Master in pharmacy

General courses

Exam marks				Exam duration	Credit hours	course title	Code	Ist semester
Total	Oral	Practical	Theo.					
100	10	30	60	1	(1+1)	New Trends In Computer Science	3001	The first
100	10	30	60	2	(1+2)	Instrumental Analysis	3002	
100	--	--	100	2	(0+2)	Biostatistics.	3003	
100	20	--	80	1	(0+1)	Scientific Writing.	3004	
					8	Total		

Course description of general courses

Course title and description	Code
New Trends In Computer Science Computer systems, types of variable computers, computer parts, digital systems, data inputs, data output, storage units, programing, statistical programs, data processing programs, multimedia and communication programs, windows, word, excel, power point, internet, in addition to educational programs that help research in the field.	**3001** **(1+1)**
Instrumental Analysis This course aims to identification of different methods of instrumental analysis ,their calibration and interpretation of results in pharmaceutical field.	**3002** **(1+2)**
Biostatistics: Normal distribution, factorial design, variance and mean measurement, measurement of significance, random sampling, T-test, ANOVA, straight line statistics and correlation coefficient measurement.	**3003** **(0+2)**
Scientific Writing Registration point selection, library use, the first step to address results, research writing, make attractive scientific paper, the quality of shape and optimum use of vocabulary writing, tables and legend, revising before publishing, bibliography and indexes**.**	**3004** **(0+1)**

Master in pharmacy
pharmaceutical technology

Exam marks			Exam duration	Credit hours	Course title	Code	semesters
Total	Oral	Theo.					
100	20	80	2	(0+2)	Physical Pharmacy and Preformulation studies	3101	The first
100	20	80	2	(0+2)	Dosage Form Design1	3102	The second semester
100	20	80	2	(0+2)	Advanced Drug DeliverySystems	3103	
100	20	80	2	(0+2)	Advanced Industrial Pharmacy	3104	
100	20	80	2	(0+2)	Quality Control And Stabilityof Pharmaceuticals	3105	
100	--	--	--	(0+2)	Selected topics in pharmaceutics	3106	
				12	Total		

Master in pharmacy
pharmaceutical technology

Course title and description	Code
Physical Pharmacy and Preformulation studies Material physical state, thermodynamics, physical characters of molecules, solubility, distribution, polymers, proteins attachment, surface tension, polymers in pharmacy applications, rheology**.**	**3101** **(0+2)**
Dosage Form Design 1 Sustained release drugs, microencapsulation, tablets, capsules, sterile products, suppositories, cosmetics and aerosoles.	**3102** **(0+2)**
Advanced Drug Delivery Systems Using red blood cells for drug transport, mucoadhesives, transdermal drug delivery systems, nasal drug delivery, colon targeting, floating tablets, braindrug targeting and nanoparticles drug delivery.	**3103** **(0+2)**
Advanced Industrial Pharmacy -Modern equipments of milling ,mixing, and drying. -Development updates of equipments concerning dosage form design and stability enhancement.	**3104** **(0+2)**
Quality Control And Stability of Pharmaceuticals **-**Concepts of quality, quality assurance, quality management, industrialoperations monitoring and material check up. -Pharmacokinetics, drug stability, factors affecting pharmacokinetic parameters, accelerated drug stability studies, unstability of dosage forms and drug hydrolysis.	**3105** **(0+2)**
Seminars on selected recent topics in pharmaceutics	**3106** **(0+2)**

Master in pharmacy
The pharmacognosy

Exam marks			Exam duration	Credit hours	Course title	Code Total	Ist semester
Total	Oral	Theo.					
100	20	80	2	(0+2)	Chromatographic isolation and identification of natural products.	3201	The first
100	20	80	2	(0+2)	Quality Control and Standardization of Herbal Products.	3202	The second
100	20	80	3	(0+3)	Biotransformation of Natural Products	3203	
100	20	80	3	(0+3)	Application of Spectroscopy in Structure Elucidation of Natural Products	3204	
100	--	--	--	(0+2)	Seminars on selected recent topics in pharmacognosy	3205	
				12	Total		

Master in pharmacy
(The pharmacognosy)

Course title and description	Code
Isolation and Identification of Natural Products using Advanced Chromatographic Methods. This course deals with studying the various chromatographic methods andtheir applications for isolation , identification , qualitative and quantitive analysis of multiple phyto constituents from different plants and their applications.	**3201** **(0+2)**
Quality Control and Standardization of Herbal Products. This course includes international standards for quality assurance of phytopharmaceuticals and these standards include agricultural quality practice also good manufacturing practice and achieving the requirements of end products according to the requirements of worldhealth organization	**3202** **(0+2)**
Biotransformation of Natural Products ' This course include introduction for identification of secondary metabolites and their importance for the producing organisms,also methods and techniques used for studying them and the use of biotransformation for these products for development of drugs and new bioactive medical compounds , and the importance of this in development of new drugs from different natural products with botanical , animal and microbial origin	**3203** **(0+3)**
Application of Spectroscopy in Structure Elucidation of Natural Products **.** This course care about studying spectroscopic methods (Ultraviolet , infrared , mass spectroscopy , nuclear magnetic resonance and their use in identification of natural products and their structure elucidation.	**3204** **(0+3)**
Seminars on selected recent topics in pharmacognosy	**3205** **(0+2)**

