



وصف المقرر الدراسي

قسم الصيدلة

المرحلة الخامسة

Title of the course: *Applied Therapeutics - I*

Level: 5<sup>th</sup> Class, 1<sup>st</sup> Semester

**Theory**

No.	Lecture title
١.	Interpretation of Lab. data.
٢.	Acute coronary syndrome.
٣.	Arrhythmias
٤.	Thrombosis
٥.	Dyslipidemia
٦.	Stroke
٧.	Shock
٨.	Liver cirrhosis
٩.	Viral hepatitis
١٠.	Inflammatory bowel diseases
١١.	Acute renal failure (ARF)
١٢.	Chronic renal failure (CRF)
١٣.	Hemodialysis and peritoneal dialysis
١٤.	Systemic lupus erythematosus (SLE)
١٥.	Benign prostatic hyperplasia (BPH)
١٦.	Acid – base disorders
١٧.	Disorders of fluid and electrolytes

١٨.	Urinary incontinence and pediatric enuresis
١٩.	Epilepsy and status epilepticus
٢٠.	Fungal infections
٢١.	Parkinson's disease
٢٢.	Pain management

### *Applied Therapeutics - I*

No.	Lecture title
٢٣.	Headache disorders
٢٤.	Tobacco use and dependence
٢٥.	Parasitic infections
٢٦.	Viral diseases
٢٧.	Parenteral nutrition
٢٨.	Enteral nutrition
٢٩.	Evidence-based pharmacy practice and medicine.
٣٠.	Drug distribution systems
٣١.	Pharmacovigilance

Title of the course: *Clinical Chemistry*

Level: ٥<sup>th</sup> Class, ١<sup>st</sup> Semester

**Theory**

No.	Lecture title
١.	Disorders of Carbohydrates metabolism, Hyperglycemia & Diabetes mellitus, Hypoglycemia
٢.	Disorders of lipid metabolism
٣.	Liver Function Tests

٤.	<b>Kidney Function Tests</b>
٥	<b>Diagnostic enzymology</b>
٦	<b>Hypothalamus &amp; pituitary endocrinology, disorders of anterior pituitary hormones, disorders of adrenal gland, hypopituitarism.</b>
٧.	<b>Reproductive system, disorders of gonadal function in males &amp; females, biochemical assessment during pregnancy</b>
٨.	<b>Tumor markers</b>
٩.	<b>Drug interaction with laboratory Tests</b>
١٠	<b>Disorders of calcium metabolism</b>
١١.	<b>Acid- Base Disorders</b>

Title of the course: *Practical of Clinical Chemistry*

Level: ٥<sup>th</sup> Class, ١<sup>st</sup> Semester

<b>No.</b>	<b>Lab. Title</b>
١.	<b>Specimen collection and preservation</b>
٢.	<b>Estimation of blood glucose (enzymatic method)</b>
٣.	<b>Oral Glucose Tolerance Test (OGTT)</b>
٤.	<b>Determination of blood urea nitrogen</b>
٥	<b>Determination of Creatine and Creatinine</b>
٦	<b>Estimation of serum uric acid</b>
٧.	<b>Estimation of serum Bilirubin</b>
٨.	<b>Estimation of serum Phosphate</b>
٩.	<b>Total lipid profile: Estimation of serum cholesterol</b>
١٠	<b>Total lipid profile: Estimation of LDL</b>
١١.	<b>Total lipid profile: Estimation of HDL</b>
١٢.	<b>Total lipid profile: Estimation of Triglycerides</b>
١٣.	<b>Estimation of AST activity</b>

14.	Estimation of ALT activity
15.	Estimation of CK activity

Title of the course: ***Clinical Laboratory Training***  
Level: 8<sup>th</sup> Class, 1<sup>st</sup> Semester  
**Theory**

No.	Lecture title
1.	Diagnostic test basics, collecting & transporting specimens, venipuncture, urine specimen, stool specimen
2.	Biochemical tests: Fasting blood glucose, Post-prandial glucose, Oral glucose tolerance test
3.	Blood urea, Blood creatinine, Creatinine clearance, Uric acid
4.	Cholesterol, Lipoproteins, triglycerides
5.	Blood proteins, Bilirubin
6.	Calcium, Inorganic phosphate, Serum chloride
7.	Alkaline phosphatase, Acid phosphatase, Alanine aminotransferase, Aspartate aminotransferase, Lactate dehydrogenase, Creatine phosphokinase
8.	Serological tests: VDRL, ASO- Titer, Hepatitis tests
9.	C-reactive protein test, Rheumatic factor test, Rosebengal test, Typhoid fever test( Widal test), Pregnancy Test
10.	General urine examination, urine specimen collection
11.	Hematological tests: RBC count, Hb, PCV, RBC indices, WBC count, Platelets count
12.	Blood typing, Coombs test, Bleeding time, ESR
13.	Microbiological tests: culture and sensitivity tests, Staining methods
14.	Culture media, Enriched culture media for general use

