M. Phil. PHARMACEUTICS
The Syllabi and Courses of Reading
Semester System

Semester-I (12 Credit Hours)

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Advanced Pharmaceutics</td>
<td>3 + 1 cr. Hrs</td>
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<tr>
<td>Biopharmaceutics</td>
<td>3 + 1 cr. Hrs</td>
</tr>
<tr>
<td>Pharmaceutical Microbiology</td>
<td>3 + 1 cr. Hrs</td>
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Semester-II (12 Credit Hours)

<table>
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<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Formulation and Product Development</td>
<td>3 + 1 cr. Hrs</td>
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<tr>
<td>Clinical Pharmacy</td>
<td>3 + 1 cr. Hrs</td>
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<tr>
<td>Biostatistics</td>
<td>4 cr. Hrs</td>
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Semester-III & IV

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Research Thesis</td>
<td>200 marks</td>
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Semester I

Paper 1 ADVANCED PHARMACEUTICS (3 + 1 Cr. Hr.)

1. Surfactants and their applications in Pharmaceutical Dosage Forms.
2. Specialized Pharmaceutical Emulsions.
4. Micro encapsulation/Methods of Particles coating.
5. Cosmetics and their quality control.
6. Transdermal drug delivery system.

Paper 2 BIOPHARMACEUTICS (3 + 1 Cr. Hr.)

1. Correlation between in-vitro and in-vivo studies of different parameters of dosage forms.
2. Biopharmaceutical and Pharmacokinetic consideration in the development of controlled release drug products.
3. Pharmacokinetic and Bioavailability Variations in disease state.
5. Bioavailability of disperse dosage forms.
7. Non-oral dosage forms.

Paper 3 PHARMACEUTICAL MICROBIOLOGY (3 + 1 Cr. Hr.)

1. Microbial Enzymes: Classification and Mechanism of Action, Commercial Production of microbial enzymes and their application, Immobilized Enzymes.
2. General Principles and Methods of Microbiological assays.
3. Microbial spoilage and preservation of pharmaceutical products.
5. Principles, synthesis and applications of Monoclonal antibodies.
6. Validation of Sterilization Procedure

Recommended Books

20. Lippincot, Microbiology by lipponcott, William & Willkin, USA, 2001

Semester II

Paper 1 FORMULATION AND PRODUCT DEVELOPMENT (3 + 1 Cr. Hr.)

2. Radiopharmaceutical formulation techniques, Q.C. instrumentation and application in health care system.
4. Quality Control and GMP Compliance in Pharmaceutical Industry. Importance of design/layout of pharmaceutical industry.
5. Precaution in handling/storage and manufacturing of pharmaceutical products containing antibiotics.
6. Stability testing.
7. Formulation and development of Controlled Release dosage Forms.
8. Packaging Techniques for Pharmaceuticals
9. Advances in Film Coating Techniques
10. Tablet Tooling
11. Calibration and Validation of instruments/equipments used in testing and manufacturing of drugs.

Paper 2 CLINICAL PHARMACY (3 + 1 Cr. Hr.)

1. Latest developments and advances in the learning of clinical Pharmacy.
2. Patient Communication
3. Total Parenteral Nutrition
4. Problem Oriented Approach: Cardiovascular Disorders, Infectious diseases, Renal diseases and Respiratory Diseases.
5. Specific Poisons and drugs: Diagnosis and treatment, Antibiotics, Antidepressants, Arsenic, Benzodiazepines, Analgesics, Calcium antagonists, Digoxin, Nitroglycerin and Cyanide
6. Pharmacy Administration

Recommended Books
5. Sprowl’s (Dittert LW; Edt), American Pharmacy., 7th Ed, JB Lippincott Co. 1990

Paper 3  BIOSTATISTICS       (4 Cr. Hr.)

Test of Hypothesis and significance: Statistical hypothesis. Level of significance. Test of significance. Confidence intervals. Test involving binomial and normal distribution.
Goodness of fit test: Chi-square distribution, it properties and application. Contingency tables. Test of homogeneity.
**Student "t" and "F" Distribution:** Properties of "t" distribution and "F" distribution. Test of significance based on "t"-distribution and "F"-distribution.

**Analysis of variance:** One - way classification. Partitioning of sum of squares and degree of freedom. Two-way classification. Multiple compression tests such as LSD, P-values. The analysis of variance models.


**Recommended Books**

**NOTE:**
An Industrial study tour will be an integral part of the courses of study in Pharmaceutics, preferably after the end of second semester.

**Semester III & IV**

**THESIS**

The research work will be carried out in any branch of Pharmaceutics. The thesis shall embody the results of research, which may either be continuation of the existing knowledge of the subject, or application of known methods of research to some technical problems. This will also include seminar and viva-voce examination concerning research topics. Three copies of research thesis printed or type written shall be submitted for the examination at the end of the academic year. The candidate will retain the fourth copy of the thesis.