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REGULATIONS

These regulations shall be called as the Revised Regulations for the Ph.D. Course work in Pharmacy with Credit Based Semester System effective from the Academic Session 2025-26.

Minimum qualification for admission

- As per the Utkal University norms for the Ph.D. Programme in Pharmacy.

Duration of the program

- The Ph.D. Course Work in Pharmacy shall be for a period of one semester (six months).

Objectives:

- To familiarize scholars with the academic writing, and reading skills.
- To train them to have independent publications.
- To acquaint students with research practices.
- To help them understand the ethical issues associated with research
- To train them for the job markets available in higher education.

Programme Outcomes:

- Scholars will be able to understand the various problems in the field of Pharmaceutical & Allied Sciences and to study them.
- They will be familiarized with research practices and can have independent publications which will not only contribute to the body of knowledge but to the university profile as well.
- They can fill up research and teaching positions.

Attainment & Progression

- A candidate is required to put in at least 80% attendance to appear for the Ph.D. course work examination.
- Minimum qualifying mark in examination is 50% in each paper.

Credit structure:

- As per the credit-based semester system, a total of 24 credits shall be awarded for the successful completion of Course Work, with each paper carrying an appropriate number of credits as mentioned in the syllabus.

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DETAILED SYLLABUS

Paper-1

Subject: Research Methodology

Full Mark-100

Credit-06

Objective:

To introduce to the students the basics of research, the processes of doing research from designing to operationalizing and to develop among them the skill to write various forms of write-ups to disseminate their research outcomes.

Learning Outcomes:

After going through this paper, the enrolled student will:

- Get to know the various theoretical foundations that have been laid down by the theories to undertake empirical research in Pharmaceutical Sciences.
- Develop a clear understanding about the types of research, with their areas of application.
- Gain knowledge on the entire research process from the conceptualization of an issue till drawing the conclusion along with the operationalization process in the Laboratory and data analysis procedures.
- Develop competency in writing different types of research papers.

Unit-1

- Spectroscopy and Chromatography Techniques (IR, NMR, Mass Spectroscopy, Gas chromatography, HPLC, HPTLC, Supercritical Fluid Chromatography).
- Introduction to biological databases (PubMed, PDB, MMDB, NCBL, EMBL, Swiss Prot, KEGG, BRENDA).
- Computer aided Drug Design - BLAST and FASTA, Sequence alignment, Molecular Docking concept and application.

Unit-2

- Bio-Pharmaceutics and Pharmacokinetics: Compartmental models, non-linear and non-compartmental pharmacokinetics, Bioavailability and Bioequivalence studies application of pharmacokinetics in modified release, targeted drug delivery systems and biotechnological products.
- Novel Drug Delivery Systems: Fundamentals, Design, Fabrication, evaluation and applications of controlled release formulations with special emphasis of lipid based drug delivery systems, Nano-formulations, Micro formulations.
- Targeted drug delivery systems, Gene delivery systems, Antisense molecules and Aptamers as drugs of future. Applications of super critical technology in advanced drug delivery system.

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Unit-3

- Organization of screening for pharmacological activity of new substances with emphasis on evaluation using, in vivo, in vitro, ex vivo, in situ and other possible alternative models.
- Detailed study of drug metabolism, Drug interactions and its correction, therapeutic incompatibility. Pharmacogenomics and Adverse drug reaction.
- High throughput screening.

Unit-4

- Drug Discovery & Development: Selection & Optimization of lead compounds.
- Phytochemical Studies: Recent advances in extraction & separation of Phtytoconstituents, Phytochemical Fingerprinting.
- Herbal formulations & Designing: Conventional & Novel drug delivery system.

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Paper-2

Subject: Research and Publications Ethics
FM- 100

Credit- 06

Objective:

To train the students to undertake ethical research with honesty, honoring the intellectual property rights of the previous authors and ensuring dignity and honor to the subjects under study.

Learning Outcomes:

After going through this paper, the student will:

- Get a fair stock knowledge on intellectual honesty and research integrity.
- Acquaint themselves with the incidences of scientific misconduct which they need to avoid during their research process.
- Get to know standards of publication ethics and the ways for ensuring plagiarism free research writings.

Unit-1

- Introduction to Ethics- Definition, moral philosophy, nature of moral judgments and reactions.
- Intellectual honesty and research integrity.

Unit-2

- Scientific Misconduct- Falsification, Fabrication and Plagiarism (FFP).
- Redundant Publications: duplicate and overlapping publications, salami Slicing. Selective reporting and misrepresentation of data.

Unit-3

- Publication Ethics Definition, Introduction and Importance. Best practices/standards setting initiatives and guidelines- COPE, WAME, etc.
- Publication Misconduct Definition, concept, problems that lead to unethical behavior and vice versa types, Violation of Publication ethics. Authorship and contributorship. Identification of publication misconduct, complaints and appeals. predatory publishers and journals.

Unit-4

- Open access publications and initiatives. Journal finder/ journal suggestion tool viz. JANE, Elsevier Journal Finder, Springer Journal Suggester, etc. Complaints and appeals: Examples and fraud from India and abroad.
- Use of Plagiarism software like Turnitin, Urkund and other open-source software tools, Conflicts of interest.

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Paper- 3

Subject: Seminar Presentation

FM-100 marks

Credit-06

- The candidate is required to give a presentation on relevant research topic for minimum 1 hour duration followed by the question answer session.

Paper- 4

Subject: Dissertation Work

FM-100

Credit-06

i) Review Work:

50 marks (3 credits)

- The candidate shall prepare, and present a comprehensive review and submit a hard copy thereof.

ii) Research Work:

50 marks (3 credits)

- The candidate shall carry out research work and submit a hard copy thereof followed by presentation.

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