

Program Specification Bachelor of Pharmacy (Pharm D - Clinical Pharmacy)

Faculty of Pharmacy

Program Specification

Bachelor of Pharmacy
(PharmD-Clinical Pharmacy)

(2025/2026)

مجلس الكلية رقم (120) 2025/7/20

Specifications of Bachelor of Pharmacy Program (PharmD- Clinical Pharmacy)

1- Basic Information:

Program Title:	Bachelor of Pharmacy (Pharm D - Clinical Pharmacy).
Total number of credit hours:	184 credit hours
Program duration:	**(5+1):** 5 years in ten semesters in addition to one-year professional training in different career fields "internship".
Department (s)	**Departments affiliated to faculty of pharmacy** Department of Pharmaceutical Chemistry Department of Pharmacology and Biochemistry Department of Pharmaceutics and Pharmaceutical Technology Department of Microbiology and Immunology Department of Pharmacognosy Department of Pharmacy Practice **Departments not affiliated to faculty of pharmacy:** Histology and Anatomy departments (Faculty of Medicine) Basic science department (Faculty of Engineering) Information technology department (Faculty of Engineering) Delta University English Language Center Psychology Department (Faculty of Medicine)
Faculty	Faculty of Pharmacy
University	Delta University for Science and Technology.
Coordinator	**Prof. Dr. Dalia Rashad El-wasseef**, Vice-Dean for Education and Student Affairs.
Date of approval	**20/7/2025**
Accreditation council	Faculty council

2- Program Aim:

- Focusing on the role of the clinical pharmacist in providing adequate healthcare to the patient inside and outside hospitals by following the principles of clinical pharmacy and the principles of pharmacokinetics and applying them in treatment and finding appropriate treatment plans in cooperation with the doctor, which leads to calculating drug doses accurately, increasing efficacy, reducing risks and drug interactions and improving patient care.
- Graduating a distinguished clinical pharmacist who is able to work in hospitals as well as in community pharmacies, pharmaceutical industries, companies, quality control laboratories, biomedical laboratories, food analysis, forensic and veterinary services, in addition to drug promotion and marketing, academia, scientific research institutions and universities and drug information centers.
- Providing suitable study and training programs to increase the competitiveness of program graduates at the regional level.
- Developing teaching, learning and assessment methods that focus on competency-based learning, self-learning, effective communication skills, leadership, creativity and entrepreneurship.
- Raising health awareness among patients and rationalizing the use of medicines within hospitals.
- Supporting the scientific research system aimed and directed at serving the community and developing the environment.
- Commitment to achieving quality standards in pharmaceutical education.

3- Program Structure

Program Contents:

Type of requirement		No. of Courses	No of credit hour	%
Faculty requirements	Professional	61	154	83.7
	Non-professional	7	10	5.5
University requirements		3	6	3.3
Total Compulsory courses		71	170	92.5
Elective courses	Faculty	4	8	4.2
	University	3	6	3.3
Total Elective courses		7	14	7.5
Total courses		78	184	100
Others	Field training	: 100 actual training hours as a graduation requirement under supervision of a faculty member in private, governmental or hospital pharmacies for.		
	The internship year	The sixth year of study is devoted to an advanced field training, with six training courses for a total of 36 weeks (one academic year).		
	Applied Research Project	The student must submit and pass a graduation project in one of the offered disciplines (specific specialty) determined by the internship program supervising committee		

Program courses and curriculum plan

Semester (1)

Course Title	Course Code	Credit Hours			Prerequisite	Examination Marks				Total Marks	Final Exam. Hours
		Lect.	Pract./Tut	Total		Period.	Pract./Tut.	Wr.	Oral		
Pharmaceutical Analytical Chemistry I	CPC 101	2	1	3	Registration	15	25	50	10	100	2
Pharmaceutical Organic Chemistry I	CPC 102	2	1	3	Registration	15	25	50	10	100	2
Pharmacy Orientation	CPT 101	1	0	1	Registration	40	--	60	--	100	1
Pharmacognosy I	CPG 101	2	1	3	Registration	15	25	50	10	100	2
Medical Terminology	CMD 101	1	0	1	Registration	40	--	60	--	100	1
Information Technology	GEN 001	1	1	2	Registration	15	25	60	--	100	1
English I	GEN 002	1	1	2	Registration	15	25	60	--	100	1
Human Rights and Fighting Corruption	CNP 101	1	0	1	Registration	40	--	60	--	100	1
Mathematics	CMS 102	1	0	1	Registration	40	--	60	--	100	1
Total		**12**	**5**	**17**						900	

Semester (2)

Course Title	Course Code	Credit Hours			Prerequisite	Examination Marks				Total Marks	Final Exam. Hours
		Lect.	Pract./Tut	Total		Period.	Pract./Tut.	Wr.	Oral		
Pharmaceutical Analytical Chemistry II	CPC 203	2	1	3	Pharmaceutical Analytical Chemistry I	15	25	50	10	100	2
Pharmaceutical Organic Chemistry II	CPC 204	2	1	3	Pharmaceutical Organic Chemistry-I	15	25	50	10	100	2
Cell Biology	CPB 201	1	1	2	Registration	15	25	60	--	100	1
Physical Pharmacy	CPT 202	2	1	3	Registration	15	25	50	10	100	2
Pharmacognosy II	CPG 202	2	1	3	Pharmacognosy- I	15	25	50	10	100	2
English ll	GEN 101	1	1	2	English I	15	25	60	--	100	1
Anatomy & Histology	CMD 202	2	1	3	Registration	15	25	60	--	100	2
Total		**12**	**7**	**19**						700	

Semester (3)

Course Title	Course Code	Credit Hours			Prerequisite	Examination Marks				Total Marks	Final Exam. Hours
		Lect.	Pract./Tut	Total		Period.	Pract./Tut	Wr.	Oral		
Pharmaceutical Organic Chemistry-III	CPC 305	2	1	3	Pharmaceutical Organic Chemistry-II	15	25	50	10	100	2
Biochemistry-I	CPB302	2	1	3	Registration	15	25	50	10	100	2
Psychology	CNP 302	1	0	1	Registration	40	--	60	--	100	1
Basic Pharmacology	CPB 303	2	0	2	Registration	40	--	60	--	100	2
Physiology	CMD 303	2	0	2	Registration	40	--	60	--	100	2
Pharmaceutical dosage forms-I	CPT 303	2	1	3	Physical pharmacy	15	25	50	10	100	2
Scientific writing and Communication skills	CNP 303	2	0	2	Registration	40	--	60	--	100	2
University Elective	GEN --	2	0	2	————————	40	--	60	--	100	2
Total		**15**	**3**	**18**						800	

Semester (4)

