performed by the firm and cancelling the registration, if the information is found incorrect.
- This empanelment is valid till **21<sup>st</sup> April, 2023** from the date of registration, to carry out energy audits under the Energy Conservation Programme.
- The Director General, MEDA reserves the right to cancel the registration at any time without assigning any reasons thereof.



General Manager (EC)

**Principal**

**P. E. S. Modern College of Pharmacy**

**Sector No.24, Yamunanagar, Nigdi,**

**Pune - 411 044.**

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Energy Audit Report: Progressive Education Society's Modern College of Pharmacy, Nigdi: 2020-21

## Enrich Consultants

Yashashree, 26, Nimal Bag Society,  
Near Muktangan English School, Parvati, Pune 411 009  
Tel: 09890444795 Email: [enrichcons@gmail.com](mailto:enrichcons@gmail.com)

Ref: EC/MCOP/20-21/01

Date: 01/9/2021

### CERTIFICATE

This is to certify that we have conducted Energy Audit at Progressive Education Society's Modern College of Pharmacy, Nigdi, Pune, in the Academic year 2020-21.

The College has adopted following Energy Efficient practices:

- Usage of Energy Efficient LED Fittings
- Usage of BEE STAR Rated Energy Efficient Equipment
- Maximum usage of Day Lighting
- Installation of 10 kWp Roof Top Solar PV Plant

We appreciate the support of Management, involvement of faculty members and students in the process of making the Campus Energy Efficient.

For Enrich Consultants,

*A Y Mehendale*

A Y Mehendale,  
Certified Energy Auditor  
EA-8192



*[Signature]*

Principal

P. E. S. Modern College of Pharmacy  
Sector No 21, Yamunanagar, Nigdi.

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Pune - 411 044. Page 3



Energy Audit Report: Progressive Education Society's Modern College of Pharmacy, Nigdi: 2020-21

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3	Study of Present Energy Consumption	11
4	Carbon Foot Printing	13
5	Study of Usage of Alternate Energy	14
6	Study of LED Lighting	15



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Energy Audit Report: Progressive Education Society's Modern College of Pharmacy, Nigdi: 2020-21

#### ACKNOWLEDGEMENT

We Enrich Consultants, Pune, express our sincere gratitude to the management of Progressive Education Society's Modern College Of Pharmacy, Nigdi Pune 411044, for awarding us the assignment of Energy Audit of their Campus for the Academic Year: 20-21.

We are thankful to all the Staff members for helping us during the field study.



Principal

P. E. S. Modern College of Pharmacy  
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Pune - 411 044.





Energy Audit Report: Progressive Education Society's Modern College of Pharmacy, Nigdi: 2020-21

### EXECUTIVE SUMMARY

1. Progressive Education Society's Modern College of Pharmacy, Nigdi consumes Energy in the form of Electrical Energy and LPG used for various Electrical Equipment, office & other facilities.

#### 2. Present Energy Consumption & CO<sub>2</sub> Emission:

No	Parameter/ Value	Energy Purchased, kWh	LPG Consumed, Kg	CO <sub>2</sub> Emissions, MT
1	Total	57606	100	52.11
2	Maximum	5233	14	4.75
3	Minimum	3906	2	3.52
4	Average	8862.46	15.38	8.02

#### 3. Energy Conservation projects already installed:

- Usage of Energy Efficient LED fittings
- Maximum Usage of Day Lighting
- Installation of 10 kWp Roof Top Solar PV Plant

#### 4. Usage of Alternate Energy:

- The College has installed Roof Top Solar PV Plant of Capacity 10 kWp.
- Energy purchased from MSSEDCL is 57606 kWh.
- Energy generated by Roof Top Solar PV Plant is 12000 kWh.
- The percentage of Usage of Alternate Energy to Annual Energy Demand is 17.24 %.

#### 5. Usage of LED Lighting:

- The Total Annual Lighting Demand of the College is 15209 kWh.
- The Total Annual LED Lighting Demand is 2350 kWh.
- The percentage of Annual LED Lighting to Annual Lighting Demand is 15.45 %.

#### 6. Assumptions:

1. 1 kWh of Electrical Energy releases 0.9 Kg of CO<sub>2</sub> into atmosphere
2. 1 Kg of LPG releases 2.68 Kg of CO<sub>2</sub> into atmosphere
3. Daily working hours-6 Nos (For Lighting Calculations)
4. Annual working Days-150 Nos (For Lighting Calculations)
5. 1 kWp Roof Top Solar PV Plant releases 4 kWh of Electrical Energy per Day
6. Annual Solar Energy Generation Days: 300 Nos.

#### 7. References:

- For CO<sub>2</sub> Emissions: [www.fatpccwv.com](http://www.fatpccwv.com)
- For Roof Top Solar PV Plant Energy generation: [www.solarroftop.gov.in](http://www.solarroftop.gov.in)

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Sector No.21, Yamunanagar, Nigdi,  
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Energy Audit Report: Progressive Education Society's Modern College of Pharmacy, Nigdi: 2020-21

#### ABBREVIATIONS

LED	: Light Emitting Diode
MSEDCL	: Maharashtra State Electricity Distribution Company Limited
IQAC	: Internal Quality Assurance Cell
BEE	: Bureau of Energy Efficiency
FTL	: Fluorescent Tube Light
CFL	: Compact Fluorescent Light
PV	: Photo Voltaic
Kg	: Kilo Gram
kWh	: kilo-Watt Hour
CO <sub>2</sub>	: Carbon Di Oxide
MT	: Metric Ton



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Energy Audit Report: Progressive Education Society's Modern College of Pharmacy, Nigdi: 2020-21

## CHAPTER-I INTRODUCTION

### 1.1 Objectives:

1. To study present Energy Consumption
2. To Study the present CO<sub>2</sub> emissions
3. To study usage of Alternate Energy
4. To study usage of LED Lighting

### 1.2 Table No 1: General Details of the College:

No	Head	Particulars
1	Name of Institution	Progressive Education Society's Modern College of Pharmacy
2	Address	Sector 21, Yamuna Nagar, Nigdi 411 044
3	Year of Establishment	1998
4	Affiliation	Savitribai Phule Pune University



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Energy Audit Report: Progressive Education Society's Modern College of Pharmacy, Nigdi: 2020-21

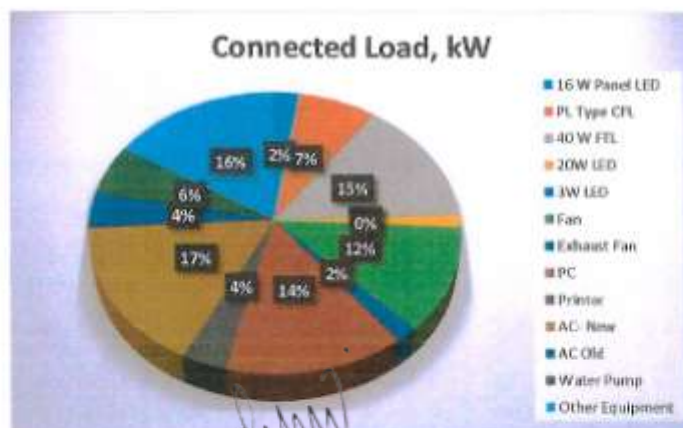
## CHAPTER-II STUDY OF CONNECTED LOAD

The major contributors to the connected load of the College include:

Table No 2: Study of Equipment wise Connected Load:

No	Equipment	Qty	Load, W/Unit	Load, kW
1	16 W Panel LED	101	16	1.62
2	PL Type CFL	149	32	4.77
3	40 W FTL	238	40	9.52
4	20W LED	46	20	0.92
5	3W LED	25	3	0.08
6	Fan	119	65	7.74
7	Exhaust Fan	22	52	1.14
8	PC	62	150	9.30
9	Printer	16	150	2.40
10	AC- New	6	1800	10.80
11	AC Old	1	2700	2.70
12	Water Pump	1	3730	3.73
13	Other Equipment	70	150	10.50
14	Total			65.21

Chart No 1: Study of Connected Load:



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Energy Audit Report: Progressive Education Society's Modern College of Pharmacy, Nigdi: 2020-21

### CHAPTER-III STUDY OF PRESENT ENERGY CONSUMPTION

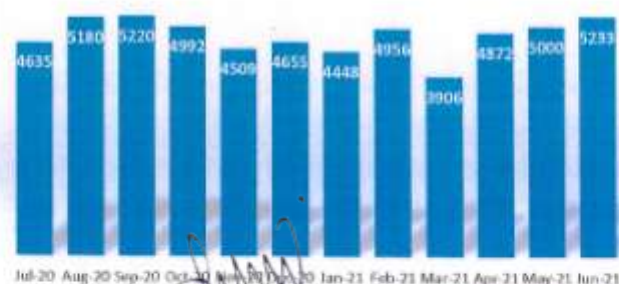
In this chapter, we present the analysis of Electrical Energy & LPG Consumption.

Table No 3: Electrical Energy & LPG Consumption Analysis- 2020-21:

No	Month	Energy Purchased, kWh	LPG Consumed, Kg
1	Jul-20	4635	8
2	Aug-20	5180	10
3	Sep-20	5220	7
4	Oct-20	4992	6
5	Nov-20	4509	10
6	Dec-20	4655	12
7	Jan-21	4448	14
8	Feb-21	4956	5
9	Mar-21	3906	2
10	Apr-21	4872	4
11	May-21	5000	8
12	Jun-21	5233	14
13	Total	57606	100
14	Maximum	5233	14
15	Minimum	3906	2
16	Average	8862.46	15.38

Chart No 2: Variation in Monthly Energy Consumption:

Electrical Energy Purchased, kWh



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Energy Audit Report: Progressive Education Society's Modern College of Pharmacy, Nigdi: 2020-21

Chart No 3: Variation in Monthly LPG Consumption:



Table No 4: Variation in Important Parameters:

No	Parameter/ Value	Energy Purchased, kWh	LPG Consumed, Kg
1	Total	57606	100
2	Maximum	5233	14
3	Minimum	3906	2
4	Average	8862.46	15.38



Principal

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Energy Audit Report: Progressive Education Society's Modern College of Pharmacy, Nigdi, 2020-21

#### CHAPTER-IV CARBON FOOTPRINTING

A Carbon Foot print is defined as the Total Greenhouse Gas emissions, emitted due to various activities.

In this we compute the emissions of Carbon-Di-Oxide, by usage of the various forms of Energy used by the College for performing its day to day activities

The College uses Electrical Energy and LPG as the Energy Source.

