



Helwan University



**QUALITY ASSURANCE AND ACCREDITATION
PROJECT**

**The Faculty of Pharmacy
Helwan University**

**BACHELOR OF PHARMACEUTICAL SCIENCES
(B.Pharm. Sciences)**

Programme Specification

2004/2005

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Helwan University
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ACCREDITATION PROJECT**

**BACHELOR OF PHARMACEUTICAL SCIENCES
(B.Pharm. Science)**

Teaching Institution: Faculty of Pharmacy, University
of Helwan, Cairo, Egypt.

Awarding Institution: University of Helwan

Degree Award: Bachelor of Pharmaceutical
Sciences (B. Pharm. Sci.)

Length and Mode: 5 years/ Full semester time

Program Coordinator: Prof. Dr. Mossad Sayed M. Abdallah
The Dean.

Assistant Coordinator: Ass. Prof. Dr. Soad M. Abdel Khalik
Manager of the Quality Assurance and
Accreditation Project

Programme Specification

(Old and New Curriculum)

2004-2005

A- Basic Information

1- Programme Title:

Bachelor Degree in Pharmaceutical Sciences

2- Programme Type:

Multidisciplinary

3- Faculty:

Faculty of Pharmacy- Helwan University

4- Departments:

- a- Department of Pharmaceutics
- b- Department of Pharmacognosy
- c- Department of microbiology and Immunity
- d- Department of Drugs and Toxicology
- e- Department of Biochemistry
- f- Department of Analytical Chemistry
- g- Department of Pharmaceutical Organic Chemistry
- h- Department of Pharmaceutical Chemistry
- i- Department of Clinical Pharmacy

5- Programme Coordinator: Prof. Dr. Mossad Sayed M. Abdallah
The Dean.

6- Assistant Coordinator: Ass.prof. Dr. Soad M. Abdel Khalik
QAAP Manager

7- External Evaluator(s): -----

8- Last date of programme specifications approval: 17/7/2003

B- Professional Information:

1-Programme Aims:

The aim of the 5-year programme is to graduate pharmacists with integrated chemical and biological knowledge related to pharmaceutical sciences. The programme combines these sciences with all related aspects of health care for the benefit of patients.

Career outcomes:

Courses of the pharmaceutical sciences degree enable pharmacists to have the skills and attitudes required for the formulation of new products; planning and optimization of drug development strategies; advising on regulatory issues; marketing of pharmaceutical products; research into the discovery, characterization, evaluation of activity and safety of medicines; and safe and economically responsible use of medicines in practice.

2-Intended Learning Outcomes (ILOs)

After completion of the programme, a graduate should demonstrate knowledge and understanding qualities and develop skills appropriate for the pharmaceutical sciences degree.

a- Knowledge and Understanding:

on successful completion of the degree programme, students will be able to demonstrate knowledge and understanding of:

- a₁- The different processes for preparing the drug to the market starting from cultivation, collection and drying.
- a₂- Describe the morphological and histological characters of entire and powdered plant organs, identify examples of plants derived drugs, their active constituents, medicinal uses and tests for their chemical identification.
- a₃- Treatment of data, gravimetric analysis, volumetric analysis including oxidation-reduction titrations using electrochemical techniques, the use of specific ion analysis and titrations.
- a₄- Gain experience in drug production using tissue culture and biosynthesis.

- a₅ - Demonstrate detailed knowledge about sampling of drugs, qualitative and quantitative analysis of natural products.
- a₆-Appropriate scientific methods used in drug separation, interpretation and analysis.
- a₇- Basic of pharmaceutics terminology of drug groups.
- a₈- Understanding of various roles & ethics of pharmacy.
- a₉- Know and understand the principles of studying history of pharmacy.
- a₁₀- Basic of pharmaceutical calculation for doses and for prescription.
- a₁₁- Know and understand various methods for evaluation of dosage forms.
- a₁₂- Understanding the principles of physical parameters and compatibility of
drugs and additives combination in dosage forms.
- a₁₃- Understand the principles of human anatomy, histology, pathology and physiology that is relevant to pharmacokinetics; absorption, distribution and elimination.
- a₁₄- Pharmaceutical care and principles of counseling that is relevant to patient health care delivery system.
- a₁₅- Basic processes of formulation of sterile pharmaceuticals .
- a₁₆-The role and applications of solid dispersion, complexation and radio pharmaceuticals in pharmacy.
- a₁₇- Principles of bioavailability and bioequivalence that is relevant to bio-pharmaceutics.
- a₁₈- Basic pharmacokinetic principles that is relevant to dosage adjustment.
- a₁₉- Understand the basic pre-formulation procedures and the relation between the therapeutic effect and dosage form design.
- a₂₀- Basic procedures in drug marketing and promotion
- a₂₁- Microbial contamination and its control.
- a₂₂- The basis of microbial structure and function, leading to an understanding

of determinants of pathogenicity in bacteria, viruses and fungi.