Master in pharmacy
(Pharmacology and toxicology)

Exam marks				Exam duration	Credit hours	Course title	Code	semesters
Total	Oral	Practical	Theo.					
100	20	--	80	2	(0+2)	Pharmacometrics	3301	The first
100	20	--	80	2	(0+2)	Applied Toxicology and Toxicometrics	3302	The second semester
100	20	———	80	2	(0+2)	Clinical Pharmacology.	3303	
100	20	---	80	2	(0+2)	Pathophysiology ofDiseases.	3304	
100	20	---	80	2	(0+2)	Immuno-Pharmacology.	3305	
100	--	100	--	2	(2+0)	Experimental Pharmacology	3306	
					12	Total		

Master in pharmacy
(Pharmacology and toxicology)

Course title and description	Code
Pharmacometrics 1- Screening and bioassay of antiulcer drugs, anti-inflammatory drugs…etc. 2- Detection and evaluation of chemically induced liver injury including: -Hepatic structure and function -classification of chemically induced liver injury -lipid peroxidation -biological antioxidants -hepatotoxic agents -evaluation of hepatic injury 3- Screening and bioassay of some drugs acting on the central nervous system and cardiovascular system.	**3301** **(0+2)**
Applied Toxicology and Toxicometrics 1- sources and hazards of reactive oxygen species, causes of potential drug adverse effects, lethal drug interactions, and drug abuse- changes in absorption, metabolism and excretion. 2- Qualitative and quantitative assessment of toxicity 3-Principles of acute, subacute and chronic toxicity: • Genetic toxicity	**3302** **(0+2)**

• Methods for testing carcinogenicity • Teratology test methods for laboratory animals • Methods in behavioral toxicology • Biochemical methods for neuro-toxicological analysis	
Clinical Pharmacology: Treatment methodology of cardiovascular diseases and central nervous system disorders with an insight on molecular signaling mechanism	**3303** **(0+2)**
Pathophysiology of Diseases: Etiology and pathophysiology of: • insomnia, anxiety, psychosomatic diseases, depression, parkinsonism, all types of epilepsy • pain, rheumatic disease rheumatic arthritis, gout • hypertension, angina , cardiac arrhythmias, atherosclerosis, congestive heart failure • asthma and COPD • endocrine imbalance	**3304** **(0+2)**
Immuno-Pharmacology: The course contents mainly deals with immune system, immunopathology, immunosuppressents and immunostimulant.	**3305** **(0+2)**
Experimental Pharmacology **Practical course:** application for various techniques used in pharmacological research and handling of experimental animals in research	**3306** **(2+0)**

Master in pharmacy
(Microbiology and immunology)

Exam marks			Exam duration	Credit hours	Course title	Code	Semesters
Total	Oral	Theo.					
100	20	80	2	(0+2)	Microbiology and Immunology	3401	The first
100	20	80	2	(0+2)	Microbiology of infectious diseases	3402	The Second
100	20	80	2	(0+2)	Biotechnology	3403	
100	20	80	2	(0+2)	Pharmaceutical Microbiology.	3404	
100	20	80	2	(0+2)	Microbial genetics and gene technology.	3405	
100	--	--	--	(0+2)	Selected Topics	3406	
				12	Total		

Master in pharmacy
(Microbiology and immunology)

Course title and description	Code
Microbiology and Immunology Biochemistry of the bacterial cell, metabolism, factors controlling bacterial growth, structure and culture of fungal cell, structure ,replication and culture of viruses and molecular genetics and the basics of immunology, immunological methods and autoimmune diseases.	**3401** **(0+2)**
Microbiology of infectious diseases The epidemiology of new infectious microbes, the relationship between the host and causative agent, the interaction between infectious diseases and the immune system, treatment and preventive measures for public health	**3402** **(0+2)**
Biotechnology Biotechnology techniques, applications of biotechnology in pharmaceuticals, food production and organic compounds	**3403** **(0+2)**
Pharmaceutical Microbiology. Study the different types of antibiotics , antimicrobial agents and disinfectants their mechanisms of action and mechanisms of resistance. Problems of contamination during pharmaceutical production.	**3404** **(0+2)**
Microbial genetics and gene technology. Microbial genetics, dealing with genes, genetic engineering and microbial biotechnology	**3405** **(0+2)**
Selected Topics:	**3406** **(0+2)**

