## FOURTH YEAR

### Hours per week

<table>
<thead>
<tr>
<th>Fourth Year</th>
<th>Lect</th>
<th>Pract</th>
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</thead>
<tbody>
<tr>
<td><strong>A- First Semester</strong></td>
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<tr>
<td>1- Pharmaceutical Medicinal Chemistry</td>
<td>4</td>
<td>5</td>
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<tr>
<td>2- Industrial Pharmacy</td>
<td>4</td>
<td>2.5</td>
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<tr>
<td>3- Toxicology, Forensic Chemistry and First aids</td>
<td>4</td>
<td>2</td>
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<td><strong>B- Second Semester</strong></td>
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<tr>
<td>1- Applied Pharmacognosy</td>
<td>4</td>
<td>6</td>
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<tr>
<td>2- Biostatics and Bioassay of drugs</td>
<td>4</td>
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<tr>
<td>3- Pharmaceutics</td>
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</tbody>
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### A) FIRST TERM

**1-PHARMACEUTICAL MEDICINAL CHEMISTRY**

Lectures 4 hrs/week and 5 hrs/week for one semester.
- Steroidal hormones.
- Polypeptide hormones.
- Oral hypoglycemics.
- Thyroid and antithyroid drugs.
- Prostaglandins.
- Vitamins.
- Autonomic N.S, CNS depressants, CNS stimulants.
- Local anesthetics.
- Cardiovascular drugs.
- Biotechnology products.

**Practical:**
- General instructions.
- HPLC assay.
- Assay and identity of vitamin C.
- Assay of benzocaine powder.
- Assay of propranolol tablets.
- Assay of fruital syrup.
- Assay of vitamin B12 amp.
- Assay of dexamethazone tablets.
- Assay of chloral hydrate, assay of flaxidil amp.
- Assay of epinephrine amp.
- Assay of INH tablets.
- Assay of streptomycin vials.
- Assay of benzyl penicillin vials.

2-PHARMACEUTICAL TECHNOLOGY

Lectures 4 hrs/week and practical 2.5 hrs/week for one semester.
- Filtration, extraction, centrifugation, emulsification.
- Size analysis, crystallization, drying, mixing.
- Air purification.
- Material of construction.
- Corrosion.
- Size reduction.
- Powders.
- Tablets and coating.
- Heat flow.
- Evaporation.
- CGMP and validation.
- Safety measure.

3-TOXICOLOGY, FORENSIC CHEMISTRY AND FIRST AIDS

Lectures 4 hrs/week and practical 2 hrs/week for one semester.
- Classification of poisons and mechanisms of poisoning.
- Treatment of poisoning.
- Antidotes and antidotal mechanism.
- Air born-gases, air pollution.
- Heavy metals, corrosives.
- Food poisoning.
- Animal and plant poisons.
- Teratology, carcinogens.
- Insecticides and pesticides.
- Isolation, separation and identification of poisons.
- Pharmacology of chemotherapeutic agents.
- First aid measures: burns, shock, fractures, haemorrhage.

B) SECOND TERM

1-APPLIED PHARMACOGNOSY

Lectures 4 hrs/week and practical 6 hrs/week for one semester.
- Production of medicinal plants.
- Evaluation of medicinal crude drugs.
- Pharmacopeal constants.
- Uses of natural products in modern medicine.
- Biosynthesis of natural products.
- Chromatographic techniques and their application.
- Crystallography and its application.
- Structure elucidation of natural products by different spectroscopic techniques.
- Drugs of biological origin.

2-BIOSTATISTICS AND ASSAY OF DRUGS
Lectures 4 hrs/week and practical 2 hrs/week for one semester.
- Types of bioassays: international standards and units.
- Assays of agonists, assays of antagonists.
- Bioassays and screening of cardiac glycosides, antiarrhythmic drugs, anticoagulants, pharmacology.
- Bioassays of hormones and vitamins.
- Antifertility agents.
- Antimicrobial bioassays.
- Screening of drugs, autonomic drugs, analgesics, tranquilizers, antihistaminics, antiinflammatory, antidiabetics, hypotensives.
- Biostatistics: Methods used in graphical presentation, kinds of averages, measures of variability, validity of the mean, coefficient of variation, confidence limits, tests of significance, correlation coefficient.

3-PHARMACEUTICS
Lectures 4 hrs/week and practical 8 hrs/week for one semester.
- Bioavailability: Gastrointestinal absorption, biologic consideration, gastrointestinal absorption, physicochemical consideration, gastrointestinal absorption, role of the dosage form.
- Basic pharmacokinetics, clinical pharmacy