**Basis for computation of CO<sub>2</sub> Emissions:**

- 1 kWh of Electrical Energy releases 0.9 Kg of CO<sub>2</sub> into atmosphere
- 1 Kg of LPG releases 2.68 Kg of CO<sub>2</sub> into atmosphere

Based on the above Data we compute the CO<sub>2</sub> emissions which are being released in to the atmosphere by the College due to its Day to Day operations

**Table No 5: Month wise CO<sub>2</sub> Emissions:**

No	Month	Energy Purchased, kWh	LPG Consumed, Kg	CO2 Emissions, MT
1	Jul-20	4635	8	4.19
2	Aug-20	5180	10	4.69
3	Sep-20	5220	7	4.72
4	Oct-20	4992	6	4.51
5	Nov-20	4509	10	4.08
6	Dec-20	4655	12	4.22
7	Jan-21	4448	14	4.04
8	Feb-21	4956	5	4.47
9	Mar-21	3906	2	3.52
10	Apr-21	4872	4	4.40
11	May-21	5000	8	4.52
12	Jun-21	5233	14	4.75
13	Total	57606	100	52.11
14	Maximum	5233	14	4.75
15	Minimum	3906	2	3.52
16	Average	8862.46	15.38	8.02



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Chart No 4: Month wise CO<sub>2</sub> Emissions:

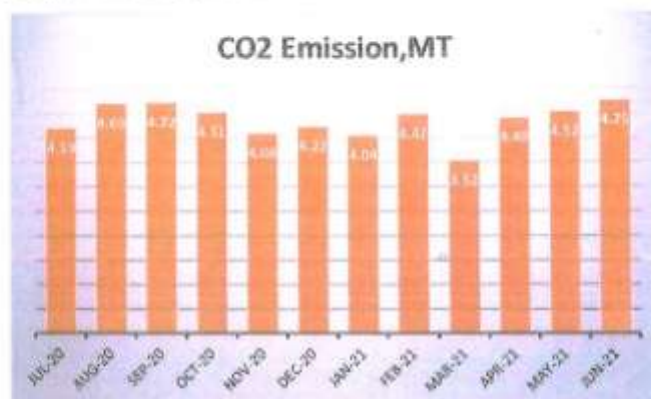


Table No 6: Important Parameters:

No	Parameter/ Value	Energy Purchased, kWh	LPG Consumed, Kg	CO <sub>2</sub> Emissions, MT
1	Total	57606	100	52.11
2	Maximum	5233	14	4.75
3	Minimum	3906	2	3.52
4	Average	8862.46	15.38	8.02



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Energy Audit Report: Progressive Education Society's Modern College of Pharmacy, Nigdi: 2020-21

## CHAPTER-V STUDY OF USAGE OF ALTERNATE ENERGY

The College has installed Roof Top Solar PV Plant of Capacity 10 kWp.

In the following Table, we compute the percentage of Usage of Alternate Energy to Annual Energy Demand of the College.

Table No 7: Computation of % Annual Energy Demand met by Alternate Energy:

No	Particulars	Value	Unit
1	Energy Purchased from MSEDCL	57606	kWh
2	Installed Roof Top Solar PV Plant Capacity	10	kWp
3	Average Daily Energy Generated	4	kWh/kWp
4	Annual Generation Days	300	Nos
5	Annual Solar Energy Generated	12000	kWh
6	Total Energy Demand = (1) + (5)	69606	kWh
7	% of Usage of Alternate Energy to Total Annual Energy Demand= (5)*100/ (6)	17.24	%

Photograph of Roof Top Solar PV Plant:



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Energy Audit Report: Progressive Education Society's Modern College of Pharmacy, Nigdi: 2020-21

## CHAPTER VI STUDY OF USAGE OF LED LIGHTING

In this chapter, we compute the percentage of usage of LED Lighting to Annual Lighting power requirement.

Table No 8: Percentage of Usage of LED Lighting to Annual Lighting Load:

No	Particulars	Value	Unit
1	No of 40 W FTL Fittings	238	Nos
2	Demand of 40 W FTL Fitting	40	W/Unit
3	Total Electrical Load of 40 W FTL Fittings	9.52	kW
4	No of 20 W LED Tube Lights	46	Nos
5	Demand of 20 W LED Tube Light	20	W/Unit
6	Total Electrical Load of 20 W LED Fittings	0.92	kW
7	No of 16 W Panel LED Fittings	101	Nos
8	Demand of 16 W Panel LED Fittings	16	W/Unit
9	Total Electrical Load of 16 W Panel LED Fittings	1.616	kW
10	No of 3 W LED Fittings	25	Nos
11	Demand of 3 W LED Fittings	3	W/Unit
12	Total Electrical Load of 3 W LED Fittings	0.075	kW
13	No of PL Type 32 W CFL Fittings	149	Nos
14	Demand of PL Type 32 W CFL Fittings	32	W/Unit
15	Total Electrical Load of PL Type 32 W CFL Fittings	4.768	kW
16	Total Lighting Load=3+6+9+12+15	16.899	kW
17	Total LED Lighting Load= 6+9+12	2.611	kW
18	Average Daily Usage Period	6	Hours
19	Annual Working Days	150	Nos
20	Annual Total Lighting Load = 10*12*13	15209	kWh
21	Annual LED Lighting Load = 11*12*13	2350	kWh
22	Annual Lighting Requirement met by LED= 15*100/14	15.45	%



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## ENVIRONMENTAL AUDIT REPORT

of  
Progressive Education Society's  
Modern College of Pharmacy,  
Sector 21, Yamuna Nagar, Nigdi 411 044



Year: 2020-21

Principal

P. E. S. Modern College of Pharmacy  
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Prepared by:

**Enrich Consultants**

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Near Muktangan English School, Parvati, Pune 411009  
Phone: 09890444795 Email: [enrichcons@gmail.com](mailto:enrichcons@gmail.com)







Environmental Audit Report: Progressive Education Society's Modern College of Pharmacy, Nigdi: 2020-21

**MAHARASHTRA ENERGY DEVELOPMENT AGENCY**

AN ISO 9001:2015 REG. NO. 18331 / 2002



**Maharashtra Energy Development Agency**

(Government of Maharashtra Institution)

Aundh Road, Opposite Spicer College Road, Near Commissionerate of Animal Husbandry,  
Aundh, Pune, Maharashtra 411067

Ph No: 020-35000450

Email: [eeo@maharashtra.com](mailto:eeo@maharashtra.com), Web: [www.maharashtra.com](http://www.maharashtra.com)

ECN/2021-22/CR-14/1377

22<sup>nd</sup> April, 2021

**CERTIFICATE OF REGISTRATION  
FOR CLASS 'A'**

We hereby certify that, the firm having following particulars is registered with **MAHARASHTRA ENERGY DEVELOPMENT AGENCY (MEDA)** under given category as "Energy Planner & Energy Auditor" in Maharashtra for Energy Conservation Programme of MEDA.

**Name and Address of the firm :** M/s Enrich Consultants  
Yashwantrao, Plot No. 26, Nirmal Hsg Society,  
Near Multangan English School, Parvati,  
Pune - 411009.

**Registration Category :** Empowered Consultant for Energy Conservation Programme for Class 'A'

**Registration Number :** MEDA/ECN/2021-22/Class A/EA-93

- Energy Conservation Programme intends to identify areas where wasteful use of energy occurs and to evaluate the scope for Energy Conservation and take concrete steps to achieve the evaluated energy savings.
- MEDA reserves the right to visit at any time without giving prior information to verify quarterly activities performed by the firm and canceling the registration, if the information is found incorrect.
- This empowerment is valid till 21<sup>st</sup> April, 2023 from the date of registration, to carry out energy audits under the Energy Conservation Programme.
- The Director General, MEDA reserves the right to cancel the registration at any time without assigning any reasons thereof.



*[Signature]*

*[Signature]*  
General Manager (EC)

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Ref: EC/MCOP/20-21/03

Date: 01/9/2021

### CERTIFICATE

This is to certify that we have conducted Environmental Audit at Progressive Education Society's Modern College of Pharmacy, Nigdi, Pune, in the Academic year 2020-21.

The College has adopted following Green Initiatives:

- Usage of Energy Efficient LED Light Fitting
- Usage of BEE STAR Rated Energy Efficient Equipment
- Maximum Usage of Day Lighting
- Installation of Roof Top Solar PV Plant of Capacity 10 kWp.
- Provision of Separate bins for Dry & Wet Waste
- Tree Plantation in the campus
- Provision of Sanitary Waste Incinerator

We appreciate the support of Management, involvement of faculty members and students in the process of Energy Conservation & making the campus Green.

For Enrich Consultants,

*A Y Mehendale*

A Y Mehendale,  
Certified Energy Auditor  
EA-8192



*P. E. S. Modern College of Pharmacy*

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### ACKNOWLEDGEMENT

We Enrich Consultants, Pune, express our sincere gratitude to the management of Progressive Education Society's Modern College of Pharmacy, Nigdi Pune 411044, for awarding us the assignment of Environmental Audit of their Campus for the Academic Year: 20-21.

We are thankful to all the Staff members for helping us during the field study.

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## EXECUTIVE SUMMARY

1. Progressive Education Society's Modern College of Pharmacy, Nigdi consumes Energy in the form of Electrical Energy and LPG used for various Electrical Equipment, office & other facilities.

### 2. Various Pollution due to College Activities:

- Air pollution: Mainly CO<sub>2</sub> on account of Electricity Consumption
- Solid Waste: Bio degradable Garden Waste
- Liquid Waste: Human liquid waste

### 3. Present Energy Consumption & CO<sub>2</sub> Emission:

No	Parameter/Value	Energy Purchased, kWh	LPG Consumed, Kg	CO <sub>2</sub> Emissions, MT
1	Total	57606	100	52.11
2	Maximum	5233	14	4.75
3	Minimum	3906	2	3.52
4	Average	8862.46	15.38	8.02

### 4. Various initiatives taken for Energy Conservation:

- Usage of Energy Efficient LED Lighting
- Maximum Usage of Day Lighting
- Installation of Roof Top Solar PV Plant of Capacity 10 kWp.

### 5. Usage of Renewable Energy & Reduction in CO<sub>2</sub> Emission:

- The College has installed Roof Top Solar PV Plant of Capacity 10 kWp.
- The Electrical Energy generated in 20-21 is 12000 kWh.
- Reduction in CO<sub>2</sub> Emissions in 2020-21 works out to be 10.8 MT.

### 6. Indoor Air Quality Parameters:

No	Parameter/Value	AQI	PM-2.5	PM-10
1	Maximum	186	86	93
2	Minimum	110	63	79



### 7. Indoor Comfort Conditions:

No	Parameter/Value	Temperature, °C	Humidity, %	Lux Level	Noise Level, dB
1	Maximum	29.2	41	270	71
2	Minimum	28.8	40	98	36

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#### 8.1 Solid Waste Management:

##### 8.1.1 Segregation of Waste at Source:

The Waste is segregated at source and the recyclable waste, like paper, plastic waste is handed over to Authorized waste collecting agent for further recycling.

##### 8.1.2 Organic Waste Management:

It is recommended to install Bio Composting Unit to convert the Bio degradable Waste into Bio compost, which can be used in the internal garden.

