

COURSE HANDOUT

PHARMACEUTICAL ANALYSIS- I (PRACTICAL)

COURSE CODE: BP108P

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	Bachelor of Pharmacy (B. Pharmacy)
Course Name	Pharmaceutical Analysis-I (Practical)
Course Code	BP108P
Session	
Semester	I
Labs (Per Week)	1 (0-0-4)
Course Credit	2
Course Coordinator Name	

1. Scope of the Course:

This course aims to provide students with practical knowledge and skills related to laboratory glassware handling, various titration techniques (aqueous and non-aqueous), pharmaceutical ingredient assay methods, and the use of electrochemical analysis equipment.

2. Course Outcomes (COs): Handle and use various laboratory glassware in a safe manner.

- 108.1. Carry out various aqueous and non-aqueous titrations.
- 108.2. Carry out the assay of active pharmaceutical ingredients (API) through various titrations like precipitation and complexometric.
- 108.3. Handle and use various equipments such as potentiometer, and conductometer for electrochemical analysis of sample.
- 108.4. To understand the importance of calibration, calibration of weights, pipette and burette.

2. Reference Books:

- RB.1 Indian Pharmacopoeia. The controller of Publications, New Delhi.
- RB.2 Rao GD. Practical Pharmaceutical Analysis. Birla Publications Pvt. Ltd., New Delhi.
- RB.3 Watson G. Pharmaceutical Analysis: A Textbook for Pharmacy Students and Pharmaceutical Chemists. Churchill Livingstone.

3. Other Readings & Relevant Websites:

Sr. No.	Link of Journals, Magazines, Websites and Research Papers
1	https://www.chemguide.co.uk/
2	https://journals.sagepub.com/home/aci
3	https://pubs.acs.org/
4	https://www.sciencedirect.com/

4. Lab Plan:

Sr. No.	Experiment	Dates (tentative)			
		Section A		Section B	
		Batch A	Batch B	Batch A	Batch B
01	To prepare and standardize 0.1 M sodium hydroxide solution.	14.09.23	15.09.23	12.09.23	11.09.23
02	To prepare and standardize 0.1 M sulphuric acid solution.	21.09.23	22.09.23	19.09.23	18.09.23
03	To prepare and standardize 0.1 N sodium thiosulphate solution.	28.09.23	29.09.23	26.09.23	25.09.23
04	To prepare and standardize 0.1 N potassium permanganate solution.	05.10.23	06.10.23	03.10.23	09.10.23
05	To prepare and standardize 0.1 N ceric ammonium sulphate solution.	12.10.23	13.10.23	10.10.23	16.10.23
06	To perform the assay of ammonium chloride (by acid-base titration).	19.10.23	20.10.23	17.10.23	23.10.23
07	To perform the assay of ferrous sulphate (by redox titration).	26.10.23	27.10.23	31.10.23	30.10.23
08	To perform the assay of copper sulphate (by redox titration).	02.11.23	03.11.23	07.11.23	06.11.23
09	To perform the assay of calcium gluconate (by complexometry).	09.11.23	10.11.23	28.11.23	04.12.23
10	To perform the assay of hydrogen peroxide (by redox titration).	30.11.23	01.12.23	05.12.23	11.12.23
11	To perform the assay of sodium benzoate (by non-aqueous titration).	07.12.23	08.12.23	12.12.23	18.12.23
12	To perform the assay of sodium chloride (by precipitation titration).	14.12.23	15.12.23	19.12.23	08.01.24
13	To determine the strength of strong acid using a strong base (Conductometry)	21.12.23	22.12.23	09.01.24	15.01.24

5. Content Beyond Syllabus (CBS):

Sr. No.	Topics	PO to be Achieved (Annexure I)
1	To demonstrate the construction and working of the pH meter.	PO3, PO4, PO8, PO11

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	05
	2. Practical Sessional Exams	10
2	End Semester Practical Exam	35
	Total	50

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.
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.