Course Title	Course Code	Credit Hours			Prerequisite	Examination Marks				Total Marks	Final Exam. Hours
		Lect.	Pract./Tut	Total		Period.	Pract./Tut	Wr.	Oral		
Pharmacology –I	CPB 404	2	1	3	Basic Pharmacology	15	25	50	10	100	2
General Microbiology and Immunology	CPM 401	2	1	3	Registration	15	25	50	10	100	2
Pathophysiology	CMD 404	2	0	2	Physiology	40	--	60	--	100	2
Pharmaceutical Dosage Forms-II	CPT 404	2	1	3	Pharmaceutical Dosage Forms-I	15	25	50	10	100	2
Biochemistry II	CPB 405	2	1	3	Biochemistry I	15	25	50	10	100	2
Phytochemistry-I	CPG 403	2	1	3	Registration	15	25	50	10	100	2
University Elective	GEN --	2	0	2	————————	40	--	60	--	100	2
Total		**13**	**6**	**19**						700	

Semester (5)

Course Title	Course Code	Credit Hours			Prerequisite	Examination Marks				Total Marks	Final Exam. Hours
		Lect.	Pract./Tut	Total		Period.	Pract./Tut	Wr.	Oral		
Pharmacology-II	CPB 506	2	1	3	Basic Pharmacology	15	25	50	10	100	2
Pharmaceutical Microbiology and Antimicrobials	CPM 502	2	1	3	General Microbiology & Immunology	15	25	50	10	100	2
Medicinal chemistry -1	CPC 506	2	1	3	Pharmaceutical organic chemistry III	15	25	50	10	100	2
Pharmaceutical Dosage Forms-III	CPT 505	2	1	3	Pharmaceutical Dosage Forms-I	15	25	50	10	100	2
Pathology	CMD 505	1	1	2	Pathophysiology	15	25	60	--	100	1
Community Pharmacy Practice	CPP 501	1	1	2	Pharmacology –II	15	25	50	10	100	1
University Elective	GEN --	2	0	2	————————	40	--	60	--	100	2
Total		**13**	**5**	**18**						**700**	

Semester (6)

Course Title	Course Code	Credit Hours			Prerequisite	Examination Marks				Total Marks	Final Exam. Hours
		Lect.	Pract./Tut	Total		Period.	Pract./Tut	Wr.	Oral		
Pharmacology-III	CPB 607	2	0	2	Pharmacology-II	40	--	60	--	100	2
Phytochemistry-II	CPG 604	2	1	3	Phytochemistry-I	15	25	50	10	100	2
Pharmaceutical Technology	CPT 606	2	1	3	Pharmaceutical Dosage Forms- III	15	25	50	10	100	2
Hospital Pharmacy	CPP 602	1	1	2	Pharmacology-II	15	25	50	10	100	1
Clinical Pharmacy Practice	CPP 603	2	1	3	Clinical pharmacokinetics	15	25	50	10	100	2
Medicinal chemistry -II	CPC 607	2	1	3	Medicinal chemistry I	15	25	50	10	100	2
Quality Control of Pharmaceuticals	CPC 608	2	1	3	Pharmaceutical Analytical Chemistry-II	15	25	50	10	100	2
Total		**13**	**6**	**19**						**700**	

Semester (7)

Course Title	Course Code	Credit Hours			Prerequisite	Examination Marks				Total Marks	Final Exam. Hours
		Lect.	Pract./Tut	Total		Period.	Pract./Tut	Wr.	Oral		
Parasitology & virology	CPM 703	2	1	3	————	15	25	50	10	100	2
Drug Information	CPB 708	1	1	2	Pharmacology-III	15	25	60	--	100	1
Advanced Drug Delivery Systems	CPT 707	2	0	2	Pharmaceutical Dosage Forms-III	40	--	60	--	100	2
Biopharmaceutics and Pharmacokinetics	CPT 708	2	1	3	Physical pharmacy	15	25	50	10	100	2
Medical Microbiology	CPM 704	2	1	3	Pharmaceutical Microbiology	15	25	50	10	100	2
Biostatistics	CPB 709	1	0	1	Registration	40	--	60	--	100	1
First Aid and Basic Life Support (BLS)	CMD 706	1	1	2	Registration	15	25	60	--	100	1
Faculty Elective	CPE --	1	1	2	————	15	25	60	--	100	1
Total		**12**	**6**	**18**						**800**	

Semester (8)

Course Title	Course Code	Credit Hours			Prerequisite	Examination Marks				Total Marks	Final Exam. Hours
		Lect.	Pract./Tut	Total		Period.	Pract./Tut	Wr.	Oral		
Medicinal Chemistry-III	CPC 809	2	1	3	Medicinal Chemistry I	15	25	50	10	100	2
Management of Endocrine and Renal Disorders	CPP 804	2	1	3	Pharmacology III	15	25	50	10	100	2
Management of Oncological Diseases and Radiopharmacy	CPP 805	2	1	3	Pharmacology III	15	25	50	10	100	2
Clinical Pharmacokinetics	CPP 806	2	1	3	Biopharmaceutics and Pharmacokinetics	15	25	50	10	100	2
Clinical Biochemistry	CPB 810	2	1	3	Biochemistry-II	15	25	50	10	100	2
Public Health and Preventive Medicine	CPM 805	2	0	2	Medical Microbiology	40	--	60	--	100	2
Faculty Elective	CPE --	1	1	2	————————	15	25	60	--	100	1
Total		**13**	**6**	**19**						**700**	

Semester (9)

Course Title	Course Code	Credit Hours			Prerequisite	Examination Marks				Total Marks	Final Exam. Hours
		Lect.	Pract./Tut	Total		Period.	Pract./Tut	Wr.	Oral		
Basic & clinical Toxicology	CPB 911	2	0	2	Pharmacology-III	40	--	60	--	100	2
Management of Neuropsychiatric Diseases	CPP 907	1	1	2	Pharmacology-III	15	25	50	10	100	1
Biotechnology	CPM 906	2	1	3	Pharmaceutical Microbiology	15	25	50	10	100	2
Phytotherapy	CPG 905	1	1	2	Phytochemistry-II	15	25	50	10	100	1
Management of critical care patients	CPP 908	1	1	2	Clinical pharmacy practice	15	25	60	--	100	1
Marketing &Pharmacoeconomics	CNP 904	2	0	2	Clinical research and pharmacovigilance	40	--	60	--	100	2
Pharmaceutical legislation and practice ethics	CNP 905	1	0	1	Registration	40	--	60	--	100	1
Entrepreneurship	CNP 906	2	0	2	Registration	40	--	60	--	100	2
Faculty Elective	CPE --	1	1	2	————————	15	25	60	--	100	1
Total		**13**	**5**	**18**						**900**	

Semester (10)

