



Dr. Rafiq Zakaria Campus

Maulana Azad Educational Trust's

Y. B. CHAVAN COLLEGE OF PHARMACY

(B. Pharm, M. Pharm & Research Centre)

ISO 21001:2018 & ISO 14001:2015 CERTIFIED | NIRF-2022 ALL INDIA RANK 65TH

NAAC ACCREDITATION "A" GRADE WITH 3.23 CGPA SCORE

COURSE MODULE

Program Title	B. Pharmacy
Department	PHARMACEUTICS
Course Title	PHARMACEUTICS I

1. **NAME OF INSTITUTION** : Y. B. CHAVAN COLLEGE OF PHARMACY,
AURANGABAD
2. **AFFILIATED UNIVERSITY** : DR. BABASAHEB AMBEDKAR
MARATHWADA UNIVERSITY, AURANGABAD
3. **DEPARTMENT** : PHARMACOGNOSY
4. **PROGRAM TITLE** : B. PHARM-I Year

4.1. Program Outcomes (PO):

PO 01: Pharmacy Knowledge: Possess knowledge and comprehension of the core and basic knowledge associated with the profession of pharmacy, including biomedical sciences; pharmaceutical sciences; behavioral, social, and administrative pharmacy sciences; and manufacturing practices.

PO 02: Planning Abilities: Demonstrate effective planning abilities including time management, resource management, delegation skills and organizational skills. Develop and implement plans and organize work to meet deadlines.

PO 03: Problem analysis: Utilize the principles of scientific enquiry, thinking analytically, clearly and critically, while solving problems and making decisions during daily practice. Find, analyze, evaluate and apply information systematically and shall make defensible decisions.

PO 04: Modern tool usage: Learn, select, and apply appropriate methods and procedures, resources, and modern pharmacy-related computing tools with an understanding of the limitations.

PO 05: Leadership skills: Understand and consider the human reaction to change, motivation issues, leadership and team-building when planning changes required for fulfillment of practice, professional and societal responsibilities. Assume participatory roles as responsible citizens or leadership roles when appropriate to facilitate improvement in health and wellbeing.

PO 06: Professional Identity: Understand, analyze and communicate the value of their professional roles in society (e.g. health care professionals, promoters of health, educators, managers, employers, employees).

PO 07: Pharmaceutical Ethics: Honour personal values and apply ethical principles in professional and social contexts. Demonstrate behavior that recognizes cultural and personal variability in values, communication and lifestyles. Use ethical frameworks; apply ethical principles while making decisions and take responsibility for the outcomes associated with the decisions.

PO 08: Communication: Communicate effectively with the pharmacy community and with society at large, such as, being able to comprehend and write effective reports, make effective presentations and documentation, and give and receive clear instructions.

PO 09: The Pharmacist and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety and legal issues and the consequent responsibilities relevant to the professional pharmacy practice.

PO 10: Environment and sustainability: Understand the impact of the professional pharmacy solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO 11: Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change. Self-assess and use feedback effectively from others to identify learning needs and to satisfy these needs on an ongoing basis.

5. COURSE SPECIFICATION :

5.1.Course Identification and General Information

a. Course Title:	PHARMACOGNOSY I	
b. Course Number/Code	BP103T	
c. Credit Hours	Theory	Practical
	45(3 Hrs/Week	60 (4Hrs. / Week)
d. Study level/semester at which this course is offered	Ist SEMESTER	
e. Pre-requisite	10+2 Syllabus	
f. Co-requisite	Fundamentals of Science	
g. Program in which the course is offered	B Pharm	
h. Language of teaching the course	English	
i. Prepared by	MRS RESHMA TOSHNIWAL	
j. Approved by HOD	DR S R LAHOTI	

5.2.Course Description:

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

5.3. Course Objectives:

1. To know the history of profession of pharmacy.
2. Understand the basics of different dosage forms, pharmaceutical incompatibilities and pharmaceutical calculations.
3. Understand the professional way of handling the prescription.
4. Preparation of various conventional dosage forms.