#### 8.2 E-Waste Management:

The E-Waste is disposed of through Authorized E-Waste collecting agency.

#### 9. Rain Water Harvesting:

The College has installed the Rainwater harvesting project, the rain water falling on the terrace is collected and is used for recharging the bore well.

#### 10. Green & Sustainable Initiatives

- > Provision of Sanitary Waste Incinerator
- > Medicinal Plant Garden in the college premises
- > Display of Posters on Resource Conservation

#### 11. Notes & Assumptions:

1. 1 kWh of Electrical Energy releases 0.9 Kg of CO<sub>2</sub> into atmosphere
2. 1 Kg of LPG releases 2.68 Kg of CO<sub>2</sub> into atmosphere
3. 1 kWp Roof Top Solar PV Plant releases 4 kWh of Electrical Energy per Day.
4. Annual Solar Energy Generation Days: 300 Nos.

#### 12. References:

- For CO<sub>2</sub> Emissions: [www.tatapower.com](http://www.tatapower.com)
- For Energy Saved by Solar Thermal Water Heating System: [www.mahauda.com](http://www.mahauda.com)
- For Various Indoor Air Parameters: [www.ishrae.com](http://www.ishrae.com)
- For AQI & Water Quality Standards: [www.cpcb.com](http://www.cpcb.com)



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### ABBREVIATIONS

Kg	: Kilo Gram
MSEDCL	: Maharashtra State Distribution Company Limited
MT	: Metric Ton
kWh	: kilo-Watt Hour
LPD	: Liters per Day
LED	: Light Emitting Diode
AQI	: Air Quality Index
PM-2.5	: Particulate Matter of Size 2.5 Micron
PM-10	: Particulate Matter of Size 10 Micron
CPCB	: Central Pollution Control Board
ISHRAE	: The Indian Society of Heating & Refrigerating & Air Conditioning Engineers



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## CHAPTER-I INTRODUCTION

### 1.1 Important Definitions:

#### 1.1.1 Environment: Definition as per environment Protection Act: 1986

Environment includes water, air and land and the inter-relationship which exists among and between Water, Air, Land and Human beings, other living creatures, plants microorganism and property

#### 1.1.2. Environmental Audit: Definition:

An audit which aims at verification and validation to ensure that various environmental laws are complied with and adequate care has been taken towards environmental protection and preservation

According to UNEP, 1990, 'Environmental audit can be defined as a management tool comprising systematic, documented and periodic evaluation of how well environmental organization management and equipment are performing with an aim of helping to regularize the environment

1.1.3. Environmental Pollutant: means any solid, liquid and gaseous substance present in the concentration as may be, or tend to be, injurious to Environment.

#### 1.1.4. Relevant Environmental Laws in India: Table No-1:

1927	The Indian Forest Act
1972	The Wildlife Protection Act
1974	The Water (Prevention and Control of Pollution) Act
1977	The Water (Prevention & Control of Pollution) Cess Act
1980	The Forest (Conservation) Act
1981	The Air (Prevention and Control of Pollution) Act
1986	The Environment Protection Act
1991	The Public Liability Insurance Act
2002	The Biological Diversity Act
2010	The National Green Tribunal Act

#### 1.1.5. Some Important Environmental Rules in India: Table No-2:

1989	Hazardous Waste (Management and Handling) Rules
1989	Manufacture, Storage and Import of Hazardous Chemical Rules
2000	Municipal Solid Waste (Management and Handling) Rules
1998	The Biomedical Waste (Management and Handling) Rules
1999	The Environment (Siting for Industrial Projects) Rules
2000	Noise Pollution (Regulation and Control) Rules
2000	Ozone Depleting Substances (Regulation and Control) Rules
2011	E-waste (Management and Handling) Rules



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2011	National Green Tribunal (Practices and Procedure) Rules
2011	Plastic Waste (Management and Handling) Rules

**1.1.6 National Environmental Plans & Policy Documents: Table No-3:**


1.	National Forest Policy, 1988
2.	National Water Policy, 2002
3.	National Environment Policy or NEP (2006)
4.	National Conservation Strategy and Policy Statement on Environment and Development, 1992
5.	Policy Statement for Abatement of Pollution (1992)
6.	National Action Plan on Climate Change
7.	Vision Statement on Environment and Human Health
8.	Technology Vision 2030 (The Energy Research Institute)
9.	Addressing Energy Security and Climate Change (MoEF and Bureau of Energy Efficiency)
10.	The Road to Copenhagen; India's Position on Climate Change Issues (MoEF)

**1.2 Objectives:**

1. To study Resource Consumption & CO2 Emissions
2. To Study CO<sub>2</sub> Emission Reduction
3. To study Indoor Air Quality Parameters
4. To study Indoor Comfort Condition Parameters
5. To Study of Waste Management
6. To Study of Rain Water Harvesting
7. To Study of Sustainable Initiatives

**1.3 General Details of College: Table No 4:**

No	Head	Particulars
1	Name of Institution	Progressive Education Society's Modern College of Pharmacy
2	Address	Nigdi, Pune-411044
3	Year of Establishment	1998
4	Affiliation	Savitribai Phule Pune University

  
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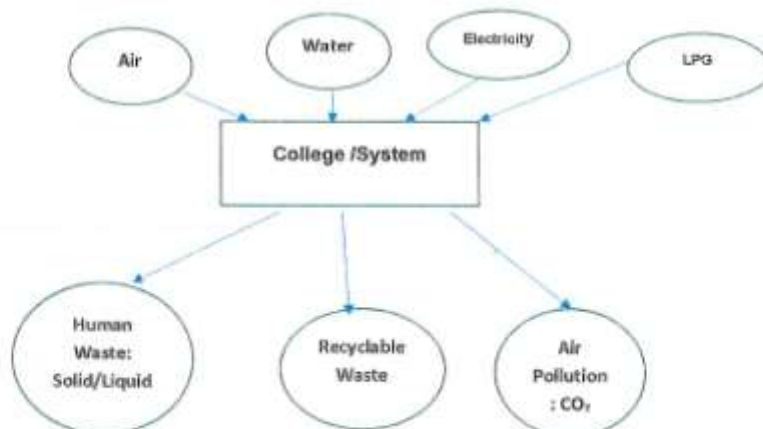
## CHAPTER-II STUDY OF CONSUMPTION OF RECOURCES & CO<sub>2</sub> EMISSION

The institute consumes following basic/derived Resources:

1. Air
2. Water
3. Electrical Energy

We try to draw a schematic diagram for the College System & Environment as under.

Chart No 1: Representation of College as System & Study of Resources & Waste



Now we compute the Generation of CO<sub>2</sub> on account of consumption of Electrical Energy.

The basis of Calculation for CO<sub>2</sub> emissions due to LPG & Electrical Energy are as under

- 1 kWh of Electrical Energy releases 0.9 Kg of CO<sub>2</sub> into atmosphere

Table No 5: Study of Consumption of Electrical Energy, LPG & CO<sub>2</sub> Emissions: 20-21:

No	Month	Energy Purchased, kWh	LPG Consumed, Kg	CO <sub>2</sub> Emissions, MT
1	Jul-20	4635	8	4.19
2	Aug-20	5180	10	4.69
	Sep-20	5220	7	4.72
	Oct-20	4992	6	4.51
	Nov-20	4509	10	4.08



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6	Dec-20	4655	12	4.22
7	Jan-21	4448	14	4.04
8	Feb-21	4956	5	4.47
9	Mar-21	3906	2	3.52
10	Apr-21	4872	4	4.40
11	May-21	5000	8	4.52
12	Jun-21	5233	14	4.75
13	Total	57606	100	52.11
14	Maximum	5233	14	4.75
15	Minimum	3906	2	3.52
16	Average	8862.46	15.38	8.02

Chart No 2: Month wise CO<sub>2</sub> Emissions:

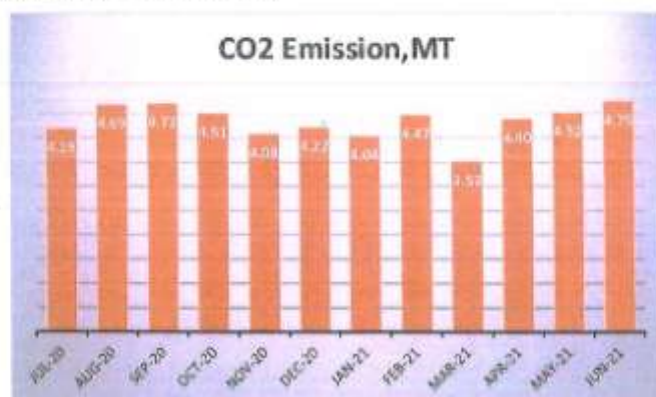


Table No 6: Important Parameters:

No	Parameter/ Value	Energy Purchased, kWh	LPG Consumed, Kg	CO <sub>2</sub> Emissions, MT
1	Total	57606	100	52.11
2	Maximum	5233	14	4.75
3	Minimum	3906	2	3.52
4	Average	8862.46	15.38	8.02



*[Signature]*

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### CHAPTER III STUDY OF CO<sub>2</sub> EMISSION REDUCTION

The College has installed Roof Top Solar PV Plant of Capacity 10 kWp.

In the following Table, we compute the Annual Reduction in CO<sub>2</sub> Emissions due to installation of Roof Top Solar PV Plant.

Table No 7: Computation of Annual Reduction in CO<sub>2</sub> Emissions:

No	Particulars	Value	Unit
1	Installed Capacity of Roof Top Solar PV Plant Capacity	10	kWp
2	Energy Generated in per kWp	4	4 kWh/kWp
3	Annual Solar Energy generation Days	300	Nos
4	Energy Generated in the Year: 20-21	12000	kWh
5	1 kWh of Electrical Energy saves	0.9	Kg/kWh
6	Qty of CO <sub>2</sub> Saved by Solar PV Plant = (4)*(5) /1000	10.8	MT of CO <sub>2</sub>

Photograph of Roof Top Solar PV Plant:



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## CHAPTER IV STUDY OF INDOOR AIR QUALITY

### 4.1 Importance of Air Quality:

**Air:** The common name given to the atmospheric gases used in breathing and photosynthesis.

By volume, Dry Air contains 78.09% Nitrogen, 20.95% Oxygen, 0.93% Argon, 0.039% carbon dioxide, and small amounts of other gases.

On average, a person inhales about 14,000 liters of air every day. Therefore, poor air quality may affect the quality of life now and for future generations by affecting the health, the environment, the economy and the city's livability.

Rapid urbanization and industrialization has added other elements/compounds to the pure air and thus caused the increase in pollution. In order to prevent, control and abate air pollution, the Air (Prevention and Control of Pollution) Act was enacted in 1981.

Air quality is a measure of the suitability of air for breathing by people, plants and animals.