- a₂₃- The immune response to infection.
- a₂₄- Recognition of disease state, pathology and management of symptoms.
- a₂₅- Basic knowledge about psychology.
- a₂₆- Understanding and knowledge the principles of physical parameters and compatibility of drug and additives combination affect physical properties of drug molecules
- a₂₇- Appropriate practical scientific methods to qualify students to apply theoretical principles and prepare them for career work in the field of chemistry of natural products.
- a₂₈- Understand how does medical terminology work that is relevant to communications.
- a₂₉- Principles of terms in pharmacy that is relevant to orienting students to pharmacy.
- a₃₀- Learn the forms and mechanics of writing which help students produce a readable piece of writing with minimal or no language mistakes
- a₃₁- Understand and interpret various methods of biological screening and standardization of drug activities.
- a₃₂- Understand the mathematical process of biostatistical procedures.
- a₃₃- The fundamental structure and function of biologically important macromolecules.
- a₃₄- Understanding of metabolism and how the cells work, including the structure and function of the cell membranes and the principles of membrane transport.
- a₃₅- Recognition of the functional groups in biologically active molecules and its application to design pharmaceutical drugs.
- a₃₆- Principles of drug formulation, dispensing and industrialization in different dosage forms.
- a₃₇- Good manufacturing practice and pharmaceutical calculations.

- a₃₈- Therapeutic uses of medicines and their significance in treatment, including adverse reactions, interactions, toxicity and forensic chemistry.
- a₃₉- Recognition of disease states and management of symptoms.
- a₄₀- Understand the principle of toxicology, narcotic drugs and substance abuse.
- a₄₁- Know the chemical structure, methods of isolation and the biological uses of medicinal plants active constituents.
- a₄₃-The functional group recognition in biologically active molecules and its application to design and specificity of drug substances.
- a₄₄-Medicines including adverse reactions, interactions of medicines and their significance in treatment.
- a₄₅- Principles of physical chemistry will be applied to understand absorption mechanisms from different dosage forms and routes of administration.

b- Intellectual Skills:

On successful completion of the degree programme, students will be able to:

- b₁- Demonstrate the knowledge and critical understanding of essential facts, principles and theories relating to subject areas identified in (a).
- b₂- Apply in practice setting the knowledge and understanding required to meet the needs of patients and other health professionals.
- b₃- Evaluate, interpret and synthesis the pharmaceutical information and data.
- b₄- Present the pharmaceutical science material and arguments clearly and correctly in writing and orally, to both specialist and lay audiences.
- b₅- Calculate the medicine doses and dosage regimens.
- b₆- Interpret patient and clinical data, including patient records held within practice settings.
- b₇- Contribute to the development of health care through reflective practice settings.

b₈- Interpret of prescriptions and other orders for medicines.

c- Professional and Practical Skills:

It is intended that, on completion of the degree programme, students will be able to:

- c₁- Handle safely of chemicals and pharmaceutical materials, taking into account their physical and chemical properties, including any specific hazards associated with their use.
- c₂- Undertake risk assessments concerning pharmaceutical procedures and practices.
- c₃- Efficiently work with the skills required for the conduct of standard pharmaceutical laboratory procedures.
- c₄- Carry the operation of standard pharmaceutical instrumentation.
- c₅- Evaluate critically and interpret purposively data derived from laboratory and clinical observations and measurements, in terms of their significance and the theory underlying them.
- c₆- Prepare and present the medicines, by manufacture and extemporaneous dispensing, including sterile products.
- c₇- Give advises for the patients and others on the safe and effective use of medicines.

d- General and Transferable Skills:

On successful completion of the degree programme, students will be able to:

- d₁- Interact effectively with patients, the public and health care professionals; including communication, both written and oral.
- d₂- Work independently or in a team in different pharmaceutical fields .
- d₃- Solve the problem , relating to qualitative and quantitative information, extend to situations where evaluations have to be made on the basis of limited information.