Course Title	Course Code	Credit Hours			Prerequisite	Examination Marks				Total Marks	Final Exam. Hours
		Lect.	Pract./Tut	Total		Period.	Pract./Tut	Wr.	Oral		
Clinical Nutrition	CPB 012	1	1	2	Biochemistry -II	15	25	60	--	100	1
Management of Dermatological, Reproductive and Musculoskeletal Diseases	CPP 009	1	1	2	Pharmacology III	15	25	60	--	100	1
Management of Pediatric Diseases	CPP 010	1	1	2	Pharmacology-III	15	25	50	10	100	1
Management of Cardiovascular Diseases	CPP 011	2	1	3	Pharmacology-III	15	25	50	10	100	2
Management of Gastrointestinal Diseases	CPP 012	2	1	3	Pharmacology-III	15	25	50	10	100	2
Management of Respiratory Diseases	CPP 013	2	1	3	Pharmacology-III	15	25	60	--	100	2
Clinical Research and Pharmacovigilance	CPP 014	1	0	1	Hospital pharmacy	40	--	60	--	100	1
Professional practice & Clinical skills	CPP 015	1	0	1	Clinical pharmacy practice	40	--	60	-	100	1
Faculty Elective	CPE --	1	1	2	————	15	25	60	--	100	1
Total		**12**	**7**	**19**						**900**	

Faculty elective courses:

Students should choose 4 Courses (8 Credit Hours)

Course Code	Course Title	Prerequisite	Credit Hours		
			L	P/T	Total
CPC E010	Advanced Pharmaceutical Analysis – Spectroscopy	Pharmaceutical analytical Chemistry II	1	1	2
CPC E011	Food Analysis	Pharmaceutical analytical Chemistry II	1	1	2
CPC E012	Drug Design	Medicinal chemistry II	1	1	2
CPG E06	Biotechnology of natural products	Biotechnology	1	1	2
CPG E07	Production and Manufacture of Medicinal Plants	Pharmacognosy-II	1	1	2
CPG E08	Chromatography and Separation Techniques	Pharmaceutical analytical Chemistry II	1	1	2
CPT E09	Applied Industrial Pharmacy	Pharmaceutical Technology	1	1	2
CPT E010	Good Manufacturing Practices	Pharmaceutical Technology	1	1	2
CPT E011	Cosmetic Preparations	Pharmaceutical Dosage Form III	1	1	2
CPM E07	Antibiotic stewardship	Pharmaceutical Microbiology and Antimicrobials	1	1	2
CPM E08	Infection Control	Pharmaceutical Microbiology and Antimicrobials	1	1	2
CPM E09	Bioinformatics	Biotechnology	1	1	2

Course Code	Course Title	Prerequisite	Credit Hours		
			L	P/T	Total
CPB E013	Drug Abuse	Pharmacology -II	1	1	2
CPB E014	Interpretation of laboratory data	Clinical Biochemistry	1	1	2
CPP E016	Geriatric pharmacotherapy	Clinical Pharmacokinetics	1	1	2
CPP E017	Pharmacogenomics and Precision Pharmacy	Clinical Pharmacy Practice	1	1	2

University Elective Courses:

Students should Choose 3 courses (6 Credit Hours)

No	Course Title	Course Code	Credit Hour
1	Egyptian Civilization	GEN 004	2
2	Introduction to Music	GEN 005	2
3	History of The Theatre	GEN 006	2
4	Leadership, Team approach & Communication Skills	GEN 102	2
5	Legislations, Contract and Procurement Management	GEN 202	2
6	Human Resources Management	GEN 203	2
7	General Risk Management	GEN 302	2

No	Course Title	Course Code	Credit Hour
8	History and Contemporary Issues of Arab Media	GEN 303	2
9	An Introduction to Athletic Psychology	GEN 304	2
10	Industrial Safety and Environmental Management	GEN 310	2
11	Marketing Skills	GEN 401	2
12	Creativity and Critical Thinking	GEN 402	2
13	Introduction to Economics	GEN 403	2
14	Public Administration	GEN 404	2
15	Quality Assurance	GEN 505	2

Program duration: (5+1)

5 years in ten semesters each term made up of 15 weeks in addition to one-year professional training in different career fields “internship”.

Program structure:

- The Bachelor of Pharmacy (Pharm D-Clinical Pharmacy) program can be completed in six years; ten semesters of full-time study following a credit hour system and one academic internship year of advanced training.
- Each academic level (year) is structured into two semesters (fall and spring), the duration of each semester is 15 weeks. Some courses may be offered in a summer semester of six to eight weeks of intensive study.

- The credit hour is a unit of study that equates to a theoretical weekly study hour (L) or a practical/tutorial lesson (P/T) of not less than two hours per week, taught over one semester.
- Number of credit hours = **178 CH** + **6 CH** university requirements.

Learning activity	Lectures	Practical	Total
No. of hours	128	56	**184**

a- Program levels:

5 years / 10 semesters + **1 year** of advanced training academic year "internship" including applied Research Project.

- In addition to preliminary 100 hours of field training in which the student should pass after the completion of 110 credit hours or third level. The training may be in any pharmacy setting including community/hospital pharmacy, pharmaceutical industry, or research centers.
- The sixth-year (9 months) is advanced training and an *applied Research Project.*
- Number of courses = 78.

Study Plan:

Item	No. of hours
University requirements	**6 CH**: Compulsory courses (English-I & English-II, Information Technology). **6 CH**: Three University Elective courses.

Item	No. of hours
Faculty compulsory courses	**164 CH**: Including 10 CH dedicated to Nonprofessional Courses (NP) (Supervised by faculty departments): Human Rights and Fighting Corruption, Scientific writing and Communication Skills, Psychology, Entrepreneurship, Pharmaceutical legislations and Practice Ethics, Marketing and Pharmacoeconomics and Mathematics
Faculty elective courses	**8 CH**: Comprising 4 courses to be selected in the 4th and 5th levels from 19 courses (Gene Regulation and Epigenetic, Eco-Friendly Synthetic Approaches in Drug Synthesis, Biotechnology of natural products, Production and Manufacture of Medicinal plants, Infection Control, Antimicrobial stewardship Chromatography and Separation Techniques, Food analysis, Advanced Pharmaceutical Analysis – Spectroscopy, Drug Abuse, Bioinformatics, Geriatric Pharmacotherapy, Pediatric Pharmacotherapy, Hepatic Disease Therapy, Radiopharmaceuticals, Cosmetic Preparations, Applied Industrial Pharmacy, Interpretation of laboratory data, Clinical Nutrition.
Field training	By the end of the training periods the graduate will achieve the learning outcomes according to the key elements of domains 2, 3 and 4 (attached Matrix). **-Summer training:** in private, governmental or hospital pharmacies for 100 actual training hours as a graduation requirement under supervision of a faculty member. Students will conduct and pass after completion 110 credit hours or completion of 3rd level, and before the beginning of the internship year. **-The internship year:** -The sixth year of study is devoted to an advanced field training, with six training courses for a total of 36 weeks