According to Section 2(b) of Air (Prevention and control of pollution) Act, 1981 'air pollution' has been defined as 'the presence in the atmosphere of any air pollutant.'

### 4.2 Air Quality Index:

An Air Quality Index (AQI) is a number used by government agencies to measure the air pollution levels and communicate it to the population. As the AQI increases, it means that a large percentage of the population will experience severe adverse health effects. The measurement of the AQI requires an air monitor and an air pollutant concentration over a specified averaging period.

We present herewith following important Parameters.

1. AQI- Air Quality Index
2. PM-2.5- Particulate Matter of Size 2.5 micron
3. PM-10- Particulate Matter of Size 10 micron

Table No 8: Indoor Air Quality Parameters:

No	Location	AQI	PM2.5	PM10
	Ground Floor			
1	Entrance Lobby	155	86	92
	Stilt Floor			
1	Dept Of Pharmaceutics	183	85	93
2	Pharmaceutics Lab	140	78	90
3	Faculty Room	173	81	90
4	Pharmaceutical Analysis Lab	123	64	82
5	HOD Pharmaceutical chemistry	186	86	92



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	First Floor			
1	Class Room-II	110	63	79
2	Class Room-IV	150	69	82
3	Tutorial room	120	68	85
4	Tutorial room	125	72	82
5	Exam Section	146	70	82
	Second floor			
1	Administrative Office	123	66	80
2	Pantry	113	66	80
3	Board room	112	68	87
4	Principal Cabin	110	67	88
5	Lobby	125	68	79
6	Pharmacognosy Lab	120	69	82
	Third Floor			
1	Dept Of Pharmacology Faculty	145	70	82
2	Pharmacology Research Lab-I	138	68	80
3	Neuropharmacology Lab	132	76	87
4	Dept Of Pharmaceutical quality assurance	112	67	88
5	Tutorial Room PG-III	125	69	79
6	Tutorial Room PG-IV	122	68	82
	Maximum	186	86	93
	Minimum	110	63	79



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## CHAPTER V STUDY OF INDOOR COMFORT CONDITION PARAMETERS

In this Chapter, we present the various Indoor Comfort Parameters measured during the Audit.  
The Parameters include:

1. Temperature
2. Humidity
3. Lux Level
4. Noise Level.

Table No 9: Study of Indoor Comfort Condition Parameters:

No	Location	Temperature, °C	Humidity, %	Lux Level	Noise Level, dB
	<b>Ground Floor</b>				
1	Entrance Lobby	29	40	168	36
	<b>Stilt Floor</b>				
1	Dept Of Pharmaceutics	28.8	41	202	41
2	Pharmaceutics Lab	28.9	41	130	56
3	Faculty Room	28.9	41	136	42.8
4	Pharmaceutical Analysis Lab	29	40	123	41
5	HOD Pharmaceutical chemistry	29.1	41	126	42.6
	<b>First Floor</b>				
1	Class Room-II	28.8	40	186	49
2	Class Room-IV	28.9	41	156	43
3	Tutorial room	29	40	171	42
4	Tutorial room	29.1	41	170	42.1
5	Exam Section	29.1	41	270	46
	<b>Second floor</b>				
1	Administrative Office	29	40	263	53.6
2	Pantry	29.1	41	238	42.1
3	Board room	28.9	40	258	56.9
4	Principal Cabin	29	41	137	71
5	Lobby	29.2	41	142	58.4
6	Pharmacognosy Lab	29.2	40	159	56.3
	<b>Third Floor</b>				
	Dept Of Pharmacology Faculty	29.1	40	159	49.3



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2	Pharmacology Research Lab-I	29	40	98	40
3	Neuropharmacology Lab	29	41	114	56
4	Dept Of Pharmaceutical quality assurance	29.1	40	152	41.3
5	Tutorial Room PG-III	29	40	115	56
6	Tutorial Room PG-IV	29	40	157	54
	Maximum	29.2	41	270	71
	Minimum	28.8	40	98	36



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## CHAPTER VI STUDY OF WASTE MANAGEMENT

### 6.1 Solid Waste Management:

#### 6.1.1 Segregation of Waste at Source:

The Waste is segregated at source and the recyclable waste, like paper waste is handed over to authorized waste collecting agent for further recycling.

Photograph of Waste Collection Bins:



### 6.2 Organic Waste Management:

It is recommended to install Bio Composting Unit to convert the Bio degradable Waste into Bio compost, which can be used in the internal garden.

### 6.3 E-Waste Management:

The E-Waste is disposed of through Authorized E-Waste collecting agency.

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## CHAPTER-VII STUDY OF RAIN WATER HARVESTING

The College has implemented the Rain Water Harvesting Project. The College has installed Pipes from the terrace and the Rain water falling on the terrace is gathered and is used to recharge the bore well.

Photograph of Rain water Harvesting Pipe:



Photograph of Rain water Harvesting Recharging Well Section:



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## CHAPTER-VIII STUDY OF ENVIRONMENT FRIENDLY INITIATIVES

### 8.1 Internal Tree Plantation:

The College has well maintained landscaped garden in the campus.

Photograph of Tree plantation:



### 8.2 Sanitary Waste Incinerator:

The College has installed Sanitary Waste Incinerator, for disposal of Sanitary Waste

Photograph of Sanitary Waste Incinerator:



*[Signature]*

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**8.3 Creation of Awareness about Energy Conservation:**

The College has displayed posters emphasizing on importance of Energy Conservation.

**Photograph of Poster on Energy Conservation:**



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**ANNEXURE-I:  
VARIOUS AIR QUALITY, WATER QUALITY, NOISE & INDOOR  
COMFORT STANDARDS:**

**1. Category Wise Air Quality Index Values & Concentration of PM 2.5 & PM10:**

No	Category	AQI Value	Concentration Range, PM 2.5	Concentration Range, PM 10
1	Good	0 to 50	0 to 30	0 to 50
2	Satisfactory	51 to 100	31 to 60	51 to 100
3	Moderately Polluted	101 to 200	61 to 90	101 to 250
4	Poor	201 to 300	91 to 120	251 to 350
5	Very Poor	301 to 400	121 to 250	351 to 430
6	Severe	401 to 500	250 +	430 +

**2. Recommended Water Quality Standards:**

No	Designated Best Use	Criteria
1	Drinking Water Source without conventional Treatment but after disinfection	pH between 6.5 to 8.5 Dissolved Oxygen 6 mg/l or more
2	Drinking water source after conventional treatment and disinfection	pH between 6 to 9 Dissolved Oxygen 4 mg/l or more
3	Outdoor Bathing (Organized)	pH between 6.5 to 8.5 Dissolved Oxygen 5 mg/l or more
4	Controlled Waste Disposal	pH between 6 to 8.5



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Environmental Audit Report: Progressive Education Society's Modern College of Pharmacy, Nigdi: 2020-21

**3. Recommended Noise Level Standards:**

No	Location	Noise Level dB
1	Auditoriums	20-25
2	Outdoor Playground	55
3	Occupied Class Room	40-45
4	Un occupied Class Room	35
5	Apartment, Homes	35-40
6	Offices	45-50
7	Libraries	35-40
8	Restaurants	50-55

**4. Thermal Comfort Conditions: For Non-conditioned Buildings:**

No	Parameter	Value
1	Temperature	Less Than 33°C
2	Humidity	Less Than 70%



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**GREEN AUDIT REPORT**  
of  
**Progressive Education Society's  
Modern College of Pharmacy,  
Sector 21, Yamuna Nagar, Nigdi, Pune 411 044**



Year: 2020-21

**Principal**

P. E. S. Modern College of Pharmacy  
Sector No.21, Yamunanagar, Nigdi,  
Pune - 411 044.

Prepared by:

**Enrich Consultants**

Yashashree, 26, Nirmal Bag Society,  
Near Muktangan English School, Parvati, Pune 411009  
Phone: 09890444795 Email: [enrichcons@gmail.com](mailto:enrichcons@gmail.com)





Green Audit Report: Progressive Education Society's Modern College of Pharmacy, Nigdi: 2020-21

**MAHARASHTRA ENERGY DEVELOPMENT AGENCY**

AN ISO 9001:2015 REG. NO. PD 01/0462



**Maharashtra Energy Development Agency**

(Government of Maharashtra Institution)

Aundh Road, Opposite Spicer College Road, Near Commissionerate of Animal Husbandary,

Aundh, Pune, Maharashtra 411067

Ph No: 020-35000450

Email: [eeo@maharaja.com](mailto:eeo@maharaja.com), Web: [www.maharaja.com](http://www.maharaja.com)

ECN/2021-22/CR-14/1377

22<sup>nd</sup> April, 2021

**CERTIFICATE OF REGISTRATION  
FOR CLASS 'A'**

We hereby certify that, the firm having following particulars is registered with **MAHARASHTRA ENERGY DEVELOPMENT AGENCY (MEDA)** under given category as "Energy Planner & Energy Auditor" in Maharashtra for Energy Conservation Programme of MEDA.

**Name and Address of the firm :** M/s Enrich Consultants  
Yashwantrao, Plot No. 26, Nirmai Bag Society,  
Near Muktaganj English School, Parvati,  
Pune - 411009.

**Registration Category :** Empowered Consultant for Energy Conservation  
Programme for Class 'A'

**Registration Number :** MEDA/ECN/2021-22/Class A/EA-03

- Energy Conservation Programme intends to identify areas where wasteful use of energy occurs and to evaluate the scope for Energy Conservation and take concrete steps to achieve the evaluated energy savings.
- MEDA reserves the right to visit at any time without giving prior information to verify quarterly activities performed by the firm and canceling the registration, if the information is found incorrect.
- This empowerment is valid till 21<sup>st</sup> April, 2023 from the date of registration, to carry out energy audits under the Energy Conservation Programme.
- The Director General, MEDA reserves the right to cancel the registration at any time without assigning any reasons thereof.



  
General Manager (EC)

**Principal**

**P. E. S. Modern College of Pharmacy**

Enrich Consultants Pvt. Ltd.  
Sector No. 21, Yamunanagar, Nigdi,  
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Green Audit Report: Progressive Education Society's Modern College of Pharmacy, Nigdi : 2020-21

## Enrich Consultants

Yashashree, 26, Nirmal Bag Society,  
Near Mukhtangan English School, Parvati, Pune 411 009  
Tel: 09890444795 Email: [enrichcons@gmail.com](mailto:enrichcons@gmail.com)

Ref: EC/MCOP/20-21/02

Date: 01/9/2021

### CERTIFICATE

This is to certify that we have conducted Green Audit at Progressive Education Society's Modern College of Pharmacy, Nigdi, Pune, in the Academic year 2020-21.