- d₄- Numerate and compute, including such aspects as error analysis, order-of-magnitude estimate correct use of units and modes of data presentation.
- d₅- study independently skills as preparation for continuing professional development.
- d₆- Behave with an ethical attitude and approach.
- d₇- Analysis and critical appraisal of published literature.
- d₈- Time-management and organization, as evidenced by the ability to plan and implement efficient and effective modes of working.
- d₉- Apply the general, biological and medical statistics.
- d₁₀- Ability to operate within a quality management framework.
- d₁₁- Use information technology skills.

9- Academic Standards

A- External References for Standards (Benchmarks)

Owing to lack of national academic reference standards, we referred to the QAA reference academic standards in pharmacy: (*Annex 1*)
European Commission, XV/E/8341/5/93-EN; approved on 3 and 4 May 1994.

QAA reference academic standards in pharmacy:

I- Subject knowledge

Substances used in medicines

A- Every medicine contains one or more biologically active ingredient and other materials which are used to make the product suitable for administration (excipients). Pharmacists are expected to know the background to the origins of medicines and the factors which influence the preparation and shelf life of medicines, under the following broad headings:

A1- sources and purification of substances used in medicine, including radio-labelled pharmaceuticals;

A2- biotechnology products and excipients;

A3- physico-chemical aspects of medicines and biological systems, including thermodynamics, chemical kinetics and an assessment of chemical and physical stability;

A4- analytical methods: principles, design, development, validation and application; Good Laboratory Practice;

A5- the properties of medicinal substances, and their relationship to molecular structure;

A6- the design of medicinal agents and approaches to their discovery; and

A7- pharmaceutical application of the technologies of genomics and proteomics.

Design and manufacture of medicines

B- The preparation of medicines requires a thorough understanding of development and manufacturing processes, so that the finished product will be suitable for its purpose. Achieving suitability involves a wide range of issues, in particular:

B1- properties of materials used for the delivery of biologically active molecules;

B2- principles of medicine formulation and systems for medicine delivery in the body;

B3- Good Pharmaceutical Manufacturing Practice;

B4- quality assurance of pharmaceutical products and processes;

B5- packaging and labelling: purpose, design and evaluation;

B6- pharmacopoeial and regulatory requirements;

B7- stability of medicines; evaluation and control of biological, chemical and physical degradation;

B8- microbial contamination and its control;

B9- sterilisation processes and aseptic procedures; and

B10- dressings, diagnostic systems, medical appliances and devices.

The actions and uses of medicines and other agents

C- While the preparation of medicines is a vital part of a pharmacist's education, increasingly the role of the pharmacist in the community and in hospitals is to give advice on the safe and effective use of medicines within the overall management of disease. To carry out this function, it is essential that the pharmacist has a thorough understanding of disease processes as well as the use of medicines and devices to alleviate disease, as follows:

C1- normal and abnormal bodily function: physiology, biochemistry, genetics, microbiology, nutrition, immunology, infective processes, pathology and pathophysiology;

C2- actions of medicines within living systems: molecular, cellular, biological and physical aspects;

C3- absorption, distribution, metabolism and excretion of medicines, including routes of administration, concepts and mathematical modelling;

C4- aetiology and epidemiology of major diseases;

C5- therapeutic uses of medicines in man, including adverse reactions to, and interactions of medicines, and their significance in treatment;

C6- recognition of disease states and the management of symptoms;

C7- clinical evaluation of new medicines;

C8- drug and substance misuse;

C9- medicine delivery devices, wound management products and other medical devices (including diagnostic agents and devices); and

C10- complementary therapies.

Legal framework, ethics and health care provision

D- The socio-economic role of pharmacists, particularly in the community, involves not only being guardians of a wide range of potent substances, for which handling and storage are legally controlled, but also applying knowledge and understanding of a wide range of issues, including:

D1- the pharmacist's role in health care;

D2- managing medicines: dispensing, clinical pharmacy (including good clinical practice), responding to symptoms, prescribing, provision of medicine and patient information, reporting of adverse reactions to medicines, medicine utilisation review;

D3- measuring outcomes in support of evidence-based practice and achieving maximum clinical effectiveness;

D4- health screening and promotion, including diagnostic testing;

D5- the social and behavioural sciences relevant to pharmacy;

D6- health policy and economics, including particularly pharmacoeconomics and pharmacoepidemiology;

D7- the law relating to pharmacy and medicines;

D8- ethics of health care and its impact on relationships with patients and other healthcare professionals;

D9- pharmacists' contribution to public health, which can be termed pharmaceutical public health;

D10- health services research methodology;

D11- the political, legislative and economic frameworks relevant to pharmacy; and

D12- analysis and management of risk.