Master in pharmacy
(pharmaceutical chemistry)

Exam marks						Course title	Code	Semesters
Total	Oral	Practical	Theo.	Exam duration	Credit hours			
100	20		80	2	(0+2)	Advanced pharmaceutical organic chemistry I	3501	The first
100	20		80	3	(0+3)	Advanced medicinal chemistry I	3502	The Second
100	10	30	60	1	(1+1)	Advanced drug design	3503	
100	20		80	2	(0+2)	Spectral identification of organic compounds	3504	
100	--		--	--	(0+3)	Seminar	3505	
					12	Total		

Master in pharmacy
(pharmaceutical chemistry)

Course title and description	Code
Advanced Pharmaceutical Organic Chemistry I: Advanced course in organic chemistry aims to employ what was previously studied by students including the principles of organic chemistry and physical chemistry. This course includes the study of the basic types of organic reactions depending on the mechanism of these interactions so that the student can identify or predict the type of the organic reaction and outputs. This course is divided into: electrophilic and nucleophilic substitution reactions for aliphatic and aromatic compounds, reactions of free radicals, addition reactions to the multiple carbon bonds and heterogeneous atoms, elimination reactions, neutralisation reactions and redox reactions.	**3501** **(0+2)**
Advanced Medicinal Chemistry I: It is an introductory course to study the fundamentals of contemporary medicinal chemistry and to study various drug classes and their mechanism of action.	**3502** **(0+3)**
Advanced Drug Design This course includes methods used in drug design and modern developments for the design of future drugs that are expected to be more effective and less toxic . Quantitative trend to assess the relationship between the Structural requirements and biological effect- molecular modeling and drug design using computer - crystal structure of the protein and the bases and methods used in drug design and modern developments for the design of future drugs . Simulation design of peptides and enzyme inhibitors- biological catalysts design - precedents medicine - large molecules as drug delivery systems.	**3503** **(1+1)**

This course involves intensive pratical training using computational methods for molecular modeling.	
Spectral Identification of Organic Compounds: Intensive course for understanding the topics relating to the interpretation of molecular spectra allowing the structural elucidation of organic compounds using UV spectrum, infrared spectroscopy, nuclear magnetic resonance spectrum and mass spectrometry.	**3504** **(0+2)**
Seminar in Pharmaceutical Chemistry	**3505** **(0+3)**

Master in pharmacy
(pharmaceutical analytical chemistry)

Exam Marks			Exam duration	Credit hours	Course title	Code	Semesters
Total	Oral	Theo.					
100	20	80	2	(0+2)	Advanced Methods of Instrumental Analysis.	3601	The first
100	20	80	1	(0+1)	Quality Control in Pharmaceutical Industry	3602	The Second
100	20	80	1	(0+1)	New Trends in analytical Chemistry.	3603	
100	20	80	2	(0+2)	Separation Analysis Techniques.	3604	
100	20	80	1	(0+1)	Stability Indicating Methods of Analysis.	3605	
100	20	80	2	(0+2)	Advanced electrochemical and thermal analysis.	3606	
100	20	80	1	(0+1)	Functional group analysis.	3607	
100	20	80	2	(0+2)	Advanced Analytical ChemistryI.	3608	
				12	Total		

Master in pharmacy
(pharmaceutical analytical chemistry)

Course title and description	Code
Advanced Methods of Instrumental Analysis: This course includes the study of molecular absorption, ultraviolet (UV)/visible spectrophotometry and infrared spectroscopy - Atomic Absorption spectrophotometry. Recent trends in analytical applications of nuclear magnetic resonance spectroscopy and electrochemical methods of analysis	**3601** **(0+2)**
Quality Control in Pharmaceutical Industry: This course emphasizes the principles of quality management for pure reference materials, Design and adjust methods to make sure the quality of the different analytical methods, Good Analytical Practice (GAP) and Good Laboratory Practice (GLP).	**3602** **(0+1)**
New Trends in analytical Chemistry This course includes the study of nanoscale chemical analysis, study of the gas phase confirmation of ions using mass spectrometry and fluorescence spectrscopy .	**3603** **(0+1)**
Separation Analysis Techniques: This course includes the study of basic principles, instrumentation and applications of different methods of chromatographic analysis such as gas chromatography – High performance liquid chromatography- Ion exchange chromatography .	**3604** **(0+2)**
Stability Indicating Methods of Analysis: This course modalities allow simultaneous determination of the active ingredients in the presence of their degaradtion products by chromatographic, spectroscopic techniques	**3605** **(0+1)**
Advanced electrochemical and thermal analysis:	**3606** **(0+2)**

