

Table (3)

Semester (3)

Course Title	Course Code	Credit Hours			Prerequisite	Examination Marks				Total Marks	Final Exam. Hours
		Lect.	Pract./tut	Total		Period.	Pract.	Wr.	Oral		
Pharmaceutical Organic Chemistry-III	PR 303	2	1	3	Pharmaceutical Organic Chemistry-II	20	40	75	15	150	2
Biochemistry I	PB302	2	1	3	Cell Biology	20	40	75	15	150	2
Pharmacognosy II	PG 303	2	1	3	Pharmacognosy-I	20	40	75	15	150	2
Basic Pharmacology	PO 302	2	1	3	Registration	20	40	75	15	150	2
Physiology and Pathophysiology	MD 302	2	1	3	Registration	20	40	75	15	150	2
Pharmaceutical Dosage Forms I	PT 303	2	1	3	Physical pharmacy	20	40	75	15	150	2
<b>Total</b>		<b>12</b>	<b>6</b>	<b>18</b>						<b>900</b>	

- *Lect.* = Lecture
- *Period.* = Periodical
- *Pract.* = Practical
- *Wr.* = Written

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**Table (4)**

**Semester (4)**

Course Title	Course Code	Credit Hours			Prerequisite	Examination Marks				Total Marks	Final Exam. Hours
		Lect.	Pract./tut	Total		Period.	Pract.	Wr.	Oral		
Pharmacology I	PO 403	2	1	3	Basic Pharmacology	20	40	75	15	150	2
General Microbiology and Immunology	PM 401	2	1	3	Cell biology	20	40	75	15	150	2
Communication Skills	NP 403	1	1	2	Registration	15	25	60	--	100	1
Pathology	MD 403	2	--	2	Registration	25	--	75	--	100	2
Pharmaceutical Dosage Forms-II	PT 404	2	1	3	Physical Pharmacy	20	40	75	15	150	2
Biochemistry II	PB 403	2	1	3	Biochemistry I	20	40	75	15	150	2
Pharmacy Legislation and Ethics	NP 404	1	-	1	Registration	10	---	40	---	50	1
Parasitology	MD 404	1	1	2	Registration	15	25	50	10	100	1
<b>Total</b>		<b>13</b>	<b>6</b>	<b>19</b>						<b>950</b>	

○ *Lect.* = Lecture                      *Pract.* = Practical  
○ *Period.* = Periodical                  *Wr.* = Written

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محتوى مقررات المستوى الثانى

### PR 303 Pharmaceutical Organic Chemistry III

This course involves: carbohydrates, amino acid & peptides, polynuclear and heterocyclic chemistry. In addition, it provides an introduction about the use of different spectroscopic tools, including infrared (IR), nuclear magnetic resonance (NMR) and mass spectrometry (MS) for the structural elucidation of organic compounds.

### PB 302 Biochemistry I

It is an introductory course that covers the biochemical properties and biological importance of biomolecules including carbohydrates, lipids, and proteins, nucleic acids, nucleoproteins and porphyrins, in addition to biochemistry of enzymes. Also, immunoglobulins will be covered.

### PT303 Pharmaceutical Dosage Forms I

This course is a study of the system of weights, measures, mathematical expertise and pharmaceutical calculations requisite to the compounding, dispensing, and utilization of drugs in pharmacy practice. It is also concerned with all manufacturing formulations aspects, packaging, storage and stability of liquid dosage forms including solutions (aqueous and non-aqueous), suspensions, emulsions and colloids with emphasis on the technology and pharmaceutical rationale fundamental to their design and development. The incompatibilities occurring during dispensing are also considered.

### PG 303 Pharmacognosy II

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Based on the Egyptian flora and other floras of wild and cultivated medicinal plants that are used in the pharmaceutical, cosmetic and food industries in the global & Egyptian market. The course introduces students to some botanical drugs of, fruits, subterreans, herbs, unorganized drugs of marine and animal origin. During the lectures and practical sessions, students learn to identify examples of these drugs in their entire and powdered forms. Student will learn about the major constituents, folk uses, clinically proven uses, benefits, precautions of those medicinal plants.possible herbal-drug interactions of selected examples of these drugs.