6.0. Course Outcomes (COs) : (Min. 4 and Max. 6)

(Use Bloom's Taxonomy words)

CO Code	Course outcome
103.01	Ability to use the techniques in the cultivation and production of crude drugs.

103.02	Ability to know the crude drugs, their uses and chemical nature.
103.03	Applying the techniques for evaluation of the herbal drugs.
103.04	Ability to carry out the microscopic and morphological evaluation of crude drugs.

6.1. Knowledge and Understanding

(Alignment of POs to COs)

CO Code	Program Outcome (PO)										
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
103.01	3	3	3	3	2	2	3	3	3	3	3
103.02	3	2	3	3	2	2	3	3	3	3	3
103.03	3	3	3	3	2	2	3	3	3	3	3
103.04	3	3	3	3	2	2	3	3	3	3	3

Correlation levels 1, 2 or 3 as defined below:

1: Slight (Low); 2: Moderate (Medium); 3: Substantial (High); If there is no correlation, put ‘-’

6.2. Teaching and Assessment Methods for achieving learning outcome:

Teaching Strategies(methods)/Tools used	Methods of Assessment
Lectures (Constructivist learning)	Formative Assessment
Collaborative learning (Discussion)	Case study
Project based Learning	Class test
Blended learning	Multiple choice questions
Inquiry based learning	Assignments
Flash cards	Seminar
Video	Viva Voce
Equipment models	Synopsis
	Tutorials
	Summative Assessment

6.3.Tools for the Teaching and learning

Theory subjects	Practical Subjects
<ul style="list-style-type: none"> • PowerPoints presentation • Videos • Flash Card • Models • Software • Charts • Smart Boards • White boards • Online Platform 	<ul style="list-style-type: none"> • White boards • Glassware • Chemicals • Instruments • Equipment • Software • Models • Plants/Crude Drugs • Animal

6.4. COURSE CONTENT

6.1. Theoretical Aspect:

Order	Topic list/units	Subtopics list	Number of Weeks	Contact Hours
1	Unit I	<p>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, Pharmacopoeias: Introduction to IP, BP, USP and Extra Pharmacopoeia.</p> <ul style="list-style-type: none"> • 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. 	3 and Half week	10

2	Unit II	<p>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.</p> <p>• Powders: Definition, classification, advantages and disadvantages, Simple & compound powders – official preparations, dusting powders, effervescent, efflorescent and hygroscopic powders, eutectic mixtures. Geometric dilutions.</p> <p>• Liquid dosage forms: Advantages and disadvantages of liquid dosage forms. Excipients used in formulation of liquid dosage forms. Solubility enhancement techniques</p>	3 and Half week	10
3	Unit III	<p>Monophasic liquids: Definitions and preparations of Gargles, Mouthwashes, Throat Paint, Eardrops, Nasal drops, Enemas, Syrups, Elixirs, Liniments and Lotions.</p> <p>• Biphasic liquids:</p> <p>• Suspensions: Definition, advantages and disadvantages, classifications, Preparation of suspensions; Flocculated and Deflocculated suspension & stability problems and methods to overcome.</p> <p>• Emulsions: Definition, classification, emulsifying agent, test for the identification of type of Emulsion, Methods of preparation & stability problems and methods to overcome</p>	2 week and 2 lecture	8
4	Unit IV	Suppositories: Definition, types, advantages	2 week	8

		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.	and 2 lecture	
5	Unit V	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 dosages forms	2 week and lecture	7
	TOTAL			45

6.2. Practical Aspects

Order	Name of Experiment	Number of Weeks
1	Syrups a) Syrup IP'66 b) Compound syrup of Ferrous Phosphate BPC'68	1
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	Solution a) Strong solution of ammonium acetate b) Cresol with soap solution c) Lugol's solution	
5	Suspensions	

	a) Calamine lotion b) Magnesium Hydroxide mixture c) Aluminium Hydroxide gel	
6	Emulsions a) Turpentine Liniment b) Liquid paraffin emulsion	
7	Powders and Granules a) ORS powder (WHO) b) Effervescent granules c) Dusting powder d) Divded powders	
8	Suppositories a) Glycero gelatin suppository b) Coca butter suppository c) Zinc Oxide suppository	
9	Semisolids a) Sulphur ointment b) Non staining-iodine ointment with methyl salicylate c) Carbopal gel	
10	Gargles and Mouthwashes a) Iodine gargle b) Chlorhexidine mouthwash	
11		
12		
13		
14		
15		