II- Abilities and skills

E- The abilities and skills demanded of the future pharmacist reflect the defining principles of the discipline. S/he must command a profound knowledge and understanding of medicines and the aptitude to apply such to health care, either by direct instructions or advice to patients or, very often, by properly informing and effectively influencing the decisions and actions of other health or social care professionals.

Pharmacy-related cognitive abilities and skills

E1- Demonstration of knowledge and critical understanding of essential facts, concepts, principles and theories relating to the subject areas identified above.

E2- Ability to apply in practice settings the knowledge and understanding required to meet the needs of patients and other health care professionals.

E3- Recognition and analysis of problems and planning of strategies for their solution.

E4- Critical evaluation, interpretation and synthesis of pharmaceutical information and data.

E5- Production of pharmacy-specific scientific documentation.

E6- Presentation of pharmaceutical science material and arguments clearly and correctly, in writing and orally, to both specialist and lay audiences.

E7- Calculation of medicine doses and dosage regimens.

E8- Interpretation of patient and clinical data, including patient records held within practice settings.

E9- Ability to contribute to the development of health care through reflective practice, enquiry and innovation.

E10- Interpretation of prescriptions and other orders for medicines.

Pharmacy-related practical skills

E11- The safe handling of chemical and pharmaceutical materials, taking into account their physical and chemical properties, including any specific hazards associated with their use.

E12- The ability to undertake risk assessments concerning pharmaceutical procedures and practices.

E13- Skills required for the conduct of standard pharmaceutical laboratory procedures.

E14- The planning, design and execution of self-directed and original research investigations, from the problem-recognition stage through to the evaluation and appraisal of results and findings; this to include the ability to select appropriate techniques and procedures.

E15- The operation of standard pharmaceutical instrumentation.

E16- The ability to evaluate critically and to interpret purposively data derived from laboratory and clinical observations and measurements, in terms of their significance and the theory underlying them.

E17- Preparation and presentation of medicines, by manufacture and extemporaneous dispensing, including sterile products.

E18- Skills in the analysis of medicines.

E19- The ability to advise patients and others on the safe and effective use of medicines.

Transferable skills

E20- Interpersonal skills; the ability to interact effectively with patients, the public and health care professionals; including communication, both written and oral.

E21- Team-working.

E22- Problem-solving, relating to qualitative and quantitative information, extending to situations where evaluations have to be made on the basis of limited information.

E23- Numeracy and computation, including such aspects as error analysis, order-of-magnitude estimations, correct use of units and modes of data presentation.

E24- Acquisition, transformation, interpretation and critical evaluation of data.

E25- Information retrieval in relation to primary and secondary information sources, including information retrieval through online computer searches.

E26- Information technology skills, including word processing, spreadsheet use, database use, archiving data and information, and internet communication.

E27- Time-management and organisation, as evidenced by the ability to plan and implement efficient and effective modes of working.

E28- Independent study skills as preparation for continuing professional development.

E29-An ethical attitude and approach.

E30- Analysis and critical appraisal of published literature.

E31- Application of general, biological and medical statistics.

E32- The ability to operate within a quality management framework; and

E33- Recognition of the need to work within personal limitations.

E33- Recognition of the need to work within personal limitations.

B- Comparison of Old Curriculum to Reference Academic Standards in Pharmacy

Approximately fit to 10-15%

Reference Academic Standard	Academic Standard	Course (s) covered the Academic Standard
A1	a ₁₋₂ a _{27,41} a ₃₅₋₃₇ , c ₁ , c ₃	Pharmacognosy (1 st , 2 nd year) Phytochemistry (3 rd year) Pharmaceutical chemistry (3 rd , 4 th years)
A2		
A3		
A4	a ₃ , c ₁ , c ₃ a ₃₅₋₃₇	Analytical chemistry (1 st , 2 nd year) Pharmaceutical chemistry (3 rd , 4 th year)
A5	a ₃₅₋₃₇	Pharmaceutical chemistry (3 rd , 4 th year)
A6	c ₁ , c ₃	
A7		
B1	a _{5,8,36} b ₁ , c ₄ , c ₆	Pharmaceutics and history of pharmacy (1 st year) Pharmaceutics and pharm legislation (3 rd year) Pharmaceutics (2 nd , 4 th year) Industrial pharmacy (4 th year)
B2	a ₈₋₁₂ b ₁	Pharmaceutics and history of pharmacy (1 st year) Pharmaceutics and pharm legislation (3 rd year) Pharmaceutics (2 nd , 4 th year)
B3	A ₁₀₋₁₁	Pharmaceutics (4 th year)
B4	c ₁ , c ₆ , a _{4-5,10-11}	Applied pharmacognosy (4 th year) Pharmaceutics (4 th year)
B5		
B6	a ₈₋₁₂ , d ₆	Pharmaceutics and pharm legislation (3 rd year)
B7	c ₁ , a ₃₅₋₃₇ a ₄₂₋₄₃	Organic chemistry (1 st year, 2 nd year) Pharmaceutical chemistry (3 rd , 4 th years)
B8	C ₃ , a ₂₁₋₂₄	Microbiology (2 nd year)
B9	a ₂₁₋₂₄	Microbiology (2 nd year)