10.	Tests for identification of bacteria, Disk diffusion tests of sensitivity to antibiotics, Choice of drugs for disk test, bacterial disease and their laboratory diagnosis
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Title of the course: ***Clinical Toxicology***

Level: 0<sup>th</sup> Class, 1<sup>st</sup> Semester

**Theory**

No.	Lecture title
1.	<b>Initial Evaluation and Management of the Poisoned Patient. Including pediatric poisoning and special consideration in the geriatric patient</b>
2.	<b>Drug Toxicity: Over the counter drugs; caffeine; theophylline; antihistamine and decongestant; non-steroidal anti-inflammatory drugs; vitamins</b>
3.	<b>Toxicity of Prescription Medications: Cardiovascular drugs; beta blockers; ACE inhibitors; Digoxin; Calcium channel blocker; Antiarrhythmic agents; hypoglycemic drugs; Opioids; CNS depressants; tricyclic antidepressants; anti-cholinergic phenothiazines; CNS stimulant</b>
4.	<b>Drug of Abuse: Opioids; Cocaine; phencyclidine; marijuana; Lysergic acid</b>
5.	<b>Chemical and Environmental Toxins: Hydrocarbones; Household toxins; Antiseptic; Disinfectants; Camphor; moth repellents</b>
6.	<b>Botanicals and plants-derived toxins: Herbal preparation; Toxic plants; Poisonous mushrooms</b>

Title of the course: ***Practical of Clinical Toxicology***

Level: 8<sup>th</sup> Class, 1<sup>st</sup> Semester

No.	Lab. Title
١.	Laboratory Principles or Toxicological Screening
٢.	Over the counter drugs: Case on Acetaminophen poisoning; Salicylates; evaluation of urine salicylates
٣.	Urine analysis of toxins and chemicals
٤.	Cardiac glycosides toxicity: Digitalis
٥.	Cases on toxicity with foods and dietary supplements
٦.	Identification of some common poisons in biological samples: Arsenic; cyanide; strychnine; Salicylates; Phenothiazine derivatives; barbiturates
٦.	Evaluation of cases of toxicity with anti-Parkinsonian drugs
٧.	Evaluation of drug toxicity on human

Title of the course: ***Industrial Pharmacy -II***

Level: 8<sup>th</sup> Class, 1<sup>st</sup> Semester

**Theory**

No.	Lecture title
١.	Pharmaceutical dosage forms: Tablets; role in therapy; advantages and disadvantages; formulation; properties; evaluation; machines used in tableting; quality control; problems; granulation, and methods of production; excipients, and types of tablets
٢.	Tablet coating; principles; properties; equipments; processing; types of coating (sugar and film); quality control, and problems
٣.	Capsules: Hard gelatin capsules; materials; production; filling equipments; formulation; special techniques
٤.	Soft gelatin capsules: Manufacturing methods; nature of capsule shell and content; processing and control; stability

٥.	<b>Micro-encapsulation; core and coating materials; stability; equipments and methodology</b>
٦.	<b>Modified (sustained release) dosage forms; theory and concepts; evaluation and testing; formulation</b>
٧.	<b>Liquids: Formulation; stability and equipments</b>
٨.	<b>Suspensions: Theory; formulation and evaluation</b>
٩.	<b>Emulsions: Theory and application; types; formulation; equipments and quality control</b>
١٠.	<b>Semisolids: Percutaneous absorption; formulation; types of bases (vehicles) preservation; processing and evaluation</b>
١١.	<b>Suppositories: Rectal absorption; uses of suppositories; types of bases; manufacturing processes; problems and evaluation</b>
١٢.	<b>Pharmaceutical aerosols: Propellants; containers; formulation; types and selection of components; stability; manufacturing; quality control and testing</b>

Title of the course:  
***Practical of Industrial Pharmacy -II***  
 Level: ٥<sup>th</sup> Class, ١<sup>st</sup> Semester