### MD 302 Physiology and Pathophysiology

This course cover the physiological function of different organs including physiology of body fluids, blood, nerve and muscle, central nervous system, special senses, autonomic nervous system, defense mechanisms. Physiology of cardiovascular, respiratory, excretory, endocrine and digestive systems; organic and energy metabolism; exercise and environmental stress are also included.

### PO 302 Basic Pharmacology

This course provides the principles underlying the actions of drugs; including pharmacokinetics, drug-receptor interactions, and drug metabolism. It explores the fundamental mechanism of drug action emphasizing the modulation of interactions between endogenous ligands and targets. Key target types include receptors, enzymes, transporter proteins, ion channels and nucleic acids are covered. Key concepts include enzyme action, regulation, inhibition and signal transduction. In addition, the course provides the basic principles of drug absorption, distribution, metabolism and excretion.

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## PB 403 Biochemistry II

It is course to study the biological oxidations and related biochemical processes, metabolism of carbohydrates, proteins and lipids and their regulations, role of hormones in metabolism regulation, integration of metabolism and metabolic disorders. Mineral metabolism, Biochemistry of cancer and free radicals and antioxidants.

## PT 404 Pharmaceutical Dosage Forms II

This course covers the structure and function of the skin, target area of treatment after topical application to skin, basic principles of diffusion through membranes and factors affecting percutaneous absorption, enhancement of skin penetration, transdermal drug delivery systems (TDDS). It also describes the principles and techniques involved in the formulation and manufacturing of traditional dermatological semisolid dosage forms (creams, ointments, gels and pastes) and cosmetic products.

## PM 401 General Microbiology and Immunology

The course provides students with a combination of laboratory and theoretical experience exploring the general aspects of microbiology. It includes knowledge of microorganisms, their morphology, diversity, cell structure and function, cultural characteristics, growth, metabolism, role of microorganisms in infectious diseases and microbial pathogenesis. It also clarifies different mechanisms of transport across bacterial cell membrane, metabolic pathways and physiology of bacteria. The course also covers the principles of genetic characters including DNA and RNA structures, replication, different forms of mutation and mutagenic agents. It also explores the basic concepts microbial growth , cultivation and reproduction. Moreover it introduces the modern concepts of medical immunology, with an emphasis on host parasite relationship, Non-specific and specific immunity, Mechanism of protective immunity. Molecular and cellular



immunology. Active and passive immunization, hypersensitivity, immuno-deficiency disorders, autoimmunity and auto-immune disease, organ transplantation is covered.

### MD 403 Pathology

The course concentrates on the study of biochemical, structural and functional changes in cells, tissues and organs, which are caused by diseases.

### MD 404 Parasitology

This course will focus on parasitic infections of humans with knowledge concerning biological, epidemiological and ecological aspects of parasites causing diseases to humans. It concerns with different parasitological related diseases in in Egypt causing serious health problems.

This part of the course will discuss medical helminthology, protozoology and entomology concerning their morphological features, life cycle, pathogenesis, clinical manifestations, different diagnostic techniques, the most recent lines of treatment and prevention with control strategy for each parasitic infection. Moreover, it also covers laboratory diagnosis of human parasitic infections.

### PO 403 Pharmacology I

This course integrates principles of pharmacology with conceptual knowledge of physiology and pathophysiology to disease processes regarding the autonomic, neuromuscular, autacoids and cardiovascular systems.

### NP 403 Communication Skills

The course will help students develop necessary written and oral communication and presentation skills to improve inter- and intra-professional collaboration and communication with patients and other health care providers. The course will also deal with the underlying attitudes, which form an interpersonal skills. It focuses on concept and meaning of communication; verbal and non verbal communication (body and vocal

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language); active listening skills; communication styles and presentation skills. Communication skills in diverse pharmacy practice setting will be discussed

## NP 404 Pharmaceutical Legislations and Ethics

A detailed presentation of law that governs and affects the practice of pharmacy, legal principles for non-controlled and controlled prescriptions, OTC drug requirements, opening new pharmacies, opening medical stores, opening factories, opening scientific offices, medicine registration, pharmacies and medicine stores management. Pharmacist duties and responsibilities, pharmacist-patient relationship, patient's rights and ethical principles and moral rules. Professional ethics provides general principles and history of pharmacy ethics, general principles of medical ethics, conflicts of interests and its management pharmacists relationship with society and family, ethics in disaster, medication error, research ethics and animal ethics.

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