The College has adopted following Green Initiatives:

- Usage of Energy Efficient LED Light Fitting
- Usage of BEE STAR Rated Energy Efficient Equipment
- Maximum Usage of Day Lighting
- Installation of Roof Top Solar PV Plant of Capacity 10 kWp
- Provision of Separate bins for Dry & Wet Waste
- Maintenance of good Internal Road
- Tree Plantation in the campus
- Implementation of Rain Water Harvesting Project
- Provision of Ramp for Divyangajan
- Provision of Sanitary Waste Incinerator

We appreciate the support of Management, involvement of faculty members and students in the process of Energy Conservation & making the campus Green.

For Enrich Consultants,

*A Y Mehendale*

A Y Mehendale,  
Certified Energy Auditor  
EA-8192



*[Signature]*

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6	Study of Rain water Harvesting	16
7	Study of Green & Sustainable Practices	17
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Green Audit Report: Progressive Education Society's Modern College of Pharmacy, Nigdi: 2020-21

### ACKNOWLEDGEMENT

We Enrich Consultants, Pune, express our sincere gratitude to the management of Progressive Education Society's Modern College of Pharmacy, Nigdi Pune 411044, for awarding us the assignment of Green Audit of their Campus for the Academic Year: 20-21.

We are thankful to all the Staff members for helping us during the field study.

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Green Audit Report: Progressive Education Society's Modern College of Pharmacy, Nigdi: 2020-21

### EXECUTIVE SUMMARY

1. Progressive Education Society's Modern College of Pharmacy, Nigdi consumes Energy in the form of Electrical Energy and LPG used for various Electrical Equipment, office & other facilities.

#### 2. Present Energy Consumption & CO<sub>2</sub> Emissions:

No	Parameter/ Value	Energy Purchased, kWh	LPG Consumed, Kg	CO <sub>2</sub> Emissions, MT
1	Total	57606	100	52.11
2	Maximum	5233	14	4.75
3	Minimum	3906	2	3.52
4	Average	8862.46	15.38	8.02

#### 3. Various initiatives taken for Energy Conservation:

- Usage of Energy Efficient BEE STAR Rated Equipment
- Usage of Energy Efficient LED Lighting
- Maximum Usage of Day Lighting
- Installation of Roof Top Solar PV Plant of Capacity 10 kWp.

#### 4. Usage of Renewable Energy & CO<sub>2</sub> Emission Reduction:

- The College has installed Roof Top Solar PV Plant of Capacity 10 kWp.
- The Electrical Energy generated in 20-21 is 12000 kWh.
- Reduction in CO<sub>2</sub> Emissions in 2020-21 works out to be 10.8 MT.

#### 5.1 Solid Waste Management:

##### 5.1.1 Segregation of Waste at Source:

The Waste is segregated at source and the recyclable waste, like paper, plastic waste is handed over to Authorized waste collecting agent for further recycling.

##### 5.1.2 Organic Waste Management:

It is recommended to install Bio Composting Unit to convert the Bio degradable Waste into Bio compost, which can be used in the internal garden.

#### 5.2 E-Waste Management:

The E-Waste is disposed of through Authorized E-Waste collecting agency.

#### 6. Rain Water Harvesting:

The College has installed the Rainwater harvesting project, the rain water falling on the terrace is collected and is used for recharging the bore well.

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Green Audit Report: Progressive Education Society's Modern College of Pharmacy, Nigdi: 2020-21

**7. Green & Sustainable Initiatives**

- Maintenance of good Internal Road
- Maintenance of Internal Garden
- Provision of Ramp for Divyangajan
- Provision of Sanitary Waste Incinerator
- Medicinal Plant Garden in the college premises
- Display of Posters on Resource Conservation

**8. Notes & Assumptions:**

1. 1 kWh of Electrical Energy releases 0.9 Kg of CO<sub>2</sub> into atmosphere
2. 1 Kg of LPG releases 2.68 Kg of CO<sub>2</sub> into atmosphere
3. 1 kWp Roof Top Solar PV Plant releases 4 kWh of Electrical Energy per Day.
4. Annual Solar Energy Generation Days: 300 Nos.

**9. References:**

- For CO<sub>2</sub> Emissions: [www.tatapower.com](http://www.tatapower.com)
- For Roof Top Solar Energy generation: [www.solarrooftop.gov.in](http://www.solarrooftop.gov.in)

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Green Audit Report: Progressive Education Society's Modern College of Pharmacy, Nigdi: 2020-21

#### ABBREVIATIONS

BEE	Bureau of Energy Efficiency
kWh	Kilo Watt Hour
LPD	Liters Per Day
Kg	Kilo Gram
MT	Metric Ton
CO <sub>2</sub>	Carbon Di Oxide
Qty	Quantity

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Green Audit Report: Progressive Education Society's Modern College of Pharmacy, Nigdi: 2020-21

## CHAPTER-I INTRODUCTION

### 1.1 Objectives:

1. To study present Energy Consumption
2. To Study CO<sub>2</sub> emissions
3. To study usage of Renewable Energy
4. Study of Waste Management
5. Study of Rain Water Harvesting
6. Study of Green & Sustainable Practices

### 1.2 General Details of College: Table No 1:

No	Head	Particulars
1	Name of Institution	Progressive Education Society's Modern College of Pharmacy
2	Address	Sector 21, Yamuna Nagar, Nigdi 411 044
3	Year of Establishment	1998
4	Affiliation	Savitribai Phule Pune University

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## CHAPTER-II STUDY OF PRESENT ENERGY CONSUMPTION

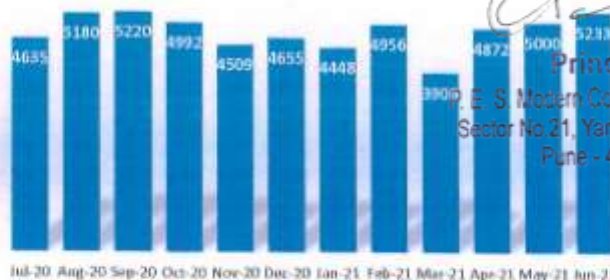
In this chapter, we present the analysis of Electrical Energy & LPG Consumption.

Table No 2: Electrical Energy & LPG Consumption Analysis- 2020-21:

No	Month	Energy Purchased, kWh	LPG Consumed, Kg
1	Jul-20	4635	8
2	Aug-20	5180	10
3	Sep-20	5220	7
4	Oct-20	4992	6
5	Nov-20	4509	10
6	Dec-20	4655	12
7	Jan-21	4448	14
8	Feb-21	4956	5
9	Mar-21	3906	2
10	Apr-21	4872	4
11	May-21	5000	8
12	Jun-21	5233	14
13	Total	57606	100
14	Maximum	5233	14
15	Minimum	3906	2
16	Average	8862.46	15.38

Chart No 1: Variation in Monthly Energy Consumption:

Electrical Energy Purchased, kWh



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Chart No 2: Variation in Variation in Monthly LPG Consumption:



Table No 3: Variation in Important Parameters:

No	Parameter/ Value	Energy Purchased, kWh	LPG Consumed, Kg
1	Total	57806	100
2	Maximum	5233	14
3	Minimum	3906	2
4	Average	8862.46	15.38

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### CHAPTER III STUDY OF CARBON FOOT PRINTING

A Carbon Foot print is defined as the Total Greenhouse Gas emissions, emitted due to various activities.

In this we compute the emissions of Carbon-Di-Oxide, by usage of the various forms of Energy used by the College for performing its day to day activities

The College uses Electrical Energy and LPG as the Energy Source.

Basis for computation of CO<sub>2</sub> Emissions:

- 1 kWh of Electrical Energy releases 0.9 Kg of CO<sub>2</sub> into atmosphere
- 1 Kg of LPG releases 2.68 Kg of CO<sub>2</sub> into atmosphere

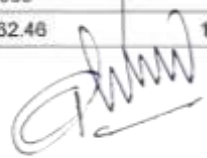
Based on the above Data we compute the CO<sub>2</sub> emissions which are being released in to the atmosphere by the College due to its Day to Day operations

Table No 4: Month wise CO<sub>2</sub> Emissions:

No	Month	Energy Purchased, kWh	LPG Consumed, Kg	CO <sub>2</sub> Emissions, MT
1	Jul-20	4635	8	4.19
2	Aug-20	5180	10	4.69
3	Sep-20	5220	7	4.72
4	Oct-20	4992	6	4.51
5	Nov-20	4509	10	4.08
6	Dec-20	4655	12	4.22
7	Jan-21	4448	14	4.04
8	Feb-21	4956	5	4.47
9	Mar-21	3906	2	3.52
10	Apr-21	4872	4	4.40
11	May-21	5000	8	4.52
12	Jun-21	5233	14	4.75
13	Total	57606	100	52.11
14	Maximum	5233	14	4.75
15	Minimum	3906	2	3.52
16	Average	8862.46	15.38	8.02



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Chart No 3: Month wise CO<sub>2</sub> Emissions:

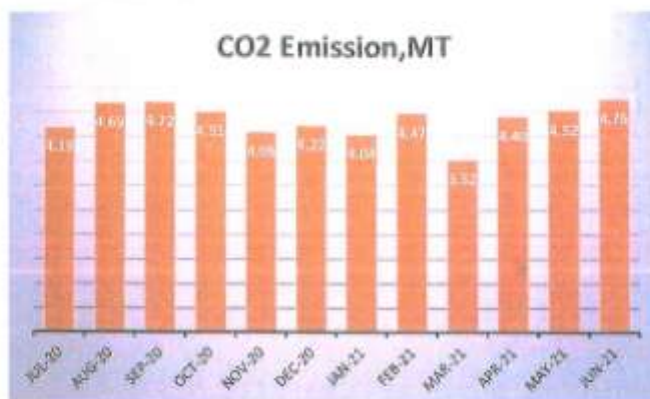


Table No 5: Important Parameters:

No	Parameter/ Value	Energy Purchased, kWh	LPG Consumed, Kg	CO <sub>2</sub> Emissions, MT
1	Total	57606	100	52.11
2	Maximum	5233	14	4.75
3	Minimum	3906	2	3.52
4	Average	8862.46	15.38	8.02



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#### CHAPTER IV STUDY OF USAGE OF RENEWABLE ENERGY

The College has installed Roof Top Solar PV Plant of Capacity 10 kWp.

In the following Table, we compute the Annual Reduction in CO<sub>2</sub> Emissions due to installation of Roof Top Solar PV Plant.

Table No 6: Computation of Annual Reduction in CO<sub>2</sub> Emissions:

No	Particulars	Value	Unit
1	Installed Capacity of Roof Top Solar PV Plant Capacity	10	kWp
2	Energy Generated in per kWp	4	4 kWh/kWp
3	Annual Solar Energy generation Days	300	Nos
4	Energy Generated in the Year: 20-21	12000	kWh
5	1 kWh of Electrical Energy saves	0.9	Kg/kWh
6	Qty of CO <sub>2</sub> Saved by Solar PV Plant = (4)*(5) /1000	10.8	MT of CO <sub>2</sub>

Photograph of Roof Top Solar PV Plant:



*[Signature]*

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## CHAPTER V STUDY OF WASTE MANAGEMENT

### 5.1 Solid Waste Management:

#### 5.1.1 Segregation of Waste at Source:

The Waste is segregated at source and the recyclable waste, like paper waste is handed over to authorized waste collecting agent for further recycling.

