Program- M.Pharm
Pharmaceutical Analysis

MODERN PHARMACEUTICAL ANALYTICAL TECHNIQUES

Course Outcomes:
At the end of the course, student will be able to:

1. Recognize the importance of modern instruments in the pharmaceutical analysis
2. Discuss the fundamental principles and applications of UV-visible, IR, flame emission, atomic absorption, NMR and Mass spectroscopy
3. Document the principles and applications of chromatographic, and electrophoretic separation techniques
4. Appraise X-ray crystallographic methods and radioimmunological assays
5. Summarize the instrumentation of the modern analytical techniques
6. Assess appropriate techniques for the analysis of various drugs and formulations

MODERN PHARMACEUTICAL ANALYSIS

Course Outcomes:

At the end of the course, student will be able to:

- Know the fundamental principles, instrumentation and applications of UV-Visible, IR, NMR, Mass spectroscopy and chromatographic techniques.
- Explain Electrophoresis and perform statistical analysis.
- Analyze drugs and pharmaceuticals using the above instruments.
- Interpret the structure of the organic compounds with the given spectral data.
- appreciate the importance of modern instruments in the quality control and research

ADVANCED PHARMACEUTICAL ANALYSIS

Course Outcomes:

At the end of the course, student will be able to:

- Analyze official drugs by different titrimetric and instrumental methods.
- Explain the Principle, procedure and applications of various reagents used in qualitative and quantitative analysis.

- Perform functional group analysis.
- Understand about the effect of impurities in drugs, residual solvents and stability studies of drugs and biological products.

PHARMACEUTICAL VALIDATION

Course Outcomes:

At the end of the course, student will be able to:

- Explain the different types of validation
- Appreciate the significance of validation in pharmaceutical industries.
- perform validation on various instruments, equipments and manufacturing facilities.

FOOD ANALYSIS

Course Outcomes:

At the end of the course, student will be able to:

- Explain various analytical techniques used to quantify food constituents, food additives, finished food products, Pesticides in food.

Describe current food regulations and legislations

ADVANCED INSTRUMENTAL ANALYSIS

Course Outcomes:

At the end of the course, student will be able to:

- Interpret NMR, Mass and IR spectra of various organic compounds.
- Discuss the theoretical and practical aspects of hyphenated instruments.
- Identify the various organic compounds.

MODERN BIO-ANALYTICAL TECHNIQUES

Scope

This subject is designed to provide detailed knowledge about the importance of analysis of drugs in biological matrices.

Objectives

At the end of the course, the student shall be able to understand

Extraction of drugs from biological samples
Separation of drugs from biological samples using different techniques
Bioanalytical method validation
Guidelines for BA/BE studies.
GCP

MODERN BIO-ANALYTICAL TECHNIQUES

Course Outcomes:

At the end of the course, student will be able to:

- Understand biological matrix and problems with analysis of biological matrices:
- Extract drugs from biological samples.
- Separate drugs from biological samples using different techniques.
- Perform Bio analytical method validation.
- Explain guidelines for GCP and BA/BE studies.

QUALITY CONTROL AND QUALITY ASSURANCE

Course Outcomes:

At the end of the course, student will be able to:

- know and apply the cGMP aspects in pharmaceutical industry
- Explain different regulatory guidelines.
- Analyse raw materials, finished products, packaging materials, in-process quality control (IPQC), and develop specifications
- Understand the scope of quality certifications applicable to Pharmaceutical industries
- Discharge the responsibilities of QA & QC departments.

COSMETIC ANALYSIS & EVALUATION

Course Outcomes:

At the end of the course, student will be able to:

- ❖ Determine physical constants of cosmetic raw materials, additives and their analysis.
- ❖ Analyse finished cosmetic products.
- ❖ Explain the principles of equipment used to measure product performance of cosmetics

RESEARCH METHODOLOGY & BIOSTATISTICS

Course Outcomes

After undergoing this course students will be able to:

1. Recognize the value, scope, objective and requirements of research
2. Discuss the basic concept and importance of statistical analysis
3. Discuss the basic principles of medical research
4. Describe the guidelines for the maintenance of laboratory animals
5. Perform the profession of Pharmacy with code of conduct and ethics
6. Apply the principles of medical research for the development of knowledge in the field of medicine

DISCUSSION / SYNOPSIS PRESENTATION

Identify the research problem
Discuss research problem with team and peers for solution
Develop a protocol report on the critically appraised research problem
Present the critically appraised research problem in appropriate forum

GROUP PROJECT

1. Work in a team and undertake a project in the area of Pharmaceutical Sciences
2. Apply concepts of pharmaceutical sciences for executing the project
3. Apply appropriate research methodology while formulating a project
4. Generate specifications, synthesize, analyse, develop and evaluate a project
5. Defend the project, exhibit, make a presentation and document the work

JOURNAL CLUB

1. Select scientific articles from reputed journals
2. Use search engines to select scientific articles
3. Critically appraise scientific articles and assess the quality
4. Develop a report on the critically appraised article
5. Present the critically appraised article in appropriate forum

RESEARCH METHODOLOGY AND BIOSTATISTICS

1. Recognize the value, scope, objective and requirements of research
2. Discuss the basic concept and importance of statistical analysis
3. Outline the basic principles of medical research
4. Summarize the guidelines for the maintenance of laboratory animals

5. Perform the profession of Pharmacy with code of conduct and ethics
6. Apply the principles of medical research for the development of knowledge in the field of medicine

DISCUSSION / COLLOQUIUM PRESENTATION

1. Identify the research problem
2. Discuss research problem with team and peers for solution
3. Develop a protocol report on the critically appraised research problem
4. Present the critically appraised research problem in appropriate forum

RESEARCH WORK

1. Review scholarly literature collected from various sources critically for the project and formulate a research problem
2. Prepare and present a research proposal
3. Conduct research to achieve research objectives
4. Propose new ideas/ methodologies or procedures for further improvement of the research problem
5. Create research document of the findings
6. Defend the research findings in front of scholarly audience