Item	No. of hours
	(one academic year). The advanced training should include four training courses (Pharmacy Based Rotation, Drug Tour: Registration to Market Rotation, Clinical Pharmacy Rotation in Adult General Medicine, Applied Research Project) and two elective clinical pharmacy course in (Cardiology and Cardiovascular, Gastroenterology and Hepatology, Nephrology and Urology, Oncology and Haematology, Infectious Diseases, Pediatrics and Neonates, Geriatrics (Elderly), Neuropsychiatric, Obstetrics and Gynaecology, Clinical Nutrition Support, Critical Care) . - The advanced training program is designed in an integrated and systematic manner, in a rotating, periodic manner, recorded in hours and training assignments, and under the strict supervision from the faculty of Pharmacy and the training facility. - The internship program supervising committee designs the advanced training program annually based on the number of students and the availability of training places, provided that the program is approved by the faculty council prior to its implementation. It is worthy to note that the student should pass 6 rotations, at least one of them is dedicated to clinical training. • Applied Research Project: The student must submit and pass a graduation project in one of the offered disciplines (specific specialty) determined by the internship program supervising committee as a graduation requirement
Program levels	**5 years / 10 terms** + **1 year** of advanced training including Applied Research Project.

4. Academic Standards:

1. The faculty adopted the National Academic Reference Standards for Pharmacy Education, issued by the National Authority for Quality Assurance and Accreditation of Education (NAQAAE); 2nd edition, April 2017.
2. The Faculty Council in NOV 24, 2020, the Faculty of Pharmacy, Delta University for Science and Technology adopted the National Academic Reference Standards (NARS) for Pharmacy Education, issued by the National Authority for Quality Assurance and Accreditation of Education (NAQAAE) in, April 2017.

DOMAIN 1- FUNDAMENTAL KNOWLEDGE

1-1- COMPETENCY

Integrate knowledge from basic and applied pharmaceutical and clinical sciences to standardize materials, formulate and manufacture products, and deliver population and patient-centered care.

1-1-1 Demonstrate understanding of knowledge of pharmaceutical, biomedical, social, behavioral, administrative, and clinical sciences.

1-1-2 Utilize the proper pharmaceutical and medical terms, abbreviations and symbols in pharmacy practice

1-1-3 Integrate knowledge from fundamental sciences to handle, identify, extract, design, prepare, analyze, and assure quality of synthetic/natural pharmaceutical materials/products.

1-1-4 Articulate knowledge from fundamental sciences to explain drugs' actions and evaluate their appropriateness, effectiveness, and safety in individuals and populations

1-1-5 Retrieve information from fundamental sciences to solve therapeutic problems.

1-1-6 Utilize scientific literature, and collect and interpret information to enhance professional decision

1-1-7 Identify and critically analyze newly emerging issues influencing pharmaceutical industry and patient health care.

DOMAIN 2- PROFESSIONAL AND ETHICAL PRACTICE

2-1- COMPETENCY

Work collaboratively as a member of an inter-professional health care team to improve the quality of life of individuals and communities, and respect patients' rights.

2-1-1 Perform responsibilities and authorities in compliance with the legal and professional structure and role of all members of the health care professional team.

2-1-2 Adopt ethics of health care and pharmacy profession respecting patients' rights and valuing people diversity.

2-1-3 Recognize own personal and professional limitations and accept the conditions of referral to or guidance from other members of the health care team.

2-2- COMPETENCY

Standardize pharmaceutical materials, formulate and manufacture pharmaceutical products, and participate in systems for dispensing, storage, and distribution of medicines.

2-2-1 Isolate, design, identify, synthesize, purify, analyze, and standardize synthetic/natural pharmaceutical materials

2-2-2 Apply the basic requirements of quality management system in developing, manufacturing, analyzing, storing, and distributing pharmaceutical materials/ products considering various incompatibilities

2-2-3 Recognize the principles of various tools and instruments and select the proper techniques for synthesis and analysis of different materials and production of pharmaceuticals

2-2-4 Adopt the principles of pharmaceutical calculations, biostatistical analysis, bioinformatics, pharmacokinetics, and bio-pharmaceutics and their applications in new drug delivery systems, dose modification, bioequivalence studies, and pharmacy practice

2-3- COMPETENCY

Handle and dispose biologicals and synthetic/natural pharmaceutical materials/products effectively and safely with respect to relevant laws and legislations.

2-3-1 Handle, identify, and dispose biologicals, synthetic/natural materials, biotechnology-based and radio-labeled products, and other materials/products used in pharmaceutical field.

2-3-2 Recognize and adopt ethical, legal, and safety guidelines for handling and disposal of biologicals, and pharmaceutical materials/products

2-4- COMPETENCY

Actively share professional decisions and proper actions to save patient's life in emergency situations including poisoning with various xenobiotics, and effectively work in forensic fields

2-4-1 Ensure safe handling/use of poisons to avoid their harm to individuals and communities

2-4-2 Demonstrate understanding of the first aid measures needed to save patient's life

2-4-3 Take actions to solve any identified medicine-related and pharmaceutical care problems.

2-4-4 Assess toxicity profiles of different xenobiotics and detect poisons in biological specimens

2-5- COMPETENCY

Contribute in pharmaceutical research studies and clinical trials needed to authorize medicinal products.

2-5-1 Fulfill the requirements of the regulatory framework to authorize a medicinal product including quality, safety, and efficacy requirements.

2-5-2 Retrieve, interpret, and critically evaluate evidence-based information needed in pharmacy profession.

2-5-3 Contribute in planning and conducting research studies using appropriate methodologies

2-6- COMPETENCY

Perform pharmacoeconomic analysis and develop promotion, sales, marketing, and business administration skills.

2-6-1 Apply the principles of business administration and management to ensure rational use of financial and human resources.

2-6-2 Utilize the principles of drug promotion, sales, marketing, accounting, and pharmacoeconomic analysis.

DOMAIN 3- PHARMACEUTICAL CARE

3-1- COMPETENCY

Apply the principles of body functions to participate in improving health care services using evidence-based data.

3-1-1 Apply the principles of body function and basis of genomics in health and disease states to manage different diseases..

3-1-2 Apply the principles of public health and pharmaceutical microbiology to select and assess proper methods of infection control.

3-1-3 Monitor and control microbial growth and carry out laboratory tests for identification of infections/diseases.

3-1-4 Relate etiology, epidemiology, pathophysiology, laboratory diagnosis, and clinical features of infections/diseases and their pharmacotherapeutic approaches.

3-2- COMPETENCY

Provide counseling and education services to patients and communities about safe and rational use of medicines and medical devices.

3-2-1 Integrate the pharmacological properties of drugs including mechanisms of action, therapeutic uses, dosage, contra-indications, adverse drug reactions and drug interactions.

3-2-2 Apply the principles of clinical pharmacology and pharmacovigilance for the rational use of medicines and medical devices..

