

R.K. PHARMACY COLLEGE

COURSE HANDOUT

Pharmaceutical Chemistry (Practical)

COURSE CODE: ER20-12P

VISION

Train the minds to think logically and become a success

MISSION

To Develop inventive, pioneering research & high-quality technical education

PROGRAMME EDUCATIONAL OBJECTIVES

- PEO 1:** To produce graduates with sound theoretical knowledge and technical skills required for career opportunities in various domains.
- PEO 2:** To incite the students towards research and to address the challenges with their innovative Contributions for the benefit of mankind.
- PEO 3:** To bring forth a quality professional equipped with technological advances to adapt easily to changes in the ever-evolving pharma and allied industry, hospital and clinical pharmacy setup, pharma retailing and distribution, and governmental and health agencies.
- PEO 4:** To engage graduates in professional ethical practices in a multidisciplinary environment, while contributing to organization through leadership and building team spirit.
- PEO 5:** Pharmacists can become lifelong learners, absorb new technologies, and then offer leadership roles in society.

Programme Name	Diploma in Pharmacy (D. Pharm)
Course Name	Pharmaceutical Chemistry (Theory)
Course Code	ER20-12P
Session	2025-26
Year	I
Labs (Per Week)	3
Course Credit	2
Course Coordinator Name	

Scope of the Course:

This course is designed to impart basic training and hands-on experiences to synthesis chemical substances used as drugs and pharmaceuticals. Also, to perform the quality control tests, impurity testing, test for purity and systematic qualitative analysis of chemical substances used as drugs and pharmaceuticals.

1. Course Outcomes (COs):

- CO.1 Perform the limit tests for various inorganic elements and report
- CO.2. Prepare standard solutions using the principles of volumetric analysis
- CO.3. Test the purity of the selected inorganic and organic compounds against the monograph standards
- CO.4 Synthesize the selected chemical substances as per the standard synthetic scheme
- CO.5. Perform qualitative tests to systematically identify the unknown chemical substances

2. Reference Books:

1. Medicinal & Pharmaceutical chemistry by Harikishan Singh and VK Kapoor
2. Wilson and Griswold's Text book of Organic Medicinal and pharmaceutical Chemistry
3. Practical Organic Chemistry by Mann and Saunders.
4. Practical Pharmaceutical Chemistry, Volume- I & II by Beckett and J. B. Stenlake

3. Other Readings & Relevant Websites:

Sr.No.	Link of Journals, Magazines, Websites and Research Papers
1	https:// www.ijpsm.com /

2	https:// www.ijisrt.com /
3	http://doi.org/10.2147/DHPS.S282420
4	http://dx.doi.org/10.22270/ajprd.v9i3.955
5	https://www.researchgate.net/publication/5533900
6	https://www.dixonvalve.com/

4. Lab Plan:

Sr.No.	Experiment	Dates (tentative)	
		Batch A	Batch B
01	Limit test for ● Chlorides; sulphate; Iron; heavy metals		
02	Identification tests for Anions and Cations as per Indian Pharmacopoeia		
03	Fundamentals of Volumetric analysis Preparation of standard solution and standardization of Sodium Hydroxide, Potassium Permanganate		
04	Assay of the following compounds ● Ferrous sulphate- by redox titration ● Calcium gluconate-by complexometric ● Sodium chloride-by Modified Volhard's method ● Ascorbic acid by iodometry ● Ibuprofen by alkalimetry		
05	Fundamentals of preparative organic chemistry Determination of Melting point and boiling point of organic compounds		
06	Preparation of organic compounds ● Benzoic acid from Benzamide ● Picric acid from Phenol		
07	Identification and test for purity of pharmaceuticals Aspirin, Caffeine, Paracetamol, Sulfanilamide		
08	Systematic Qualitative analysis experiments (4 substances)		

5. Content Beyond Syllabus (CBS):

Sr.No.	Topics	PO (Annexure 1)
1)	To demonstrate the working of UV spectrophotometry instrumentation.	PO1, PO3, PO4

6. Evaluation Scheme:

The marks allocated for the continuous mode of internal assessment shall be awarded for attendance, practical records, regular viva voce, etc. Two practical sessional exams shall be conducted during mid of the semester. The average marks of the two practical sessional exams shall be computed for internal assessment. A practical sessional exam shall be conducted for 40 marks and shall be computed for 10 marks. Weightage for various evaluation components is as below:

Sr.No.	Evaluation Component	Weightage
1	Internal Assessment 1. Continuous Mode 2. Practical Sessional Exams	15 15
2	End Semester Practical Exam	10
	Total	40

As per PCI and University guidelines, minimum 75% attendance is required to become eligible for appearing in the End Semester Practical Examination.

This document is approved by:

Designation	Name	Signature
Course Coordinator		
HOD		
Principal		

ANNEXURE I: PROGRAM OUTCOMES

1. **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.
2. **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.
3. **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.
4. **Modern tool usage:** Learn, select, and apply appropriate methods and procedures, resources, and modern pharmacy-related computing tools with an understanding of the limitations.
5. **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.
6. **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).
7. **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.
8. **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.
9. **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.
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.
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.
- 11.