B10		-
C1	a ₁₃ a ₂₁₋₂₂ a ₃₂ a ₅₂ , d ₁	Physiology, anatomy, histology (1 st year) Microbiology (2 nd year) Biochemistry (3 rd year) Public health, pathology, parasitology (3 rd year)
C2	a ₃₁₋₃₃ a ₃₈₋₄₀ c _{5,7} , d ₃	Pharmacology (3 rd year) Bioassay (4 th year) Toxicology (4 th year)
C3	a ₃₈₋₄₀ , d ₉	Pharmacology (3 rd year) Bioassay (4 th year)
C4		
C5	a ₃₈₋₄₀	Pharmacology (3 rd year) Bioassay (4 th year)
C6	a ₂₁₋₂₄ a ₃₄ a ₃₈₋₄₀	Pharmacology (3 rd year) Public health, pathology, parasitology (3 rd year) Microbiology (2 nd year) Biochemistry (3 rd year) Bioassay (4 th year)
C7	a ₃₈₋₄₀ a ₄₋₅ , d ₁₁	Toxicology (4 th year) Applied pharmacognosy (4 th year)
C8		
C9	a ₁₋₂	Pharmacognosy (1 st , 2 nd) Phytochemistry (3 rd year) Applied pharmacognosy (4 th year)
C10		
D1	a ₁₀₋₁₁	Pharmaceutics (4 th year)
D2	a ₃₁₋₃₃ a ₃₈₋₄₀ a ₁₀₋₁₁	Pharmacology (3 rd year) Bioassay (4 th year) Pharmaceutics (4 th year)
D3		
D4	a ₃₄	Biochemistry (3 rd year)
D5	a ₂₅	Psychology (1 st year)
D6		

D7	a ₈	Pharmaceutics and pharm legislation (3 rd year)
D8		
D9	a ₂₁₋₂₄	Public health, pathology, parasitology (3 rd year)
D10		
D11		
D12		
E1		All courses
E2	a ₈₋₁₂ a ₂₁₋₂₄ a ₃₄ a ₄₋₅ a _{38,40}	Pharmaceutics (2 nd year) Microbiology (2 nd year) Biochemistry (3 rd year) Pharmaceutics and pharm legislation (3 rd year) Public health, pathology, parasitology (3 rd year) Pharmacology (3 rd year) Bioassay (4 th year) Toxicology (4 th year) Applied pharmacognosy (4 th year) Pharmaceutics (4 th year)
E3	a ₂₅ a ₃ a ₄₋₅ a ₂₁₋₂₄ a ₄₂₋₄₃ a ₃₈₋₄₀	Industrial pharmacy (4 th year) Applied pharmacognosy (4 th year) Pharmaceutical chemistry (3 rd , 4 th years) Bioassay (4 th year) Toxicology (4 th year) Public health, pathology, parasitology (3 rd year) Pharmacology (3 rd year) Pharmaceutics and pharm legislation (3 rd year) Biochemistry (3 rd year) Phytochemistry (3 rd year) Pharmacognosy (1 st , 2 nd year) Microbiology (2 nd year) Analytical chemistry (1 st , 2 nd year) Pharmaceutics (2 nd year) Organic chemistry (1 st , 2 nd year)
E4	a ₉₋₁₀	Pharmaceutics (4 th year)