3-2-3 Provide evidence-based information about safe use of complementary medicine including phytotherapy, aromatherapy, and nutraceuticals.

3-2-4 Provide information about toxic profiles of drugs and other xenobiotics including sources, identification, symptoms, and management control.

3-2-5 Educate and counsel patients, other health care professionals, and communities about safe and proper use of medicines including OTC preparations and medical devices.

3-2-6 Maintain public awareness on social health hazards of drug misuse and abuse.

DOMAIN 4- PERSONAL PRACTICE

4-1- COMPETENCY

Express leadership, time management, critical thinking, problem solving, independent and team working, creativity and entrepreneurial skills.

4-1-1 Demonstrate responsibility for team performance and peer evaluation of other team members, and express time management skills.

4-1-2 Retrieve and critically analyze information, identify and solve problems, and work autonomously and effectively in a team.

4-1-3 Demonstrate creativity and apply entrepreneurial skills within a simulated entrepreneurial activity.

4-2- COMPETENCY

Effectively communicate verbally, non-verbally and in writing with individuals and communities.

4-2-1 Demonstrate effective communication skills verbally, non-verbally, and in writing with professional health care team, patients, and communities.

4-2-2 Use contemporary technologies and media to demonstrate effective presentation skills.

4-3- COMPETENCY

Express self-awareness and be a life-long learner for continuous professional improvement.

4-3-1 Perform self-assessment to enhance professional and personal competencies.

4-3-2 Practice independent learning needed for continuous professional development.

Delta University for Science and Technology

Faculty of Pharmacy
PharmD-Clinical Pharmacy Program

Program Specification

Course Code	Course	1-1-1	1-1-2	1-1-3	1-1-4	1-1-5	1-1-6	1-1-7	2-1-1	2-1-2	2-1-3	2-2-1	2-2-2	2-2-3	2-2-4	2-3-1	2-3-2	2-4-1	2-4-2	2-4-3	2-4-4	2-5-1	2-5-2	2-5-3	2-6-1	2-6-2	3-1-1	3-1-2	3-1-3	3-1-4	3-2-1	3-2-2	3-2-3	3-2-4	3-2-5	3-2-6	4-1-1	4-1-2	4-1-3	4-2-1	4-2-2	4-3-1	4-3-2
CPC 101	Pharmaceutical Analytical Chemistry I	✓		✓								✓		✓		✓																				✓						✓
CPC 102	Pharmaceutical Organic Chemistry I	✓										✓																								✓						✓
CPT 101	Pharmacy Orientation	✓	✓								✓																															
CPG 101	Pharmacognosy I	✓		✓			✓					✓				✓																✓							✓		✓
CMD 101	Medical Terminology	✓	✓																				✓												✓	✓		✓		✓	✓
GEN 001	Information Technology	✓																																					✓		
GEN 002	English I		✓						✓																									✓	✓	✓	✓		✓	✓	✓	✓
CNP 101	Human Rights and Fighting Corruption										✓																															
CMS 102	Mathematics	✓				✓	✓	✓							✓									✓	✓												✓					
CPC 203	Pharmaceutical Analytical Chemistry II	✓		✓										✓			✓																			✓						
CPC 204	Pharmaceutical Organic Chemistry II	✓										✓		✓			✓																			✓				✓		
CPB 201	Cell Biology	✓	✓						✓							✓										✓										✓	✓			✓		✓
CPT 202	Physical Pharmacy	✓		✓								✓																								✓	✓					
CPG 202	Pharmacognosy II	✓		✓				✓				✓				✓																✓							✓		✓
GEN 101	English II	✓	✓	✓			✓	✓	✓															✓												✓	✓		✓	✓	✓
CMD 202	Anatomy & Histology	✓	✓													✓										✓													✓		
CPC 305	Pharmaceutical Organic Chemistry-III	✓		✓										✓																						✓				✓	✓	
CPB302	Biochemistry-I	✓	✓					✓					✓			✓	✓									✓										✓		✓		✓		✓
CNP 302	Psychology	✓					✓	✓																												✓						
CPB 303	Basic Pharmacology	✓			✓	✓																				✓				✓					✓						✓
CMD 303	Physiology	✓																					✓			✓			✓							✓	✓	✓		✓	✓	
CPT 303	Pharmaceutical dosage forms-I	✓	✓	✓									✓																							✓	✓			✓		
CNP 303	Scientific writing and Communication skills		✓			✓																	✓									✓			✓				✓		
CPB 404	Pharmacology –I	✓			✓	✓										✓	✓									✓				✓						✓	✓		✓	✓	
CPM 401	General Microbiology and Immunology	✓														✓	✓											✓									✓		✓		
CMD 404	Pathophysiology	✓																					✓			✓										✓				✓	✓
CPT 404	Pharmaceutical Dosage Forms-II	✓		✓									✓																							✓	✓			✓		
CPB 405	Biochemistry II	✓						✓					✓			✓							✓			✓		✓								✓	✓		✓	✓		✓
CPG 403	Phytochemistry-I	✓		✓								✓				✓																✓							✓		✓
CPB 506	Pharmacology-II	✓			✓			✓								✓	✓							✓		✓			✓	✓				✓		✓	✓				✓
CPM 502	Pharmaceutical Microbiology and Antimicrobials	✓														✓							✓				✓	✓		✓						✓				✓	
CPC 506	Medicinal chemistry -1	✓			✓									✓																✓						✓	✓				
CPT 505	Pharmaceutical Dosage Forms-III	✓		✓									✓	✓		✓																					✓					
CMD 505	Pathology	✓	✓							✓	✓															✓		✓	✓							✓	✓					✓
CPP 501	Community Pharmacy Practice		✓		✓	✓	✓				✓															✓			✓	✓				✓		✓	✓		✓	✓		
CPB 607	Pharmacology-III				✓	✓												✓			✓					✓	✓		✓	✓						✓				✓	✓	
CPG 604	Phytochemistry-II	✓		✓								✓				✓																					✓				✓		✓
CPT 606	Pharmaceutical Technology	✓		✓									✓	✓																		✓					✓				
CPP 602	Hospital Pharmacy	✓		✓									✓				✓																✓				✓					
CPP 603	Clinical Pharmacy Practice	✓				✓													✓			✓							✓					✓			✓		✓	✓		
CPC 607	Medicinal chemistry -II	✓		✓	✓							✓		✓	✓	✓														✓					✓	✓					✓
CPC 608	Quality Control of Pharmaceuticals	✓		✓			✓					✓	✓				✓					✓															✓		✓		✓
CPM 703	Parasitology & virology	✓														✓	✓									✓		✓	✓								✓				