#### Photograph of Waste Collection Bins:



### 5.2 Organic Waste Management:

It is recommended to install Bio Composting Unit to convert the Bio degradable Waste into Bio compost, which can be used in the internal garden.

### 5.3 E-Waste Management:

The E-Waste is disposed of through Authorized E-Waste collecting agency.



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## CHAPTER-VI STUDY OF RAIN WATER HARVESTING

The College has implemented the Rain Water Harvesting Project. The College has installed Pipes from the terrace and the Rain water falling on the terrace is gathered and is used to recharge the bore well.

Photograph of Rain water Harvesting Pipe:



Photograph of Rain water Harvesting Recharging Well Section:



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Green Audit Report: Progressive Education Society's Modern College of Pharmacy, Nigdi: 2020-21

## CHAPTER-VII STUDY OF GREEN & SUSTAINABLE PRACTICES

### 7.1 Pedestrian Friendly Roads:

The College has well maintained internal road to facilitate the easy movement of the students within the campus.

Photograph of Internal Road:



### 7.2 Internal Tree Plantation:

The College has well maintained landscaped garden in the campus.

Photograph of Tree plantation:



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**7.3 Provision of Ramp:**

For easy movement of Divyangajan, the College has made provision of Ramp.

**Photograph of Ramp:**



**7.4 Creation of Awareness about Energy Conservation:**

The College has displayed posters emphasizing on importance of Energy Conservation.

**Photograph of Poster on Energy Conservation:**



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**7.5 Sanitary Waste Incinerator:**

The College has installed Sanitary Waste Incinerator, for disposal of Sanitary Waste

Photograph of Sanitary Waste Incinerator:



Pimpri-Chinchwad, Maharashtra 411 044  
47, Kounteya Housing Society, Yamuna  
Nagar, Nigdi, Pimpri-Chinchwad,  
Maharashtra 411 044, India  
Lat:18.6635668 Long:73.7819758

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**ANNEXURE-1:  
DETAILS OF TREES & PLANTS:**

**List of Trees:**

No	Common Name Of Tree	Qty
1	Palm	130
2	Audumbar	2
3	Ficus	10
4	Pimpal	1
5	Palas	1
6	Ashoka	2
7	Sonchampa	2
8	Christmas	3
9	Mango	1
10	Chikoo	1
11	Rubber	1
12	Umbrell Palm	5
13	Ticoma	2
14	Papaya	1
15	Shevri	1
16	Tagar	1
17	Ixzora	4
18	Kadunim	3
19	Total	171

**List of Ornamental Plants:**

No	Common Name
1	Coleus
2	Drecena
3	Song Of India
4	Hibiscus
5	Gokarna
6	Cactus
7	Tulsi
8	Rose
9	Jai



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## List Of Medicinal Plants

S.No.	BotanicalName	S.No.	BotanicalName
1.	<i>Adhatodavasica</i>	29.	<i>Lawsonialanensis</i>
2.	<i>Aegle marmelos</i>	30.	<i>Magnolia champaca</i>
3.	<i>Aloe barbadensis</i>	31.	<i>Mangifera indica</i>
4.	<i>Andrographis paniculata</i> Nees.	32.	<i>Mimosa pudica</i>
5.	<i>Annona reticulata</i> L.	33.	<i>Musa acuminata</i>
6.	<i>Asparagus racemosus</i> Wild.	34.	<i>Myristica fragrans</i>
7.	<i>Azadirachta indica</i>	35.	<i>Pimenta dioica</i>
8.	<i>Bergerakoenigii</i>	36.	<i>Piper betel</i>
9.	<i>Butea monosperma</i>	37.	<i>Piper longum</i>
10.	<i>Cassia angustifolia</i>	38.	<i>Piper nigrum</i>
11.	<i>Catharanthus roseus</i>	39.	<i>Pongamia pinnata</i>
12.	<i>Centella asiatica</i>	40.	<i>Pterocarpus santalum</i>
13.	<i>Chrysalidocarpus lutescens</i>	41.	<i>Ricinus communis</i>
14.	<i>Cinnamomum zeylanicum</i> Breyn.	42.	<i>Ruta graveolens</i>
15.	<i>Citrus limon</i>	43.	<i>Sapindus mukorossi</i>
16.	<i>Costus igneus</i>	44.	<i>Saraca asoca</i>
17.	<i>Curcuma amada</i>	45.	<i>Syzygium aromaticum</i>
18.	<i>Curcuma longa</i>	46.	<i>Syzygium cumini</i>
19.	<i>Cymbopogon citratus</i>	47.	<i>Tamarindus indica</i>
20.	<i>Elettaria cardamomum</i>	48.	<i>Terminalia arjuna</i>
21.	<i>Eucalyptus globules</i>	49.	<i>Terminalia bellirica</i>
22.	<i>Ficus glomerata</i>	50.	<i>Terminalia chebula</i>
23.	<i>Ficus racemosa</i>	51.	<i>Tinospora cordifolia</i>
24.	<i>Gymnema sylvestre</i>	52.	<i>Trachyspermum ammi</i>
25.	<i>Helicteres isora</i>	53.	<i>Vitex negundo</i> L.
26.	<i>Hemidesmus indicus</i>	54.	<i>Withania somnifera</i>
27.	<i>Hibiscus rosa-sinensis</i>	55.	<i>Eleocharis ganitrus</i>
28.	<i>Kalanchoe pinnata</i>	56.	<i>Cinamomum camphora</i>
29.	<i>Bryophyllum pinnatum</i>		



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QMS-ISO 9001:2015  
 EMS-ISO 14001:2015  
 Reg. No. R1918395

## Certificate

Division: PCMC Registered  
 Date: 11-12-2020

This is to certify that **PES'S MODERN COLLEGE OF PHARMACY(A00726)** is registered with us for Scientific Disposal of BMW generated at their Health Care Establishment from 01-04-2020 to 31-03-2021  
 Registration No: A00726


PESPL Code	Name & Address of Occupier	Category	No. Of Beds
ML000002	<b>DR. P. D. CHOUDHARI</b> <b>ML000002-PES'S MODERN COLLEGE OF PHARMACY(A00726)</b> <b>SEC. NO. 21, YAMUNA NAGAR, NIGDI, PUNE-411044</b>	Medical College Laboratory	0


As per The Biomedical Waste Management Rules, 2016 and MPCB norms, proper segregation & disposal of the same by delivering the waste to the CBWTF vehicle at designated point is the responsibility of individual generator.

Compliance as per MPCB rules as under be ensured from your end :-

1	Proper Segregation and Handling over the waste to us.
2	Waste sharps, needles, metals as per schedule I (Category White) of Biomedical Waste Management Rules 2016, to be handed in puncture-proof, leak-proof, tamper-proof container with white barcode.
3	Glass material and metallic body implants after disinfection by soaking washed glassware after cleaning with detergent and Sodium Hypochlorite treatment or through autoclaving or microwaving or hydroclaving as per schedule I Category (a) & (b) Blue of Biomedical Waste Management Rules, 2016 to be handed over in cardboard box with blue barcode.
4	Ensure Delivery of biomedical waste in Red bag, Yellow bag and white barcode container, blue barcode box to collection vehicle.
5	No untreated bio-medical waste should be kept stored a period of 48 hours.

We hereby certify that the **Bio Medical Waste** received at our end is disposed off as per the norms laid down by MPCB from time to time

For Passco Environmental Solutions Pvt. Ltd.  
  
 Authorized Signatory

  
 Principal  
**PES'S Modern College of Pharmacy**  
 Sector No 21, Yamunanagar, Nigdi,  
 Pune - 411 044

**PASSCO ENVIRONMENTAL SOLUTIONS PVT. LTD.**

**Operator Common Bio-Medical Waste Treatment Facility for P.M.C./P.C.M.C. Area**

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 P.M.C. Site Office : Karam Chetaniwadi, Chetaniwadi, Near to Nandu Hospital, Pune - 411 001.  
 P.C.M.C. Site Office : S. No. 172, 173, 174, Y.C.M. Hospital, Ground Floor, Sant Tukaram Nagar, Pimpri-411 015. Tel. : +91 20 2742 0295, 6733 2149  
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Progressive Education Society's  
**MODERN COLLEGE OF PHARMACY**

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'Best College Award' by Savitribai Phule Pune University



Approved by All India Council for Technical Education, New Delhi, Pharmacy Council of India, New Delhi,  
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Savitribai Phule Pune University, Pune & Approved under Section (2 (f) & 12 (B) of UGC Act, 1956

Sector No. 21, Yamunanagar, Nigdi, Pune - 411 044. (M.S.) Tel. : 020-27661314 / 15

E-mail : mcopnigdi44@gmail.com Website : www.mcop.org.in

Prof. Dr. P. D. Chaudhari  
M.Pharm., Ph.D.  
Principal

Prof. Dr. Gajanan R. Ekbote  
M.S., M.N.A.M.S.  
Chairman, Business Council  
P.E.Society, Pune

Ref :

Date :

# Environment and Sustainability

(Academic year 2019-20)



**P. E. Society's  
Modern College of Pharmacy, Nigdi, Pune-44**

**NSS REGULAR ACTIVITY REPORT 2019-20**

1.	Name of activity	Guinness World Records
2.	Date of activity	23.06.2019
3.	Time	7.00 am to 5.00 pm
4.	Total no students participate	100
5.	Occasion of activity	Nirmal wari
6.	Inauguration by	Maharashtra Chief Minister Devendra Fadnavis
7.	Place of activity	SPPU
8.	Objectives of activity	The Savitribai Phule Pune University (SPPU) Sunday attempted to create a Guinness World record by distributing 16,631 saplings of neem to volunteers of the National Service Scheme (NSS), linked to more than 350 colleges. The saplings are likely to be planted along the Pune-Pandharpur pilgrimage route taken by warkaris during Ashadhi Wari,
9.	Outcome of activity	Above said objective achieved and created Guinness World record by distributing 16,631 saplings of neem to volunteers of the National Service Scheme (NSS).
10.	Activity co-coordinator	Prof. Mr. A. S. Tapkir



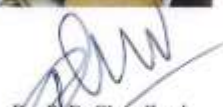


Photos of activity



  
Dr. A. S. Tapkir  
Program officer



  
Dr. P. D. Chaudhari  
Principal



P. E. Society's  
Modern College of Pharmacy, Nigdi, Pune-44

NSS REGULAR ACTIVITY REPORT 2019-20

1.	Name of activity	Swachha Wari-Swastha Wari-Nirmal Wari-Hareet Wari Abhiyan Vishva Hindu Parishad and MCOP jointly organized distribution of medicine camp
2.	Date of activity	22 June to 13 July 2019
3.	Time	8 am to 11 am
4.	Total no students participate	03
5.	Occasion of activity	Nirmal wari
6.	Inauguration by	Warkari
7.	Place of activity	Chinchwad
8.	Objectives of activity	To distribute the medicines Aware about health and hygiene
9.	Outcome of activity	Medicines are distributed
10.	Activity co-coordinator	Dr. A. S. Tapkir

Photos of activity










  
Dr. A. S. Tapkir  
Program officer




  
Dr. P. D. Chaudhari  
Principal

Principal  
P. E. S. Modern College of Pharmacy  
Sector No. 21, Yamanagar, Nigdi,  
Pune - 411 044.