E5		
E6		
E7	a ₈ b ₁ a ₈₋₁₂	Pharmaceutics and history of pharmacy (1 st year) Pharmaceutics and pharm legislation (3 rd year) Pharmaceutics (2 nd , 4 th year)
E8	a ₂₁₋₂₄ a ₉₋₁₀	Pharmacology (3 rd year) Pharmaceutics (4 th year)
E9	a ₃₄ a ₃₅₋₃₇ a ₃₈₋₄₀	Biochemistry (3 rd year) Pharmaceutical chemistry (3 rd , 4 th years) Public health, pathology, parasitology (3 rd year) Bioassay (4 th year) Toxicology (4 th year)
E10	a ₈ a ₃₈₋₄₀	Pharmaceutics and pharm legislation (3 rd year) Pharmacology (3 rd year) Pharmaceutics (4 th year)
E11		
E12		
E13		
E14	a ₃₄ a ₃₈₋₄₀	Biochemistry (3 rd year) Pharmacology (3 rd year) Pharmaceutics (4 th year)
E15		
E16	a ₃₄ a ₃₈₋₄₀	Biochemistry (3 rd year) Pharmacology (3 rd year) Pharmaceutics (4 th year)
E17	a ₈₋₁₂ a ₂₅	Pharmaceutics (2 nd year) Pharmaceutics and pharm legislation (3 rd year) Industrial pharmacy (4 th year)
E18	a ₃ a _{27,41} a ₃₅₋₃₇	Analytical chemistry (1 st , 2 nd year) Phytochemistry (3 rd year) Pharmaceutical chemistry (3 rd , 4 th year)
E19	a ₃₇₋₃₈	Pharmacology (3 rd year)

	a9-10	Pharmaceutics (4 th year)
E20		All courses that include oral exam.
E21		
E22		
E23	d ₄	Mathematics (1 st year)
E24		
E25		
E26		
E27		
E28		
E29		
E30		
E31		
E32		
E33		

Teaching and learning:

The degree course features a variety of teaching approaches chosen to meet stated learning objectives, including:

Lectures, Practical sessions, field visits, team-working and summer training.

Assessment:

Written examinations, practical assessments, oral presentation, essay assignment, laboratory and other written reports.

Evaluation of successful students will be according to the following standards:

- Excellent: from 85% to over from total marks.
- Very good: from 75% to less than 85% from total marks.
- Good: from 65% to less than 75% from total marks.
- Passable: from 60% to less than 65% from total marks.
- In case of failure, the evaluation is as follows:
- Weak: from 30% to less than 60% from total marks.

-Very weak: less than 30% from total marks.

10-Curriculum Structure and Contents

a- Programme duration: 5 years

b- Programme structure

b.i- No. of hours per week:

Lectures: 153 hours/week in 10 semesters

Laboratory: 135 hours/week in 10 semesters

Total: 288 hours

Each semester is 12.5 weeks.

b.ii- No of credit hours: Compulsory: 149

Elective: lecture: 4 practical : 4

b.iii- No of credit hours of basic sciences courses: --

b.iv- No of credit hours of courses of social and humanities: --

b.v- No of credit hours of specialized courses: --

b.vi- No of credit hours of other courses: --

b.vii- Practical Field Training: 300 hours

b.viii- Program Levels: Honour Levels

11- Programme Courses(New Curriculum)

1- Level/year of Programme: 1 **Semester:** 1

Code No	Course Title	No. of Units	No. of hr/week		Program ILOs Covered
			Lect.	Lab.	
101	Physical & General Chemistry	12.5	3	2	a ₂₃₋₂₆ , b ₁ ; d ₃
102	Organic Chemistry I	12.5	3	3	a ₄₂₋₄₃ ; b ₁₋₄ ; c ₁
103	Analytical chemistry I	12.5	2	3	a ₃ , c ₃₋₅ , 7
104	Botany & Medicinal Plants	12.5	3	2	a ₁ ; b ₁₋₄
105	English Language & Medical Terminology	12.5	2	--	a ₂₈₋₃₀ ; 1
106	Mathematics	12.5	2	--	d ₄
	Total		15	10	25x12.5=312.5

2- Level/year of Programme : 1 **Semester:** 2

Code No	Course Title	No. of Units	No. of hr/week		Program ILOs Covered
			Lect.	Lab.	
107	Biophysics & Physical Pharmacy	12.5	3	2	b ₁ , d ₃
108	Organic Chemistry II	12.5	3	3	a ₄₂₋₄₃ ; b ₁₋₄ ; c ₁
109	Analytical Chemistry II	12.5	2	3	a ₃ , c ₃₋₅
110	Pharmacognosy I	12.5	2	3	a ₂ ; b ₁₋₄
111	Anatomy & Histology	12.5	3	2	a ₁₃ , b ₁₋₄
112	Introduction to pharmacy and history of pharmacy	12.5	1	--	b ₁
	Total		14	13	27x12.5=337.5