No.	Lab. title
١.	<b>Direct compression method for preparation of tablets</b>
٢.	<b>Wet granulation method for preparation of tablets</b>
٣.	<b>Dry granulation method for preparation of tablets</b>
٤.	<b>Evaluation of tablets</b>
٥.	<b>Capsules dosage form: Preparation and evaluation</b>
٦.	<b>Parenteral dosage forms</b>

Title of the course: ***Organic Pharmaceutical Chemistry-IV***

Level: 6<sup>th</sup> Class, 1<sup>st</sup> Semester

**Theory**

No.	Lecture title
١.	Basic concept of prodrugs; Covalent bonds (cleavable); Prodrugs of functional groups; Types of prodrugs
٢.	Chemical delivery systems; Polymeric prodrugs; Types and structure of polymers; Cross-linking reagents
٣.	Drug targeting
٤.	Project
٥.	Combinatorial chemistry; Peptides and other linear structures; Drug like molecules; Support and linker; Solution-phase combinatorial chemistry
٦.	Detection, purification and analgesics; Encoding combinatorial libraries; High-throughput screening; Virtual screening; Chemical diversity and library design

Title of the course: ***Advanced Pharmaceutical Analyses***

Level: 6<sup>th</sup> Class, 2<sup>nd</sup> Semester

**Theory**

No.	Lecture title
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१.	UV / visible spectroscopy; Sample handling and instrumentation; Characteristic absorption of organic compounds; Rules for calculation of lambda max and application; Application of UV/visible; spectroscopy; Problems and solutions
२.	Infra Red spectroscopy (theory and H-bonding effect; Sampling techniques and interpretation of spectra; Characteristic group frequencies of organic compounds; Application of IR spectroscopy; Problems and solutions
३.	$^1\text{H}$ -Nucleomagnetic Resonance (NMR) and $^{13}\text{C}$ -NMR spectroscopy; Introduction, the nature of NMR absorption, chemical shifts and factors affecting them, information obtained from NMR spectra, more complex spin-spin splitting patterns, application of $^1\text{H}$ -NMR spectroscopy; $^{13}\text{C}$ -NMR spectroscopy: introduction and characteristics, DEPT $^{13}\text{C}$ -NMR spectroscopy
४.	Mass spectroscopy: Introduction and interpreting Mass spectra; interpreting Mass spectra fragmentation patterns, Mass behavior of some common functional groups.
४.	Elemental microanalysis CHNSO

Title of the course:

*Pracyical of Advanced Pharmaceutical Analyses*

Level: 6<sup>th</sup> Class, १<sup>nd</sup> Semester

No.	Lab. Title
१.	Introduction & demonstration to visible spectrophotometry
२.	Absorption spectra of known colored solution
३.	Absorption spectra of unknown colored solution
४.	Beer's law plot of known solution

٥.	Beer's law plot of unknown solution
٦.	Colorimetric assay of tetracycline (FeCl <sub>٦</sub> ), known sample
٧.	Colorimetric assay of tetracycline (FeCl <sub>٦</sub> ), unknown sample
٨.	Colorimetric assay of tetracycline (acid), known sample
٩.	Colorimetric assay of tetracycline (acid), unknown sample
١٠.	Colorimetric assay of streptomycin (maltol, known sample)
١١.	Colorimetric assay of streptomycin (maltol, unknown sample)
١٢.	Colorimetric assay of streptomycin (oxidized, known sample)
١٣.	Colorimetric assay of streptomycin (oxidized, unknown sample)
١٤.	Colorimetric assay of tetracycline (basic, known sample)
١٥.	Colorimetric assay of tetracycline (basic unknown sample)

Title of the course: ***Applied Therapeutics - II***

Level: ٥<sup>th</sup> Class, ٧<sup>nd</sup> Semester

### **Theory**

No.	Lecture title
١	Thyroid and parathyroid disorders
٢	Contraception
٣	Endometriosis
٤	Menstruation related disorders
٥	Hormonal replacement therapy (HRT)
٦	Cancer treatment and chemotherapy
٧	Leukemias
٨	Lymphomas and Multiple myeloma
٩	Breast and prostate cancers