7.0. ASSESSMENT MECHANISM :

Sr. No.	Assessment Mechanism	Week due	Marks	Proportion of Final Assessment
1	Assignments, Exercises & Home works	2 nd week of	10	6%

		every month		
2	Sessional (Internal Theory exam)	As per scheduled examination	15	10%
3	Continuous Practical Assessment (Sessional Practical exam)	Weekly during practicals	15	10%
4	Final exam (theory)	As per University at end of course	75	50%
5	Final exam(practical)		35	24%
Total			150	100%

8.0.STUDENT SUPPORT:

Office hours/week	Other procedures
Two hours minimum	e-mail,can meet personally

9.0.TEACHER'S AVAILABILITY FOR STUDENT SUPPORT:

Days	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Time	12:00-1:00	12:00-1:00	12:00-1:00	12:00-1:00	12:00-1:00	12:00-1:00

10.0. LEARNING RESOURCES:

Sr. No.	Title of Learning Material	Details
1	Text books	
2	Essential references (as per syllabus)	<ol style="list-style-type: none"> 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

		<p>Publisher, The University of Michigan.</p> <p>7. Alfonso R. Gennaro Remington. The Science and Practice of Pharmacy, Lippincott Williams, New Delhi.</p> <p>8. Carter S.J., Cooper and Gunn's. Tutorial Pharmacy, CBS Publications, New Delhi.</p> <p>9. E.A. Rawlins, Bentley's Text Book of Pharmaceutics, English Language Book Society, Elsevier Health Sciences, USA.</p> <p>10. Isaac Ghebre Sellassie: Pharmaceutical Pelletization Technology, Marcel Dekker, INC, New York.</p> <p>11. Dilip M. Parikh: Handbook of Pharmaceutical Granulation Technology, Marcel Dekker, INC, New York.</p> <p>12. Francoise Nieloud and Gilberte Marti-Mestres: Pharmaceutical Emulsions and Suspensions, Marcel Dekker, INC, New York.</p>
3	Reference material	Books, Research and Review articles
4	E-materials and websites	Powerpoint presentation, video demonstration
5	Other learning material	Notes

11.0. FACILITIES REQUIRED:

Sr. No.	Particular of Facility Required
1	Lecture Rooms (capacity for 60 students)
2	Laboratory (capacity for 20 students)
3	Computing resources: PC with latest version and hardware/software and utilization of open source and licensed application software
4	Other resources: Appropriate laboratory tools, Chemicals, Glass ware, Apparatus, Instrumentation

12.0. COURSE IMPROVEMENT PROCESSES:

12.1. Strategies for obtaining student feedback on effectiveness of teaching:

Course delivery evaluation by students using: Questionnaire forms and online questionnaires

12.2. Other strategies for evaluation of teaching by the instructor or by the department:

Periodic review by Academic Planning & Monitoring Committee and departmental review committee, Observations and assistance of colleagues, External assessments by advisors/ examiners and auditors.

12.3. Process for improvement of teaching:

Use of ICT tools, teaching aids, Simultaneous practical orientation and theory classes (SPOT), Adoption of reflective teaching.

12.4. Describe the planning procedures for periodically reviewing of course effectiveness and planning for improvement:

Periodic review by departmental meeting , Review of course delivery and outcome through assessment and feedback from all stake holders.

12.5. Course development plans:

Provide inputs for course improvement and update to University Course development Committees (Board of Studies)

13.0. INFORMATION ABOUT FACULTY MEMBER RESPONSIBLE FOR THE COURSE:

Name	MRS RESHMA TOSHNIWAL
Location	M'PHARM PHARMACEUTICS LAB
Contact Detail (e-mail & cell no.)	soni21774@yahoo.com , 9823431300
Office Hours	10:00 AM to 5:00 PM

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