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Course Code	Course	1-1-1	1-1-2	1-1-3	1-1-4	1-1-5	1-1-6	1-1-7	2-1-1	2-1-2	2-1-3	2-2-1	2-2-2	2-2-3	2-2-4	2-3-1	2-3-2	2-4-1	2-4-2	2-4-3	2-4-4	2-5-1	2-5-2	2-5-3	2-6-1	2-6-2	3-1-1	3-1-2	3-1-3	3-1-4	3-2-1	3-2-2	3-2-3	3-2-4	3-2-5	3-2-6	4-1-1	4-1-2	4-1-3	4-2-1	4-2-2	4-3-1	4-3-2
CPB 708	Drug Information	✓					✓		✓																								✓				✓		✓	✓		
CPT 707	Advanced Drug Delivery Systems	✓						✓							✓	✓																			✓						✓
CPT 708	Biopharmaceutics and Pharmacokinetics	✓													✓																				✓	✓					
CPM 704	Medical Microbiology	✓						✓								✓	✓											✓	✓								✓	✓				
CPB 709	Biostatistics	✓													✓							✓	✓													✓					✓
CMD 706	First Aid and Basic Life Support (BLS)	✓	✓						✓	✓									✓	✓						✓							✓			✓			✓		
CPC 809	Medicinal Chemistry-III	✓			✓	✓																								✓				✓	✓	✓			✓		✓
CPP 804	Management of Endocrine and Renal Disorders	✓	✓		✓		✓	✓			✓												✓			✓			✓					✓			✓		✓		✓
CPP 805	Management of Oncological Diseases and Radiopharmacy	✓			✓	✓	✓	✓			✓									✓			✓	✓			✓			✓					✓			✓			✓
CPP 806	Clinical Pharmacokinetics	✓													✓																				✓	✓			✓		
CPB 810	Clinical Biochemistry	✓			✓			✓								✓	✓						✓			✓		✓	✓						✓	✓	✓	✓			
CPM 805	Public Health and Preventive Medicine	✓						✓																			✓		✓					✓		✓	✓				
CPB 911	Basic & clinical Toxicology	✓						✓	✓									✓			✓												✓		✓		✓		✓		✓
CPP 907	Management of Neuropsychiatric Diseases	✓	✓		✓			✓	✓		✓									✓			✓							✓				✓			✓		✓		✓
CPM 906	Biotechnology	✓						✓					✓			✓							✓			✓										✓			✓			
CPG 905	Phytotherapy	✓		✓					✓							✓														✓	✓		✓				✓	✓			
CPP 908	Management of critical care patients	✓	✓		✓		✓	✓			✓								✓				✓							✓	✓				✓			✓		✓		✓
CNP 904	Marketing & Pharmacoeconomics	✓						✓																✓	✓												✓		✓	✓		
CNP 905	Pharmaceutical legislation and practice ethics	✓							✓	✓							✓					✓																				
CNP 906	Entrepreneurship	✓	✓																					✓	✓										✓		✓		✓		
CPB 012	Clinical Nutrition	✓	✓			✓		✓												✓						✓			✓	✓		✓		✓		✓	✓	✓		✓
CPP 009	Management of Dermatological, Reproductive and Musculoskeletal Diseases	✓	✓		✓		✓	✓			✓									✓			✓			✓			✓					✓			✓		✓		✓
CPP 010	Management of Pediatric Diseases	✓	✓		✓	✓	✓				✓									✓			✓			✓			✓					✓			✓		✓		✓
CPP 011	Management of Cardiovascular Diseases	✓	✓		✓		✓	✓			✓									✓			✓	✓		✓			✓					✓			✓		✓		✓
CPP 012	Management of Gastrointestinal Diseases	✓	✓		✓		✓	✓			✓									✓			✓			✓			✓					✓			✓				✓
CPP 013	Management of Respiratory Diseases	✓	✓		✓			✓			✓												✓			✓			✓					✓			✓		✓		✓
CPP 014	Clinical Research and Pharmacovigilance	✓													✓								✓	✓								✓							✓	✓		
CPP 015	Professional practice & Clinical skills		✓				✓		✓	✓	✓									✓									✓	✓				✓		✓	✓				✓	

Course Code	Course	1-1-1	1-1-2	1-1-3	1-1-4	1-1-5	1-1-6	1-1-7	2-1-1	2-1-2	2-1-3	2-2-1	2-2-2	2-2-3	2-2-4	2-3-1	2-3-2	2-4-1	2-4-2	2-4-3	2-4-4	2-5-1	2-5-2	2-5-3	2-6-1	2-6-2	3-1-1	3-1-2	3-1-3	3-1-4	3-2-1	3-2-2	3-2-3	3-2-4	3-2-5	3-2-6	4-1-1	4-1-2	4-1-3	4-2-1	4-2-2	4-3-1	4-3-2
Elective courses																																										
CPC E010	Advanced Pharmaceutical Analysis – Spectroscopy			✓				✓				✓		✓																							✓						✓
CPC E011	Food Analysis			✓								✓		✓																						✓						✓
CPC E012	Drug Design	✓			✓							✓			✓							✓								✓						✓	✓			✓		
CPG E06	Biotechnology of natural products	✓		✓								✓				✓																				✓	✓			✓	✓	✓
CPG E07	Production and Manufacture of Medicinal Plants	✓		✓									✓			✓											✓										✓			✓	✓	✓
CPG E08	Chromatography and Separation Techniques	✓		✓								✓				✓																				✓						✓
CPT E09	Applied Industrial Pharmacy	✓		✓				✓					✓	✓																							✓	✓				
CPT E010	Good Manufacturing Practices	✓											✓																							✓	✓			✓		
CPT E011	Cosmetic Preparations	✓		✓									✓																							✓	✓			✓		
CPM E07	Antibiotic stewardship	✓							✓							✓											✓		✓						✓		✓				
CPM E08	Infection Control	✓							✓							✓												✓	✓						✓		✓				
CPM E09	Bioinformatics	✓								✓					✓					✓			✓				✓					✓				✓	✓					✓
CPB E013	Drug Abuse	✓			✓				✓											✓	✓											✓		✓	✓		✓				✓
CPB E014	Interpretation of laboratory data	✓				✓	✓		✓				✓											✓			✓			✓							✓	✓				
CPP E016	Geriatric pharmacotherapy	✓	✓		✓		✓	✓			✓									✓			✓							✓	✓				✓		✓		✓	✓		✓
CPP E017	Pharmacogenomics and Precision Pharmacy	✓						✓	✓														✓			✓			✓							✓	✓		✓		✓
100 hours summer training																																									
	100 hours summer training	✓	✓		✓				✓	✓	✓						✓	✓		✓					✓		✓						✓	✓	✓	✓		✓			