۱۰	Adverse effects of chemotherapy
۱۱	Human immunodeficiency virus
۱۲	Adrenal gland disorders
۱۳	Pituitary gland disorders
۱۴	Alzheimer's disease
۱۵	Schizophrenia
۱۶	Depressive disorders
۱۷	Anxiety disorders
۱۸	Sleep disorders
۱۹	Bipolar disorders
۲۰	Glaucoma
۲۱	HSCT( Hematop. Stem- cell- Transplantation).
۲۲	Multiple sclerosis
۲۳	Adverse drug reactions

Title of the course: ***Dosage Form Design***  
Level: ۵<sup>th</sup> Class, ۷<sup>nd</sup> Semester  
**Theory**

No.	Lecture title
۱.	Pharmaceutical consideration: The need for the dosage form
۲.	General consideration for the dosage form
۳.	Pre-formulation; physical description, microscopic examination
۴.	Melting point; phase rule; particle size; polymorphism; solubility
۵.	Permeability; pH; partition coefficient; pka; stability; kinetics; shelf life
۶.	Rate reaction; enhancing stability

٧.	<b>Formulation consideration: Excipients; definition and types; appearance; palatability; flavoring</b>
٨.	<b>Sweetening; coloring pharmaceuticals; preservatives; sterilization; preservatives selection</b>
٩.	<b>Biopharmaceutical considerations: Principle of drug absorption; dissolution of the drugs</b>
١٠.	<b>Bioavailability and bioequivalency; FDA requirements</b>
١١.	<b>Assessment of bioavailability; bioequivalence among drug products</b>
١٢.	<b>Pharmacokinetic principles: Half life; clearance; dosage regimen considerations</b>

Title of the course: ***Hospital Training***

Level: ٥<sup>th</sup> Class, ٢<sup>nd</sup> Semester

**Theory**

No.	Practice title
١.	<b>Clinical Pharmacy Practice in Internal Medicine: Clinical observation of cases; evaluation of the case sheets; case presentation; discussion and evaluation</b>
٢.	<b>Clinical Pharmacy Practice in Surgery wards: Clinical observation of cases; evaluation of the case sheets; case presentation; discussion and evaluation</b>
٣.	<b>Clinical Pharmacy Practice in Gynecology and Obstetrics Ward: Clinical observation of cases; evaluation of the case sheets; case presentation; discussion and evaluation</b>
٤.	<b>Clinical Pharmacy Practice in Pediatric Ward: Neurology , Cardiology , GIT , Birth defects , Sepsis , Meningitis</b>

Title of the course: ***Pharmacoeconomic***



Title of the course:  
***Practical of Therapeutic Drug Monitoring (TDM)***  
 Level: 5<sup>th</sup> Class, 2<sup>nd</sup> Semester

No.	Lab. title
١	TDM practice in hospitals (overview of the process of requesting serum level monitoring, TDM request form, TDM lab facilities and instrument, TDM team and their own responsibilities)
٢	Problems in basic Pharmacokinetics (PK) and pharmacodynamic (PD)
٣	Clinical PK equations and calculations
٤	Clinical PK in special population and cases
٥	Problems in Clinical PK for Aminoglycosides
٦	Problems in Clinical PK for Vancomycin
٧	Problems in Clinical PK for Digoxin
٨	Problems in Clinical PK for Phenytoin
٩	Problems in Clinical PK/PD for other Anticonvulsants (e.g., Carbamazepine, Valproic Acid, Phenobarbitone/Primidone, Ethosuxsimide)
١٠	Problems in Clinical PK for Theophylline
١١	Problems in Clinical PK/PD for Immunosuppressants (e.g., Cyclosporine, Tacrolimus)
١٢	Problems in Clinical PK/PD for Cardiovascular agents (e.g., Lidocaine, Procainamide/N-Acetyl Procainamide)
١٣	Clinical PK/PD of other drugs (e.g., Lithium), Anticancer agents, and Anticoagulants

Title of the course: **Pharmaceutical Biotechnology**

Level: 5<sup>th</sup> Class, 2<sup>nd</sup> Semester

**Theory**

No.	Lecture title
١	<b>Biotechnology - introduction</b>
٢	<b>Formulation of biotechnology product (biopharmaceutical consideration) Microbial consideration- sterility-pyrogen viral decontamination Excipients of parenteral products - solubility enhancer-anti adsorption agents buffer components-preservatives – osmotic agents.</b>
٣	<b>Route of administration Parenteral route Oral route Alternative routes ( nasal-pulmonary-rectal-buccal transdermal ).</b>
٤	<b>Pharmacokinetic of peptides and proteins , Elimination of proteins (proteolysis-excretion-metabolism</b>

