

General and specific topics for MSc. and PhD applicants at College of Pharmacy/ Hawler Medical University

Pharmaceutics (MSc. & PhD)

General topics in Pharmaceutics

1. Dosage form design: Biopharmaceutical and pharmacokinetic considerations.

Specific topics in Pharmaceutics

1. Powders and granules
2. Capsules
3. Tablets
4. Solid oral Modified -release dosage forms and drug delivery system

Reference: Ansls, Pharmaceutics the science of dosage form.

General topics in Pharmacology (PhD.)

1. Renal system
2. Hepatic system
3. CNS depressant drugs (over dose)

Specific topics in Pharmacology (PhD.)

1. Cardio vascular system
2. Pulmonary system
3. CNS stimulants and Antidepressant drugs over dose

General topics in clinical pharmacy (PhD.)

1. Therapeutic care plan
2. G.I.T disorder
3. Hypertension crisis management

Specific topics in clinical pharmacy (PhD.)

1. Drugs out of counter (OTC)

2. common cold, eye and ear preparations
3. Patient assessment and communication (Anemia, Obesity, Diabetes)
4. TDM (Therapeutic drug monitoring)
5. (I.V fluid administration)

General topics in clinical pharmacy (MSc.)

1. - Chemotherapeutic drug monitoring
2. - Classification and management of pulmonary disease

Specific topics in clinical pharmacy (MSc.)

1. TDM (Hypertension, Asthma)
2. Patient assessment and communication (Anti arrhythmic drugs)
3. Fibromyalgia, Arthritis

General topics in Pharmacognosy (PhD. & MSc.)

1. Alkaloids
2. HPLC

Specific topics in Pharmacognosy (PhD. & MSc.)

1. Alkaloids
2. HPLC
3. Glycoside
4. Volatile oil

Specific Topics in Analytical Chemistry (Master Applicants in Analytical Chemistry)

5. Classical Methods of Analysis
6. Spectroscopy (Spectrochemical Methods)
7. Molecular Spectroscopic Methods
8. Atomic Spectroscopic Methods
9. Chromatography and Chromatographic Methods
10. Practical Aspects of Chemical Analysis (Sampling)

General Topics in Analytical Chemistry (for Organic PhD applicants)

1. Spectroscopy (Spectrochemical Methods)
2. Molecular Spectroscopic Methods
3. Chromatography and Chromatographic Methods

Specific Topics in Organic Chemistry (for PhD applicants in Organic Chemistry)

- 1) Proton transfer
- 2) Nucleophilic substitution reactions on sp^3 hybridized
- 3) Oxidation-reduction reactions of organic compounds
- 4) Reactive intermediates
- 5) Nomenclature of chiral molecules
- 6) Molecular modeling of organic compounds
- 7) Alicyclic hydrocarbons
- 8) Drawing reaction mechanism

General Topics in Organic Chemistry (Master Applicants in Analytical Chemistry)

1. Electrophilic aromatic substitution reactions
2. Electrophilic addition reactions
3. The SN_1 and SN_2 reactions: mechanism, kinetics and reactivity
4. Molecular orbitals: hybrid orbitals
5. Catalysis reactions
6. Carbonyl compounds
7. Acidity and basicity, polarity and solubility of organic compounds

General Topics in Medicinal Chemistry (PhD and Master Applicants in other Pharmacy departments)

1. Physicochemical properties in relation to biological activity
2. Prodrugs
3. Drug metabolism

Specific Topics in Medicinal Chemistry (for Master applicants in Medicinal Chemistry)

1. Physico-chemical properties in relation to biological activity
2. Prodrugs
3. Drug metabolism
4. Bioisosterism
5. Structure-activity relationship

6. Drug-likeness (Lipinski rule of 5)
7. Drug design

Clinical Analysis

- Clinical biochemistry

- 1- Liver
- 2- Renal system

Pathophysiology

- 1- Neoplasia and genetics
- 2- Cardiovascular system
- 3- Inflammations including Virology and bacterial Infections

General topics in Histology

1. Integumentary system
2. Digestive system
3. Female reproductive system
4. Male reproductive system

Specific topics in Histology

1. Urinary system
2. Digestive system
3. Female reproductive system
4. Male reproductive system

General topics in Bacteriology & Molecular biology (PhD. & MSc.)

1. Structure of bacteria
2. Pathogenesis of bacteria
3. Antimicrobial Drugs and Mechanism of action

Specific topics in Bacteriology & Molecular biology (PhD. & MSc.)

1. Genetics of Bacteria
2. Laboratory diagnosis of bacteria
3. Antimicrobial Drugs: Resistance

General topics in Human Physiology

1. The circulation, blood cells and immunity
2. Regulation and acid base balance
3. Body temperature and temperature regulation
4. Body fluid and the kidney
5. Endocrinology.

Specific topics in human biology

1. Respiratory system
2. Body fluid and the kidney
3. Cardiovascular system
4. Endocrinology and reproduction
5. Regulation of acid base balance