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Course	1-1-1	1-1-2	1-1-3	1-1-4	1-1-5	1-1-6	1-1-7	2-1-1	2-1-2	2-1-3	2-2-1	2-2-2	2-2-3	2-2-4	2-3-1	2-3-2	2-4-1	2-4-2	2-4-3	2-4-4	2-5-1	2-5-2	2-5-3	2-6-1	2-6-2	3-1-1	3-1-2	3-1-3	3-1-4	3-2-1	3-2-2	3-2-3	3-2-4	3-2-5	3-2-6	4-1-1	4-1-2	4-1-3	4-2-1	4-2-2	4-3-1	4-3-2
Internship year (Obligatory rotations)																																								
Community Pharmacy based rotation	✓	✓		✓	✓	✓		✓	✓	✓		✓		✓		✓	✓	✓	✓			✓		✓		✓			✓	✓	✓	✓		✓	✓	✓	✓			✓	✓	
Institutional/ Hospital Pharmacy based rotation	✓	✓		✓	✓	✓		✓	✓	✓		✓	✓	✓		✓	✓					✓		✓		✓	✓			✓	✓	✓		✓	✓	✓	✓	✓		✓	
Intravenous admixing preparation pharmacy based rotation								✓	✓	✓		✓	✓	✓	✓	✓													✓	✓					✓	✓		✓			
Clinical pharmacy rotation in adult general medicine	✓	✓		✓	✓	✓	✓	✓	✓					✓				✓	✓			✓							✓	✓	✓			✓	✓	✓	✓		✓	✓	✓	✓
Drug tour: registration to market rotation	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓			✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓			
Applied Research Project	✓		✓					✓	✓		✓	✓														✓			✓	✓	✓			✓		✓	✓			✓		✓
Internship year(Elective rotations)																																									
Clinical Pharmacy in Cardiology and Cardiovascular	✓	✓		✓	✓	✓		✓	✓					✓				✓	✓			✓							✓	✓		✓		✓	✓	✓	✓		✓	✓	✓	✓
Clinical Pharmacy in Gastroenterology and Hepatology	✓	✓			✓	✓		✓	✓					✓				✓	✓			✓							✓	✓		✓		✓	✓	✓	✓		✓	✓	✓	✓
Clinical Pharmacy in Nephrology and Urology	✓	✓		✓	✓	✓		✓	✓					✓				✓	✓			✓							✓	✓		✓		✓	✓	✓	✓		✓	✓	✓	✓
Clinical Pharmacy in Oncology and Hematology	✓	✓		✓	✓	✓	✓	✓	✓			✓		✓					✓			✓				✓			✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Clinical Pharmacy in Infectious Diseases	✓	✓		✓	✓	✓		✓	✓					✓				✓	✓			✓							✓	✓		✓		✓	✓	✓	✓		✓	✓	✓	✓
Clinical Pharmacy in Pediatrics and Neonates	✓	✓		✓	✓	✓		✓	✓					✓				✓	✓			✓							✓	✓		✓		✓	✓	✓	✓		✓	✓	✓	✓
Clinical Pharmacy in Geriatrics (Elderly)	✓	✓		✓	✓	✓		✓	✓					✓				✓	✓			✓							✓	✓		✓		✓	✓	✓	✓		✓	✓	✓	✓
Clinical Pharmacy in Neuropsychiatric	✓	✓		✓	✓	✓		✓	✓					✓				✓	✓			✓							✓	✓		✓		✓	✓	✓	✓		✓	✓	✓	✓
Clinical Pharmacy in Obstetrics and Gynecology	✓	✓		✓	✓	✓		✓	✓					✓				✓	✓			✓							✓	✓		✓		✓	✓	✓	✓		✓	✓	✓	✓

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6- Teaching and Learning Strategy:

1) Teaching methods:

- Teaching methods used to achieve the predetermined program competencies include:

– Advanced lectures	– **Videos**
– Practical sessions	– **Flipped classroom**
– Tutorial sessions	– **Role play**
– Assignments	– **Simulation**
– Research projects	– **Virtual labs**
– Case studies	– **Site visits**
– Group presentation	– **Applied Research Project**
– Group discussion	– **Field training**
– Interactive learning	– **Internship**

7- Assessment and evaluation methods:

a. Assessment methods

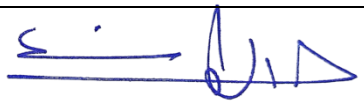
- Faculty of Pharmacy, Delta University for Science and Technology establishes principles and methods for the formative and summative assessment of student achievements.
- Assessment methods measure student performance in all of the professional competencies in accordance with the stated outcome expectations.
- Grades are measure of the performance of a student in an individual course.

- Assessment methods include:

– Written Exams (Paper or online)	– Peer-assessment
– Laboratory Exams (Using Checklist)	– Portfolio
– Final Oral Exams (Using Viva cards)	– Objective Structured Clinical Examination
– Quizzes	– Objective Structured Practical Examination
– Assignments	– TOSCE
– Research project	– OSLE
– Applied Research Project	– Field training
– Self-assessment	– Internship

8. Program Key Performance Indicators (if any)

No.	Performance Indicator	Target Level	Method	Measurement
1.	Percentage of achieved objectives for program improvement and development plan	≥90%	statics for data analysis	Annually
2.	Number of enrolled students	≥0	Statics from Student affairs and academic guide unit	Annually
3.	Staff: student ratio	1:25≥	Data base analysis from Staff affairs department	Annually
4.	Success rates for students	≥85%	Data base analysis from control and Student affairs	Annually
5.	Percentage of graduates	≥90%	Data base analysis from control and Student affairs	Annually
6.	Student satisfaction with services and effectiveness of student support	≥80%	Questionnaires of students on education services	Annually

Program coordinator:	
Name:	**Prof. Dr. Dalia Rashad El-wasseef** Vice-Dean for Education and Student Affairs.
Signature:	
Date:	July 20, 2025
Dean of the Faculty:	
Name:	**Prof. Dr. Hassan A. El-Kashef.** *Dean of the Faculty*
Signature:	
Date:	July 20, 2025

- ***Program admission requirements:***
- ***Admission policy:***
- ***Courses Registration:***
- ***Academic Load:***
- ***Marks Distribution***
- ***Grading System***
- ***Unsatisfactory academic performance***
- ***Academic difficulty:***
- ***Graduation***
- **Training:**

Annex

Attachment 1: *Matrix of courses covering program's key elements.*

Attachment 2: *Courses Description.*

Attachment 3: *Matrix of methods of learning and assessments for program's LOs.*

Program admission requirements:

Candidate should have the general certificate of secondary education (scientific section) or an equivalent certificate from a foreign institute recognized by the university. Transferring students registered in one of the Faculties of Pharmacy in Egyptian or foreign universities may be accepted provided that the student fulfills the requirements for admission to the college, the courses he studied in the college from which he is transferred are calculated for the student according to the rules determined by the College Board.

Admission policy:

The faculty complies with the admission regulations and requirements of the Egyptian Supreme Council of Universities (ESCU).