3- second year/first semester

Code No.	Course Title	No. of units	No. of hr./week		Programme ILOs covered
			Lect.	Lab.	
213	Organic chemistry (3)	12.5	3	3	a ₄₂₋₄₃ ; b ₁₋₄ ; c ₁
214	Analytical chemistry (3)	12.5	2	3	a ₃ , c ₃₋₅
215	Pharmacognosy (2)	12.5	3	4	a ₁ ; b ₁₋₄
216	Pharmaceutics (1)	12.5	3	4	a ₇₋₉ , b ₁₋₁₀ ; c ₂
217	Physiology	12.5	3	1	a ₂ ; b ₁₋₄
	Total		14	15	29x12.5=362.5

4- second year/second semester

Code No.	Course Title	No. of units	No. of hr./week		Programme ILOs covered
			Lect.	Lab.	
218	Organic chemistry (4)	12.5	3	3	a ₄₂₋₄₃ ; b ₁₋₄ ; c ₁
219	Analytical chemistry (4)	12.5	3	3	
220	Pharmacognosy (3)	12.5	2	3	a ₁ ; b ₁₋₄
221	Pharmaceutics (2)	12.5	3	3	a ₁₀₋₁₁ , b ₁₋₁₀ ; c ₂
222	Biochemistry (1)	12.5	3	1	a ₃₂ ; b ₁₋₁₀ ; c _{4-6,9} ; d _{1,6}
223	Computer	12.5	2	2	d ₁₀₋₁₁
	Total		16	15	31x12.5=387.5

5- Third year/first semester

Code No.	Course Title	No. of units	No. of hr./week		Programme ILOs covered
			Lect.	Lab.	
324	Phytochemistry (1)	12.5	3	3	a ₃₆₋₃₈ ; b ₁₋₆ ; c _{4-6, 7}
325	Microbiology+ Immunology	12.5	3	2	a ₂₁₋₂₂ ; b ₁₋₁₀ ; c _{2,4, 6} ; d _{1,6}
326	Clinical Pharmacy (1)	12.5	3	3	a _{4,28} ; b ₂₋₆
327	Pharmaceutics (3)	12.5	3	4	a ₁₁₋₁₃ ; b ₁₋₁₀ ; c _{2,4,6} ; d ₁₀
328	Pharmacology (1)	12.5	3	3	a ₃₈ ; b ₁₋₁₀ ; c _{1,2,4,6} ; d _{1,6}
329	General pathology and parasitology	12.5	3	3	a ₃₁
	Total		18	16	34x12.5=425.0

6- Third year/second semester

Code No.	Course Title	No. of units	No. of hr./week		Programme ILOs covered
			Lect.	Lab.	
330	Phytochemistry (2)	12.5	3	4	a ₃₆₋₃₈ ; b ₁₋₆ ; c _{4-6, 7}
331	Pharmaceutical microbiology and biotechnology	12.5	3	2	a ₂₁₋₂₂ ; b ₁₋₁₀ ; c _{2,4, 6} ; d _{1,6}
332	Biochemistry (2)	12.5	3	3	a ₃₂ ; b ₁₋₁₀ ; c ₄₋₆ ; d _{1,6}
333	Community pharmacy and OTC drugs	12.5	3	2	d ₁₋₃
334	Pharmacology (2)	12.5	3	3	a ₃₈ ; b ₁₋₁₀ ; c _{1,2,4,6} ; d _{1,6}
335	Psychology	12.5	1	--	d ₆
	Total		16	14	30x12.5=375.0

7- Fourth year/first semester

Code No.	Course Title	No. of units	No. of hr./week		Programme ILOs covered
			Lect.	Lab.	
436	Pharmacology (3)	12.5	3	2	a ₃₈ ; b ₁₋₁₀ ;
437	Pharmaceutical chemistry (1)	12.5	3	4	a ₃ ; b ₁₋₆ ; c _{1,4,6,7}
438	Pharmacognosy (4)	12.5	2	2	a ₄₋₆ ; b ₁₋₆ ; c _{1,3,6-7}
439	Bio-pharmaceutics	12.5	2	2	a ₁₆₋₁₇
440	Clinical chemistry and molecular biology	12.5	3	3	a ₄₄

441	Statistic, drug screening and biological screening	12.5	3	2	a ₃₇
	Total		16	15	31x12.5=387.5

8- Fourth year/second semester

Code No.	Course Title	No. of units	No. of hr./week		Programme ILOs covered
			Lect.	Lab.	
442	Clinical pharmacy (1)	12.5	3	3	a ₃₆₋₃₈ ; c ₃₋₇
443	Pharmaceutical chemistry (2)	12.5	3	4	a ₃ ; b ₁₋₆ ; c _{1,4,6,7} ; d ₆
444	Toxicology and forensic chemistry	12.5	3	4	a ₄₀ ; b ₁₋₁₀ ; c _{1,2,4,6} ; d _{1,6}
445	Pharmaceutical care	12.5	3	3	a ₃₆₋₃₈ ; c ₃₋₆
446	Microbiology of the infected diseases	12.5	3	3	a ₂₁₋₂₂ ; b ₁₋₁₀ ; c _{2,4,6} ; d _{1,6}
	Total		15	17	32x12.5=400.0

