Paramedical program	
Specialization	**Pharmacy**
Course number	**020805131**
Course title	**Pharmaceutics 1**
Credit hours	**2**
Theoretical hours	**2**
Practical hours	**0**

Brief Course Description:

Introduction to pharmaceutics and its definitions, Drug prescription and its contents, The course study different physical pharmaceutical procedures, biological and dynamical pharmacy.

Course Objectives:

Upon the completion of the course, the student will be able to:
1. Identify pharmacy, scopes of pharmaceutical practice, pharmacist and assistant pharmacist duties.
2. Identify pharmaceutical ethics .
3. Identify parts and components of drug prescription, types and criteria of dispensing.
4. Identify the pharmaceutical procedures.
5. Identify methods of Administration of drugs.
6. Identify drugs pharmacokinetics and biopharmaceutics.

Detailed Course Description:

Unit number	Unit name	Unit content	Time needed
1.	**Introduction**	• **Definition of :** Pharmacy, pharmacist, pharmaceutics, Medication, controlled Substances, pharmaceutical dosage forms, pharmaceutical preparations. • Pharmacist role in health care • Pharmacist technician role in health care • Types of pharmacy practice setting: (community pharmacy, non institutional ,drug stores, institutional pharmacy such as hospital pharmacies, drug manufacturing, medical representation, academic field , governmental institution)	
2.	**Pharmaceutical ethics and behavioral aspects of pharmacy**	• Pharmacist and Pharmacist relation • Pharmacist and Patient relation • Pharmacist and Community relation • Pharmacist and Physician relation • Logos of Medical profession • Social and behavioral aspects of pharmacy • General pharmaceutical ethics	
3.	**Dispensing and Prescription.**	• Definition of prescription. • Types of prescriptions and criteria to dispense it. • The parts of prescription • Abbreviations. • Measures taken to deal with any mistake in any prescription	
4.	**Physical pharmaceutical procedures**	• Physical procedures: (size reducing, separation, Mixing and homogenization • Pharmaceutical procedures that need heat, cold like (crystallization, lyophylization, drying, melting, evaporation, boiling, viscosity).	

5.	**Pharmaceutical procedures which need solvents**	• Dissolving : • Methods of dissolving, and types of solvent • Distillation • Extraction • Maceration • Decoction • Percolation • Digestions	
6.	**Biopharmaceutics And pharmacokinetics**	▪ Definitions. ▪ Routes of drug administration. ▪ Pharmaceuticals dosage forms. ▪ Pharmacokinetics (in brief) ▪ Bioavailability, Bioequivalence, ▪ pharmaceutical equivalence.	

Evaluation Strategies:

	Exams	**Percentage**	**Date**
	Mid Exam	40%	--/--/----
	Final Exam	50%	--/--/----
	Homework and Projects Discussions and lecture Presentations	10%	--/--/----

Teaching language:

- English

Teaching Methodology:

- Lectures

Text Book and References:

1. Pharmaceutical practice , A.J. Winfield, R.M.E. Richards, 3d. edition, 2005, Churchill Livingstone
2. Remington ,The science and practice of pharmacy 21st edition,2004, Lippincott William & Wilkens
3. British Pharmacopoeia 2008, British pharmacopoeia Commission, TSO.
4. L V Allen, N G Popovich, H C Ansel, Ansel‟s Pharmaceutical dosage forms & Drug Delivery Systems, 9th edition, 2nd Indian reprint, 2011, Published by Lippincott Williams and Wilkins, Wolters Kluwer (India) Pvt. Ltd., New Delhi.
5. The pharmacy technician work book & certification , Perspective press ,2nd edition 2004, Morton publishing company.
6. The Science of dosage form design, Edin burgh, 2002, New Yourk, Churchill Livingston

Paramedical program	
Specialization	**Pharmacy**
Course number	**020805231**
Course title	**Pharmaceutics 2**
Credit hours	**2**
Theoretical hours	**2**
Practical hours	**0**

Brief Course Description:

The course deals with Pharmaceutical (liquid, gas)dosage forms including the properties &specification of each phase, their deterioration features.

Course Objectives:

Upon the completion of the course, the student will be able to:
1. Identify the (liquid, gas) state of matter &the properties for each.
2. Identify (liquid, gas) Pharmaceutical dosage forms & their uses &examples of each.
3. Knowing the advantages &disadvantages of each kind.
4. Identify the deterioration features of each kind.

Detailed Course Description:

Unit number	Unit name	Unit content	Time needed
1.	**Liquid state :**	▪ **Forces of attraction:** o Surface tension phenomena &it's application o Types of surfactant ▪ Effect of PH on ionization of weekly acidic or basic drugs &their salts ▪ preparation of buffer solution ▪ Solubility definition o Expression related to degree of solubility o Factors affecting solubility	
2.	**Liquid Pharmaceutical dosage form**	▪ **Water:** o Pharmaceutical waters o the Q.C. test done for purified and parenteral water ▪ **Aromatic Water** o method of preparations o examples ▪ **Solutions:** o general principles in preparation of solutions o Enema o Douches o Gargles o Syrup ▪ Physical & chemical changes during storage and use ▪ **Spirits** o Method of preparation ▪ Tinctures o classifications	

