FIRST YEAR

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<td>3- Fundamentals of Human Anatomy, Histology, and Physiology</td>
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A) FIRST TERM

1- ORGANIC PHARMACEUTICAL CHEMISTRY

Lectures 6 hrs/week and practical 6 hrs/week for one semester.
- A review of atoms and molecules.
- Introduction to the chemical bond, attraction between molecules, orbitals and their role in covalent bonding.
- Electronic interactions.
- Hydrocarbons.
- Organic halogen compounds.
- Alcohols, ethers, aldehydes and ketones, amines, carboxylic acids, carboxylic acid derivatives.
- Dicarbanyl compounds.
- Carbohydrates and sugars.
- Amino acids and proteins.
- Stereochemistry and isomerism

Practical:
- Purity of organic compounds.
- Physical properties of organic compounds.
- Ignition and nature of compounds.
- Identification of organic compounds.
- Determination of elements (preparation of Lasssaigne's filtrate, test for nitrogen, test for sulphur, test for halogen)
- Types of organic compounds and functional group test.

2-ANALYTICAL PHARMACEUTICAL CHEMISTRY

Lectures 2 hrs/week and 6 hrs/week for one semester:
- Theoretical considerations.
- Classification of reactions.
- End point detection and indicators.
- Standard solutions.
- Calculations.
- Acid-base titrations.
- Precipimetry.
- Compleximetry.
- Gravimetry.

Practical:
- Standard solutions.
- Determination of pH of tap water.
- Buffer solutions.
- Titration curves.
- Double indicator titrations.
- Non aqueous titrations.
- Determination of solubility product.
- Determination of chloride by Mohr's method.
- Determination of bromide by Volhard's method.
- Determination of chloride & iodide mixture by Fajan's method.
- Determination of mercuric oxide by amm. thiocyanate.
- Determination of mercuric chloride by pot. iodide.
- Determination of zinc salts by ferrocyanide.
- Direct EDTA titrations
- Indirect EDTA titrations.
- Mixture of metal ions (Ca, Mg & Bi).
- Non EDTA titrations.
- Gravimetric determination of calcium.
- Gravimetric determination of nickel.
- Gravimetric determination of magnesium.

3- ESSENTIALS OF HUMAN ANATOMY, HISTOLOGY AND PHYSIOLOGY

3-1- ANATOMY
Lectures 1 hr/week and practical 1 hr/week for one semester:
- Introduction to human anatomy.
- General osteology.
- Systematic anatomy.

3-2- HISTOLOGY
Lectures 1 hr/week and practical 1 hr/week for one semester:
- The cell-epithelial tissues
- Connective tissues.
- Muscular tissues.
- Nervous tissues and nerve endings.
- The heart.
- The blood vessels.
- The lymphatic organs.
- The skin and its appendages.
- The digestive system and associated glands
- The respiratory system.
- The urinary system.
- The reproductive system.
- Endocrine glands.
- The eye.
- The central nervous system.

3-3- PHYSIOLOGY
Lectures 4 hrs/week for one semester:
- Blood, muscles and nerves.
- Autonomic nervous system.
- Circulation.
- Respiration.
- Digestion.
- Central nervous system.
- Endocrine glands.
- Regulation of body temperature and general metabolism kidney.

B) SECOND TERM
1-GENERAL PHARMACOGNOSY AND MEDICINAL PLANTS

Lectures 4 hrs/week and practical 5 hrs/week for one semester:

1- General:
- General introduction, scope of pharmacognosy, definition, classification and description.
- Reserved food materials (starches and its types, proteins, fixed and volatile oils).
- BiproducTs, calcium oxalate, calcium carbonate.
- Active constituents e.g. alkaloids, glycosides, bitter principles, volatile oils.
- Crude drugs occurring naturally: Lycopodium, kamala, diatoms, lupulin, tale and chalk.
- Cultivation of medicinal plants, collection, drying, packing, preservation, protection and adulteration.

2- Crude drugs composed of plant organs:
- Barks: General introduction and Cascara bark, Frangula bark, Cascarilla bark, Cinchona bark, Cinnamon bark, Cassia bark, Quillaia bark, Pomegranate bark, Sassafras bark, Wild-cherry bark and Witch-hazel bark.
- Galls (Blue galls, Chinese galls and English galls).
- Wood (General introduction): Quassia wood, Sassafras wood, Sandal wood, Log wood and Sapan wood.
- Flowers: General introduction and German chamomile, Cloves, Roman chamomile, Saffron, Safflower, Arnica, Calendula, Pyrethrum, Santonica, Karkadch and Lavander.

2-PHARMACEUTICS AND HISTORY OF PHARMACY

Lectures 6 hrs/week and practical 5 hrs/week for one semester:
- Solutions of electrolytes.
- Ionic equilibrium.
- Some physical properties of drug molecules.
- Distribution phenomena.
- Ophthalmic solutions.
- Solubility.
- Buffers and buffer capacity.
- Introduction to pharmaceutical preparations.
- Mixtures powders, cachets, packets, methods of extraction.

3-ESSENTIALS OF MATHEMATICS AND MECHANICS

Lectures 4 hrs/week for one semester:
- Differentiation.
- Integration.
- Algebra (mathematical induction, binomial theory partial fraction, matrices solution of system of linear equation using determinants & matrices).
- Mechanics (vectors & applications, kinematics of a particle.
- Fundamental concepts motion in a straight line with const. or varied acceleration in Cartesian, - polar & intrinsic coordinates.
- Plane kinematics, Newton's laws, work, energy & power, conservation laws, applications, projectiles.

4-PSYCHOLOGY

Lectures 2 hrs/week for one semester:
- The units of study and analysis range from the individual to formal groups and organizations.
- Selected social and behavioral science concepts are presented explaining their relationship to health and disease.