9- Fifth year/first semester

Code No.	Course Title	No. of units	No. of hr./week		Programme ILOs covered
			Lect.	Lab.	
547	Public health and community medicine	12.5	3	---	a ₃₉ ; b ₁₋₁₀ ; c _{1,4,6} ; d _{1,6}
548					
549	Pharmaceutical chemistry (3)	12.5	3	4	a ₃ ; b ₁₋₆ ; c _{1,4,6} ; d ₆
550	Industrial pharmacy	12.5	2	2	a ₃₆₋₃₇ ; c _{2,4-6}
551	Pharmaceutical control and quality assurance	12.5	3	3	a _{5,24,27} ; b ₃ ; c ₅₋₆ ; d _{2-3,10-11}
552	Pharmacy legislation	12.5	1	--	a ₈ ; b ₆
553	Elective subject (1)	12.5	2	2	
	Total		14	11	25x12.5=312.5

10- Fifth year/second semester

Code No.	Course Title	No. of units	No. of hr./week		Programme ILOs covered
			Lect.	Lab.	
554	Marketing and promotion	12.5	2	0	c ₂₇
555	Clinical Pharmacy (2)	12.5	4	2	a ₃₆₋₃₈ ; c ₃₋₆
556	Manufacturing and quality of	12.5	2	2	a ₄₋₆ ; b ₁₋₆ ; c _{1,3,6}

he/she is required to have successfully passed in all subjects. However, the student may still be transferred if he/she has failed in not more than two basic subjects and two complementary ones from the same academic year or from previous years. In such cases, students "carrying" subjects from one year to the next should re-sit for their "failed" subjects in their proper respective semesters. Final year students who have failed in a maximum of two basic complementary ones in that year or from previous years can re-sit for their exams in those subjects in September of the same year. Should the student failed again, he/she has to re-sit for his/her exams in those subjects in their proper respective semesters thereafter as many times as necessary until he/she succeeds)

First Year/Level/Semester 1 (New curriculum):

Automatically moved to second Semester.

First Year/Level/Semester 2 (New curriculum):

Pass in all subjects or fail in not more than two compulsive subjects and two subsidiary subjects.

First Year/Level/Semester 1(Old curriculum):

Automatically moved to second Semester

Second Year/Level/Semester 2 (Old curriculum):

Pass in all subjects or fail in not more than two compulsive subjects and two subsidiary subjects.

Second Year/Level/Semester 1(Old curriculum):

Automatically moved to second Semester.

Second Year/Level/Semester 2(Old curriculum):

Pass in all subjects or fail in not more than two compulsive subjects and two subsidiary subjects.

Third Year/Level/Semester 1(Old curriculum):

Automatically moved to second Semester.

Third Year/Level/Semester 2 (Old curriculum):

Pass in all subjects or fail in not more than two compulsive subjects and two subsidiary subjects.

Fourth Year/Level/Semester 1(Old curriculum):

Automatically moved to second Semester

Fourth Year/Level/Semester 2(Old curriculum):

Pass in all subjects or fail in not more than two compulsive subjects and two subsidiary subjects. In the latter case, the student is allowed to enter a September Exam.

14: By laws and Regulations for Undergraduate Students

"Enrollment opportunities/or "regular" and "external" students:

Academic year	Enrollment opportunities	
	Regular students	External students
First	Two opportunities	Non
First	Two opportunities	Two opportunities
Second	Two opportunities	Two opportunities
Third	Two opportunities	Two opportunities
Fourth	Two opportunities	Two opportunities
Fifth	Two opportunities	Number of subjects, he/she would be allowed to re-sit for the exam the subjects he/she has failed in indefinitely until he/she is graduated.

* Once the student exhausts the number of opportunities of a being a "regular" student, he/she becomes an "external" student for a certain number of times according to the above table. Once an "external" student in a certain year succeeds in his/her exams for that year to allow him/her to be

transferred to the following year, he/she automatically becomes registered as a regular student again."

Programme Coordinator

Prof. Dr. Mossad Sayed M.

Abdallah

The Dean.