  		
<p>P. E. Society's Modern College of Pharmacy, Nigdi, Pune-44</p>		
<p>NSS REGULAR ACTIVITY REPORT 2019-20</p>		
<p>P. E. Society's Modern College of Pharmacy, Nigdi, Pune-44</p>		
<p>NSS REGULAR ACTIVITY REPORT 2019-20</p>		
1.	Name of activity	Swachha Wari-Swastha Wari-Nirmal Wari-Hareet Wari Abhiyan Patravali Watap (distribution of dish prepared from plant leaf are used to serve food)
2.	Date of activity	24/06/2019
3.	Time	8am to 1pm
4.	Total no students participate	10
5.	Occasion of activity	Nirmal wari
6.	Inauguration by	Mr. Ruosaheb Kalokhe
7.	Place of activity	Dehugaon
8.	Objectives of activity	To keep city clean , avoid plastic and thermacol plates and promote to use patravali for lunch and dinner by pilgrims
9.	Outcome of activity	1 lakh patravali distributed in dehugaon so we avoid plastic and thermacol use and achive the goal of nirmal wari swatch wari
10.	Activity co-coordinator	Dr. A. S. Tapkir





Photos of activity





  
Dr. A. S. Tapkir  
Program officer



  
Dr. P. D. Chaudhari  
Principal

Principal  
P. E. S. Modern College of Pharmacy  
Sector No.21, Yamunanagar, Nigdi,  
Pune - 411 044.



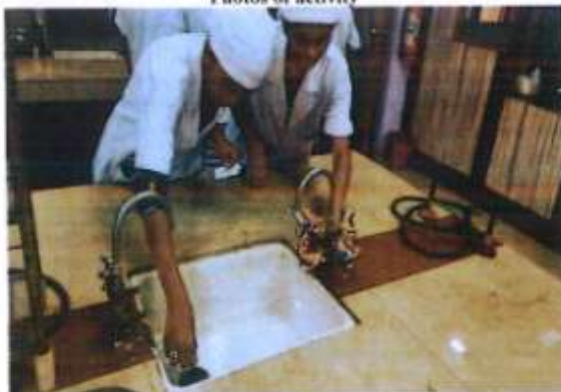


P. E. Society's  
Modern College of Pharmacy, Nigdi, Pune-44

NSS REGULAR ACTIVITY REPORT 2019-20


1.	Name of activity	Swachta Pakhawada
2.	Date of activity	01.08.2019 to 15.08.2019
3.	Time	10am to 05pm
4.	Total no students participate	100
5.	Occasion of activity	Swachta Pakhawada
6.	Inauguration by	Dr. P. D. Chaudhari, Principal, Modern College of Pharmacy, Nigdi, Pune.
7.	Place of activity	Modern College of Pharmacy, Nigdi, Pune.
8.	Objectives of activity	To clean labs, classrooms, common passage of college.
9.	Outcome of activity	To create the importance of cleanliness amongs the students
10.	Activity co-coordinator	Dr. A. S. Tapkir

Photos of activity











  
Dr. A. S. Tapkir  
Program officer



  
Dr. P. D. Chaudhari  
Principal



<div style="text-align: center;"></div> <p style="text-align: center;"><b>P. E. Society's</b> <b>Modern College of Pharmacy, Nigdi, Pune-44</b></p> <p style="text-align: center;"><b>NSS REGULAR ACTIVITY REPORT 2019-20</b></p>		
1.	Name of activity	Donation the Ganpati bappa idols: Instead of immersing Ganesh idols, families and mandals donated the idols to NSS unit of MCOP to prevent water pollution, this Swachh Bharat Abhiyan was conducted in collaboration with sanskar pratishthan chinchwad
2.	Date of activity	06.09.2019
3.	Time	5pm to 8 pm
4.	Total no students participate	20
5.	Occasion of activity	Ganpati visarjan
6.	Inauguration by	Dr. Mohan Gaikwad sanskar pratishthan chinchwad
7.	Place of activity	Morya Gosavi , Pawana Nadi Ghat, Chinchwad, Pune.
8.	Objectives of activity	To prevent water pollution, river pollution To keep environment clean and safe
9.	Outcome of activity	Ganesh idols not immersed in a river by citizen, hence the objectives are achieved. Some citizen immersed the idol in artificial tanks rather than river.
10.	Activity co-coordinator	Dr. A. S. Tapkir



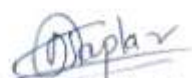




Photos of activity





  
Dr. A. S. Tapkir  
Program officer



  
Dr. P. D. Chaudhari  
Principal



P. E. Society's  
Modern College of Pharmacy, Nigdi, Pune-44

NSS REGULAR ACTIVITY REPORT 2019-20

1.	Name of activity	Tree Plantation
2.	Date of activity	09.09.2019
3.	Time	8.00 am 10.30 am
4.	Total no students participate	50
5.	Occasion of activity	---
6.	Inauguration by	Dr. P. D. Chaudhari, Principal, Modern College of Pharmacy, Nigdi, Pune.
7.	Place of activity	Modern College of Pharmacy, Nigdi, Pune.
8.	Aim of activity	Plantation
9.	Outcome of activity	Plantation was done successfully(Number of samplings planted:50)
10.	Activity co-coordinator	Prof. Mr. A. S. Tapkir

Photos of activity





*Dr. A. S. Tapkar*

Dr. A. S. Tapkar



*Principal*  
Dr. E. S. Chaudhari  
Principal  
Modern College of Pharmacy  
Sector No. 21, Yamunanagar, Nigdi,  
Pune - 411 044.





P. E. Society's  
Modern College of Pharmacy, Nigdi, Pune-44

NSS REGULAR ACTIVITY REPORT 2019-20

1.	Name of activity	Swachh bharat abhiyan Cleaning campaign Morya Gosavi mandir and Pawana river on occasion of Mahatma Gandhi Jayanti Celebration
2.	Date of activity	02.10.2019
3.	Time	7am to 10am
4.	Total no students participate	20
5.	Occasion of activity	Gandhi jayanti
6.	Inauguration by	NSS volunteers
7.	Place of activity	Morya Gosavi mandir parisar
8.	Objectives of activity	To prevent water pollution, river pollution To keep environment clean and safe
9.	Outcome of activity	River area is clean successfully, area was cleaned
10.	Activity co-coordinator	Dr. A. S. Tapkir

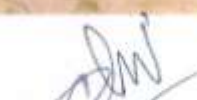
Photos of activity





  
Dr. A. S. Tapkir  
Program officer



  
Dr. P. D. Chandhari  
Principal



P. E. Society's  
Modern College of Pharmacy, Nigdi, Pune-44

NSS REGULAR ACTIVITY REPORT 2019-20

1.	Name of activity	Ek Bharat Shreshtha Bharat(Waghapur)
2.	Date of activity	08.02.2020
3.	Time	Residential camp
4.	Total no students participate	1
5.	Occasion of activity	Ek Bharat Shreshtha Bharat
6.	Inauguration by	S.P College, Pune
7.	Place of activity	A/P Waghapur, Pune
8.	Objectives of activity	<ul style="list-style-type: none"><li>• To promote the leadership skills of students.</li><li>• To promote the extracurricular activities in students for social service.</li></ul>
9.	Outcome of activity	<ul style="list-style-type: none"><li>• Volunteer actively participated in the camp.</li><li>• Through this the development of the skills of the volunteer has been occurred.</li></ul>
10.	Activity co-coordinator	Dr. A. S. Tapkir

Photos of activity





  
Dr. A. S. Tapkir  
Program officer



  
Dr. P. D. Chaudhari  
Principal

Principal  
P. E. S. Modern College of Pharmacy  
Sector No. 25, Yamunanagar, Nagpur  
Pune - 411 044.



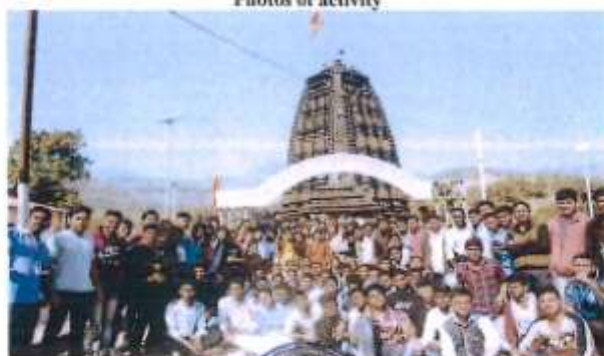


P. E. Society's  
Modern College of Pharmacy, Nigdi, Pune-44

NSS REGULAR ACTIVITY REPORT 2019-20

1.	Name of activity	"Swacha bharat Abhiyan", Ratangad, Kalsubai camp university level residential camp
2.	Date of activity	17.02.2019 to 23.02.2019
3.	Time	Residential camp
4.	Total no students participate	4
5.	Occasion of activity	-----
6.	Inauguration by	Dr. D.Y. Patil ACS College, Pimpri, Pune & Dr. D.Y. Patil ACS College, Akurdi, Pune.
7.	Place of activity	Ratanwadi, Kalsubai forest, Tq- Akole, Dist.- Ahmednagar.
8.	Objectives of activity	<ul style="list-style-type: none"><li>Swacha bharat Abhiyan</li><li>To create awareness amongst the students.</li></ul>
9.	Outcome of activity	<ul style="list-style-type: none"><li>The ratangad fort was cleaned by NSS volunteers.</li></ul>
10.	Activity co-coordinator	Dr. A. S. Tapkir

Photos of activity





  
Dr. A. S. Tapkir  
Program officer



  
Dr. P. D. Chaudhari  
Principal

Principal  
P. E. S. Modern College of Pharmacy  
Sector No 21, Yamunanagar, Nigdi,  
Pune - 411 004.