		○ preparation ▪ **Extracts** ○ Type (liquid, solid, semisolid) ▪ **Elixir** ▪ **Parentral Preparation** ○ Preparation and sterility ○ Additives used in parental preparation & examples for each ○ The desirable properties of a good parental preparation ○ Q.C. tests applied at parental preparation ▪ **Ophthalmic Drops** ○ The desirable properties of good ophthalmic drop ▪ **Ear ,Nose Drops** ▪ **Liniment** ▪ **Suspension** ○ The properties of a good suspension ○ The role of suspending agent ○ The stability of suspension ▪ **Lotions** ○ Main component of lotion ▪ **Emulsions** ○ types of emulsion (o /w, w/o) ○ methods of preparation ○ role of emulsifying agent types ○ form of instability of emulsions ○ factors affecting stability of emulsion ○ methods for identifying emulsion type	
3.	**Gaseous State :**	▪ Kinetic molecular theory ○ Real gases ,ideal gases ○ factors affecting solubility of gases (temperature &pressure)	

4.	**Gaseous Pharmaceutical Dosage Form**	▪ **Aerosol** o types of aerosol o type of propellant	

Evaluation Strategies:

	Exams	**Percentage**	**Date**
	Mid Exam	40%	--/--/----
	Final Exam	50%	--/--/----
	Homework and Projects Discussions and lecture Presentations	10%	--/--/----

Teaching language:

- English

Teaching Methodology:

Lectures , visits for a pharmaceutical industry fields

Text Books & References:

1- Martin's Physical pharmacy and pharmaceutical sciences, Patric J .Siko, fifth edition, 2006, Lippincott (Williams & Wilkens)
2- Pharmaceutical practice , A.J. Winfield, R.M.E. Richards, 3d. edition, 2005, Churchill Livingstone
3- Physical pharmacy, Alfred Martin, Bustamante, 4th edition,1993, Lippincott William & Wilkins
4- Remington ,The science and practice of pharmacy 21st edition,2004, Lippincott William & Wilkens

5- British Pharmacopoeia 2008, British pharmacopoeia Commission, TSO.
6- The Science of dosage form design, Edin burgh, 2002, New Yourk, Churchill Livingston
8- Gilbert & Christopher Rhodes , Modern Pharmaceutics, third edition ,1995, Publisher Marcel Dekker, Madison Avenue , New York Morton publishing company.

Paramedical program	
Specialization	**Pharmacy**
Course number	**020805233**
Course title	**Pharmaceutics 3**
Credit hours	**2**
Theoretical hours	**2**
Practical hours	**0**

Brief Course Description:

Brief Course Description:

☿ To study semi solid and solid pharmaceutical dosage forms . Also the course deal with drug incompatibilities.

Course Objectives:

Upon the completion of the course, the student will be able to:

1. Identify the properties of semi solids and solid state of matter.
2. To realize semi solid and solid pharmaceutical dosage forms in addition to their features of deterioration
3. To acquaint students with drug incompatibilities – different kinds of incompatibilities (Physical, Chemical, Therapeutic).

Detailed Course Description:

Unit number	Unit name	Unit content	Time needed
1.	**Semisolid Pharmaceutical dosage forms**	▪ **Ointment** o Kind of bases and Properties for each o Methods of preparations of ointment. o The Q. C test ▪ **Ophthalmic ointment** ▪ **Creams: (** Cold cream, Vanishing cram) ▪ Pastes ▪ Liniments ▪ Suppositories o Kind of bases and their properties (cacao butter, PEG, witepsol base, glycerogelatine) o Methods of Preparation	
2.	**Solid State** :	▪ **Type of solid forms** (crystalline ,amorphous) o Effect of polymorphism on stability of drugs o Factors affecting dissolution of solid substances	
3.	**Solid-Pharmaceutical dosage form**	▪ **Powders** o Problems in preparation and mixing powders (Eutectic mixtures -oxidation-reduction absorption of moisture) ▪ **Effervescent Powders** o Main composition of this dosage form o Test evaluation ▪ **Capsules** o Types (hard, soft, enteric, spansules) o The Q. C. test ▪ **Tablets** o Methods of preparation o Importance & types of granulation o Excipients (role &examples)	

		▪ **Types of tablets** o (sublingual, chewable, compound, pellets, lozenges, pastilles, effervescent, sustained &controlled release tablet) o Coating of tablets (enteric, sugar, film) o Tablet problems (sticking ,mottling lamination, capping, chipping ,hardness, weigh variation) o The Q.c. test of tablets.	
4.	**Drug incompatibilities**	▪ **Physical incompatibility** - Immiscibility - Insolubility - Liquefaction ▪ **Chemical incompatibility** - Oxidation - Hydrolysis - Polymerization - Isomerization ▪ **Therapeutic incompatibility** - Change in extent and rate of gastric and enteric absorption - Replacement of drugs with plasma protein - Induction of liver enzyme - Change in rate and extent of drug elimination	

Evaluation Strategies:

	Exams	**Percentage**	**Date**
	Mid Exam	40%	--/--/----
	Final Exam	50%	--/--/----

	Homework and Projects Discussions and lecture Presentations	10%	--/--/----

Teaching language:

- English

Teaching Methodology:

Lectures , visits for a pharmaceutical industry fields

Text Books & References:

1- Martin's Physical pharmacy and pharmaceutical sciences, Patric J .Siko, fifth edition, 2006, Lippincott (Williams & Wilkens)
2- Pharmaceutical practice , A.J. Winfield, R.M.E. Richards, 3d. edition, 2005, Churchill Livingstone
3- Physical pharmacy, Alfred Martin, Bustamante, 4th edition,1993, Lippincott William & Wilkins
4- Remington ,The science and practice of pharmacy 21st edition,2004, Lippincott William & Wilkens
5- British Pharmacopoeia 2008, British pharmacopoeia Commission, TSO.
6- The Science of dosage form design, Edin burgh, 2002, New Yourk, Churchill Livingston
8- Gilbert & Christopher Rhodes , Modern Pharmaceutics, third edition ,1995, Publisher Marcel Dekker, Madison Avenue , New York Morton publishing company.