This course includes the study of the theory of modern electrochemical analytical methods. The study also includes their importance in the estimation of various pharmaceutical drugs, whether in pure form or in pharmaceutical dosage forms and its suitability in drug control. The study of thermal analysis techniques, namely: thermal gravimetric analysis and its derivatives, differential thermal analysis, differential scanning calorimetry,dimensional thermal analysis, detection and quanitative analysis of gases, and other …	
Functional Group Analysis: This course emphasis the basic principles of functional groups analysis by direct and indirect methods.	**3607** **(0+1)**
Advanced Analytical ChemistryI. Safety precautions in labs, classification of hazard chemical materials, evaluation of the statistical results of chemical analysis and determine the degree of confidence in those results. Identify and assess the impact on the results of analysis points. Design and methodology for analytical method	**3608** **(0+2)**

Master in pharmacy
(Biochemistry)

Exam Marks				Exam duration	Credit hours	Course title	Code	Semesters
Total	Oral	Practical	Theo.					
100	20		80	2	(0+2)	Biochemistry as Research tool in Diseases.	3701	The first
100	10	30	60	1	(1+1)	Diagnostic laboratory apparatus.	3702	The Second
100	20		80	2	(0+2)	Clinical Biochemistry and Human Genetics	3703	
100	20		80	2	(0+2)	Molecular biological techniques.	3704	
100	--		--	-	(0+2)	Selected topics for MSc students (seminars).	3705	
100	20		80	2	(0+2)	Common Diseases in Egypt	3706	
					12	Total		

Master in pharmacy
(Biochemistry)

Course title and description	Code
Biochemistry as Research tool in Diseases. Chemistry of biomolecules and their relationship to the components of the cell - biological membranes: the structure and function of biological membranes, enzymes: structure and mechanism of action and the biologicalinteraction and the relationship of that reaction kinetics .vitamins and minerals principles. Also food metabolism and porphorin**. Exploiting biochemistry as tool in diseas diagnosis and perusal of disease response to different therapeutic modalities.**	**3701** **(0+2)**
Diagnostic laboratory apparatus: The study of traditional and modern methods and devices that are used in different methods of Medical and Laboratory analysis Spectroscopy and chromatography devicesELISA analysis devices Analysis and calibration of viruses qualitatively and quantitatively.	**3702** **(1+1)**
Clinical Biochemistry and human Genetics: Deals with heridaitary diseases, the relation between phenotype and genotype, molecular analysis of mutations. Chemical and bio-molecular diagnosis of genetic diseases The Study of Metabolic diseases such as: Obesity – diabetes - Endocrinology - liver and kidney disease	**3703** **(0+2)**
Molecular biological techniques: **1**- .Polymerase chain reaction (qualitative) 2-- Polymerase chain reaction (PCR) quantitative 3- linking results with other pathological analysis	**3704** **(0+2)**
Selected topics for M.Pharm students (seminars) The student studies selected topics dealing with recent discoveries in the field of specialization	**3705** **(0+2)**
Common diseases in Egypt Here we teach common diseases in Egypt, with an impact on health and the economy	**3706** **(0+2)**

Master in pharmacy
(clinical pharmacy)

Exam Marks			Exam duration	Credit hours	Course title	Code	Semesters
Total	Oral	Theo.					
100	20	80	2	(0+2)	Advanced Therapeutics I.	3801	The first
100	20	80	2	(0+2)	Advanced Therapeutics II.	3802	The Second
100	20	80	2	(0+2)	Advanced Therapeutics III.	3803	
100	20	80	2	(0+2)	Advanced Therapeutics IV.	3804	
100	20	80	2	(0+2)	Clinical Interpretation of Laboratory Data	3805	
100	--	--	--	(0+2)	Selected Topics (Seminars)	3806	
				12	Total		

Master in pharmacy
(clinical pharmacy)

Course title and description	Code
Advanced Therapeutics I. This course include recent advances in cardiovascular diseases,and Hyperlipidemia regarding pathophysiology and treatment and role of Phramacist in Cardiovascular Disorders	**3801** **(0+2)**
Advanced TherapeuticsII. This course include recent advances in Dermatologic Disorders regarding pathophysiology and treatment and role of Phramacist in Dermatologic Disorders in addition to the use of OTC drugs in practice.	**3802** **(0+2)**
Advanced Therapeutics III. This course include recent advances in Neuropsychatric disorders (epilepsy,Parkinson disease) and Bone disorders (oestoarthrites) regarding pathophysiology and treatment and role of Phramacist in these disorders	**3803** **(0+2)**
Advanced Therapeutics IV. This course includes recent advances in regarding Cancer and Urology **regarding** pathophysiology and treatment and role of Phramacist in these Disorders **.**	**3804** **(0+2)**
Clinical Interpretation of Laboratory Data The course is scheduled to address the different ways to diagnose the diseases and the impact of various diseases on medical tests and how to diagnose through medical tests.	**3805** **(0+2)**
Selected Topics (Seminars)	**3806** **(0+2)**