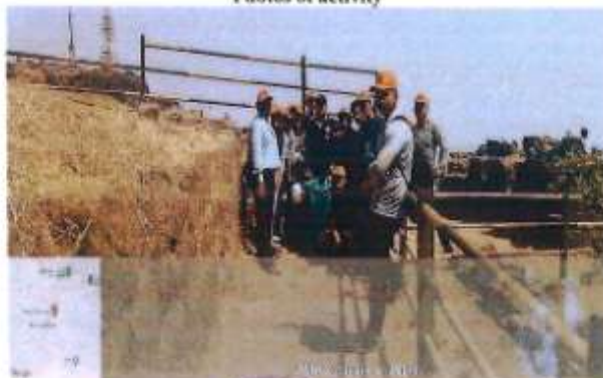


P. E. Society's  
Modern College of Pharmacy, Nigdi, Pune-44

**NSS REGULAR ACTIVITY REPORT 2019-20**

1.	Name of activity	Sinhgad Fort Cleaning Camp and conservation of fort
2.	Date of activity	23.02.2020
3.	Time	7 am to 5 pm
4.	Total no students participate	20
5.	Occasion of activity	Swatchh bharat abhyan, gadh sanvardhan
6.	Inauguration by	Dr. Umbhrani, VC of SPPU
7.	Place of activity	Sinhgad fort
8.	Objectives of activity	To clean the fort To make the people aware about cleaning of historical place.
9.	Outcome of activity	Sinhgad fort was clean
10.	Activity co-coordinator	Dr. A. S. Tapkir

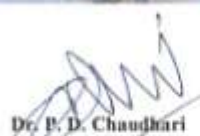
**Photos of activity**





  
Dr. A. S. Tapkir  
Program officer



  
Dr. P. D. Chaudhari  
Principal

Principal  
P. E. S. Modern College of Pharmacy  
Sector No.21, Yamunanagar, Nigdi,  
Pune - 411 044.





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Principal

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M.S, M.N.A.M.S.  
Chairman, Business Council  
P.E.Society, Pune

Ref :

Date :

# Environment and Sustainability

(Academic year 2018-19)



**P. E. Society's  
Modern College of Pharmacy, Nigdi, Pune-44**

**NSS REGULAR ACTIVITY REPORT 2018-2019**

1.	Name of activity	Tree Plantation
2.	Date of activity	07/08/2018
3.	Time	10AM -11AM
4.	Total no students participate	100
5.	Occasion of activity	NSS activity
6.	Inauguration by	Dr. Amit Tapkir
7.	Place of activity	Modern college of Pharmacy, Nigdi, Pune
8.	Objectives of activity	To make the students aware about the tree plantation.. To make the premises green.
9.	Outcome of activity	Students got idea how to do tree plantation and importance of tree plantation for our forest Eco system.
10.	Activity co-coordinator	Dr. Amit Tapkir

**Photos of activity**



**Dr. Amit Tapkir**  
NSS Program officer



**Dr. P. D. Chaudhari**  
**Principal**  
P. E. S. Modern College of Pharmacy  
Sector No.21, Yamunanagar, Nigdi,  
Pune - 411 044



**P. E. Society's  
Modern College of Pharmacy, Nigdi, Pune-44**

**NSS REGULAR ACTIVITY REPORT 2018-2019**

1.	Name of activity	State level camp "Nadi- Parikrama Shibir"
2.	Date of activity	6th to 9th February 2019
3.	Total no students participate	01
4.	Occasion of activity	Mula rivers geographical orientation and to view the adivasi. culture.
5.	Place of activity	Kalsubai- Harishchandra Forest.
6.	Objectives of activity	To clean the premises of Mula river. To make the students aware about the mula rivers geographical orientation and adivasi culture. To give contribution for swach ani swasth bharat abhiyan
7.	Outcome of activity	Students got idea regarding Geographical orientation of Mula river and lifestyle of adivasi.
8.	Activity co-coordinator	Dr. A. S. Tapkir



**Principal**


P. E. S. Modern College of Pharmacy  
Sector No.21, Yamunanagar, Nigdi,  
Pune - 411 044.






Photos of activity



  
Dr. A. S. Tapkir  
NSS Program officer



  
Dr. P. D. Chaudhari  
Principal  
P. E. S. Modern College of Pharmacy  
Sector No.21, Yamunanagar, Nigdi,  
Pune - 411 044





**P. E. Society's  
Modern College of Pharmacy, Nigdi, Pune-44**

**NSS REGULAR ACTIVITY REPORT 2018-2019**

1.	Name of activity	Save water save environment camp-wall paintings for giving message to save water and environment.
2.	Date of activity	12/03/2019
3.	Time	10AM-12PM
4.	Total no students participate	50
5.	Occasion of activity	NSS activity
6.	Inauguration by	Dr. Amit Tapkir
7.	Place of activity	Modern college of Pharmacy, Nigdi, Pune
8.	Objectives of activity	To increase awareness of students about the saving water and securing the environment.
9.	Outcome of activity	Student understood the role of each human being to save water and environment
10.	Activity co-coordinator	Dr. Amit Tapkir

**Photos of activity**



**Dr. Amit Tapkir**  
NSS Program officer



**Dr. P. D. Chaudhari**  
**Principal**  
P. E. S. Modern College of Pharmacy  
Sector No 21, Yamunanagar, Nigdi,  
Pune - 411 044.



P. E. Society's  
Modern College of Pharmacy, Nigdi, Pune-44

NSS REGULAR ACTIVITY REPORT 2018-2019

1.	Name of activity	Satyamev Jayate Water Cup - Paani Foundation - save water campaign
2.	Date of activity	25/04/2019
3.	Time	10:00 am to 5:00 pm
4.	Total no students participate	10
5.	Occasion of activity	Water cup competition
6.	Inauguration by	sarpanch
7.	Place of activity	Savergaon village Tal. sangamner
8.	Objectives of activity	Continuous Contour Trenches making training, Save water save environment campaign Watershed management Recharge ground water level
9.	Outcome of activity	CCT ware prepared Watershed management done This work will helps to recharge ground water level
10.	Activity co-coordinator	Dr. A. S. Tapkir

Photos of activity









**P. E. Society's  
Modern College of Pharmacy, Nigdi, Pune-44**

**NSS CAMP ACTIVITY REPORT 2018-2019**

1.	Name of activity	Gram swachata Abhiyan
2.	Date of activity	14/01/19
3.	Time	7.30 am to 12.00pm
4.	Total no students participate	50
5.	Occasion of activity	NSS camp
6.	Inauguration by	Dr. P. D. Chaudhari
7.	Place of activity	At post Shirgaon Tal. Mawal, Dist Pune. 1. All Road and Street 2. Schools 3. Colleges 4. Grampanchayat 5. Prarthanasthal 6. Cremation ground ( Shamashanbhumi) etc 7. River etc.
8.	Objectives of activity	To clean the premises of At post Shirgaon Tal. Mawal, Dist Pune. To make the students aware about the cleaning.
9.	Outcome of activity	Shirgaon Premises has been free from unwanted dusty materials and students got idea regarding importance of cleaning activity to keep good environment.
10.	Activity co-coordinator	Dr. Amit Tapkir








Photos of activity



  
**Dr. Amit Tapkir**  
NSS Program officer



  
**Dr. P. D. Chaudhari**  
**Principal**  
P. E. S. Modern College of Pharmacy  
Sector No.21, Yamunanagar, Nigdi,  
Pune - 411 044.



**P. E. Society's  
Modern College of Pharmacy, Nigdi, Pune-44**

**NSS CAMP ACTIVITY REPORT 2018-2019**

1.	Name of activity	Sessions on: 1. Plastic free India 2. Samarth Bharat Abhiyan 3. Saksham Yuva Abhiyan
2.	Date of activity	18/01/2019
3.	Time	8.00 to 11.00
4.	Total no students participate	50
5.	Occasion of activity	NSS Camp
6.	Inauguration by	Dr. A. S. Tapkir
7.	Place of activity	At post Shirgaon Tal. Mawal, Dist Pune
8.	Objectives of activity	To make the orphanage students aware about use of cloth bags instead of plastic bags and plastics drawbacks. To aware orphanage students for being responsible for development of nation. To aware orphanage students regarding the actual work and dedication required by young generation for ruler society development
9.	Outcome of activity	Orphanage students got idea regarding hazards effect of plastic on environment. Many orphanage students has been motivates for development of nation. Orphanage students realized the importance of hard work and dedication required for developing ruler society.
10.	Activity co-coordinator	Dr. A. S. Tapkir.





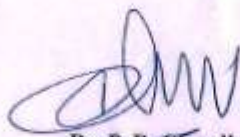


Photos of activity





  
Dr. A. S. Tapkir  
NSS Program officer



  
Dr. P. D. Chaudhari  
Principal  
P. E. S. Modern College of Pharmacy  
Sector No.21, Yamunanagar, Nigdi,  
Pune - 411 044.




**QMS-ISO-9001:2008**  
**EMS-ISO-14001:2004**  
 Reg. No. RI91-8395  
 Date: 20/06/2016


**PASSCO**

### CERTIFICATE

This is to certify that, **PES's Modern College of Pharmacy**  
**Dr. P. D. Choudhari**

**Address:** Sec. No. 21,  
 Yamuna Nagar,  
 Nigdi, Pune 411044

is registered with us for scientific disposal of B.M.W. generated at his/her  
 Health Care Establishment as **BIO RESEARCH CENTRE**

The Registration No is - **A00726/2016-19** and its valid till - **31/03/2019**

As per MPCB norms, proper segregation & disposal of the same by delivering the waste to the CBWTF vehicle at  
 designated point is the responsibility of individual (Generator).

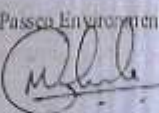
Compliance as per MPCB rules as under to be ensured from your end:-


1	Proper Segregation and Handing over the waste to us.
2	Waste sharps/Needles to be disinfected & Mutilated (Burning/Cutting) before Handing over to us
3	Glass material to be given separately after disinfection & breaking at your end.
4	Ensure Delivery of both Yellow & Red bags to collection vehicle.


**We hereby certify that the Bio Medical Waste received at our end is disposed off as per the norms laid down by MPCB from time to time.**

We are enclosing the statement of collection pertaining to your Health Care Establishment for the  
 Period from 01-05-2016 to 31-05-2016

For Passco Environmental Solutions Pvt. Ltd.

  
 Authorized Signatory



  
 Principal  
 P.D. Choudhari  
 Sec. No. 21, Yamuna Nagar, Nigdi,  
 Pune - 411 044

**PASSCO ENVIRONMENTAL SOLUTIONS PVT. LTD.**

**Operator Common Bio-Medical Waste Treatment Facility for P.M.C./P.C.M.C. Area**

Regd. Office : "Narayani" 34/4 Erandewadi, Behind Eken Pharmaceuticals, Pune-411 004, India, Telefax : +91 20-6602 4765, 2545 7098.  
 P.M.C. Site Office : Kalash Crematorium Compound, Next to Paldi Hospital, Pune - 411 001.  
 P.C.M.C. Site Office : A. No. 172, 173, 174, Y.C.M. Hospital, Ground Floor, Sant Tukaram Nagar, Pimpri-411 018, Tel. : +91 20 2742 0395, 0733 2149  
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