Courses Registration:

Faculty assigns one staff member as an academic advisor for each group of students (20-30 students) who will be responsible for student support regarding academic and social issues. He will follow up students' attendance and progress in different courses as well. In addition, academic advisors will be available to help students select the required and suitable courses from the list of the offered courses. Selection of the courses for any given level is conditional on the successful completion of the prerequisite course of the preceding level. Courses registration should be done within the allowed time frame for registration according to the academic calendar.

Academic Load:

The academic load is the number of credit hours that the student registers in one semester and it must be taken into account that the registered academic load for

the student in any semester is not less than 12 credit hours and not more than 20 credit hours and that the academic load for the struggling student does not exceed 12 credit hours. Academic load during the summer semester, with a maximum of 10 credit hours. The College Board may allow the student in the last two semesters to increase the study load beyond the maximum limit and not exceed 3 credit hours (the student benefits one time).

(1) Marks Distribution

- The total grade is out of 100%.
- In order to pass a course, the student must obtain a minimum of 60% of the total grade and a minimum of 30% of the final written exam.
- The grades of the Faculty courses are distributed according to the following table:

Type of course	Period./Actv.	Pract.	Wr.	Oral	Total
Course includes a practical and oral exam	15	25	50	10	100
Course includes a practical and no oral exam.	15	25	60	-	100
Course has no practical nor oral exams	40	-	60	-	100

(2) Grading System:

The following Table illustrates the grading system adopted in the Faculty:

Grade expression	Grade scale	Grade point average value (GPA)	Numerical scale marks
EXCELLENT	A^+	4	≥ 97%
	A	4	93 – < 97%
	A^-	3.7	89 - < 93%
VERY GOOD	B^+	3.3	84 - < 89%

Grade expression	Grade scale	Grade point average value (GPA)	Numerical scale marks
	B	3	80 - < 84%
	B^{-}	2.7	76 - < 80%
	C^{+}	2.3	73 - < 76%
	C	2	70 - < 73%
	C^{-}	1.7	67 - < 70%
SATISFACTORY	**D^{+}**	1.3	64 - <67%
	D	1	60 - < 64%
FAIL	**F**	0	< 60%
Withdraw	**W**	-	-
Incomplete	**I***	-	-
Absent	**Abs E****	-	-

- **Grade point average (GPA):**

➢ A GPA for each student will be calculated, both at the end of each grading period and cumulatively.

➢ A GPA based on the ratio of grade points earned divided by the number of credits earned with grades of A-F (including pluses and minuses).

➢ Both the periodic and cumulative GPA appears on each student's record.

➢ The semester GPA of the student is the weighted average of the grade points acquired in the courses passed in that particular semester.

➢ Registration symbols that do not carry grade points or credit:

W: withdrawal prior to deadline indicates a student has officially withdrawn from a course.

I*: Students who have satisfactory attendance in the courses but cannot attend the final written/oral exams due to an acceptable excuse by the faculty council, they

can enter the final written/oral exams of the courses in the beginning of the next semester and their full grade is calculated.

Abs E:** If the student in the above case cannot enter the final written/oral exams in the next semester, he should re-register in the course and his full grade is calculated.

Unsatisfactory academic performance:

- Student who fails to attend the final written exam.
- Student who fails to achieve 30% of the marks in the final written exam.
- Student who fails to achieve 60% of the total course marks.
- If the student fails in any compulsory course, he must study the same course and attend exam when it is presented later and the grade that he obtains is calculated for him. But if he fails in an elective course, he can re-study or study another alternative optional course to complete the graduation requirements, after the approval of the academic advisor and the approval of the college council.

Academic difficulty:

- A student is considered academically failing if he obtains a semester GPA less than "1".
- A student who obtains a semester average (GPA) less than “1” for four continuous semesters or in six unconnected semesters is dismissed from the college after being advised academically at least two warnings and approval of the college council.
- The failed student is allowed to re-study the courses he passed with a grade

of D in order to improve the GPA and the higher grade obtained by the student is earned.

Graduation:

Obtaining a Bachelor of Pharmacy degree (*PharmD-Clinical Pharmacy*) according to the credit hours system requires the following:

Studying and passing 184 credit hours distributed over ten semesters. The compulsory college requirements include 164 credit hours and the faculty elective requirements, which represent 8 credit hours, 6 credit hours are university elective requirements and University Compulsory requirements 6 hours, provided that the GPA is not less than one.

- Passing a first field training period with a total of 100 actual training hours in private and government pharmacies and hospital pharmacies approved by the College Board, under the supervision of a faculty member. Training takes place during the summer vacations after the student has passed **110** credit hours or at the end of the third level.
- Passing the advanced training (9 months) after completion of the academic years, according to the detailed regulations for the Internship Year Training Program, which includes the Applied research project in one of the offered disciplines.

Training:

By the end of the training periods, the graduate will achieve the learning outcomes according to the key elements of domains 2, 3 and 4.

- **Summer training**: in private, governmental or hospital pharmacies for 100 actual training hours as a graduation requirement under supervision of a faculty member. Students should commence their training during the summer vacation following the completion of level 3 and before the beginning of the internship year.
- **Internship year**: The sixth year of study is devoted to an advanced field training, with six training **rotations** for a total of 36 weeks (one academic year). The advanced training should include four mandatory training **rotations** (Pharmacy Based Rotation, Drug Tour: Registration to Market Rotation, Clinical Pharmacy Rotation in Adult General Medicine, Applied Research Project) and two elective clinical pharmacy course in (Cardiology and Cardiovascular, Gastroenterology and Hepatology, Nephrology and Urology, Oncology and Haematology, Infectious Diseases, Pediatrics and Neonates, Geriatrics (Elderly), Neuropsychiatric, Obstetrics and Gynaecology, Clinical Nutrition Support, Critical Care) training **rotation.**
- The advanced training program is designed in an integrated, systematic, periodic and rotational manner, recorded in hours and training assignments and under the strict supervision of the faculty of Pharmacy and the training facility.
- The internship program supervising committee designs the advanced training program annually based on the number of students and the availability of training places, provided that the program is approved by the faculty council prior to its implementation.

Annex

Attachment 1*: Courses Description.*

Attachment 2*: Matrix of methods of learning and assessments for program's LOs.*

Course Description

CPC 101 Pharmaceutical Analytical Chemistry- I (2+1)

Chemical Kinetics, rate of reaction, first Order reaction, rate law , Second order and third order of reaction, molecularity , Theories of reaction rate, activation energy and catalysis , Photochemistry, absorbed energy and quantum yield.

Introduction to qualitative and quantitative inorganic chemistry, acid-base theory, titration curve and buffer solutions. Precipitimetry factors affecting precipitate formation and pharmaceutical application.

CPC 102 Pharmaceutical Organic Chemistry- I (2+1)

The objective of this course is to provide students with the basic knowledge in pharmaceutical organic chemistry, which will serve as fundamentals for other
courses offered during subsequent semesters. This course involves Electronic structure of atom, alkanes [nomenclature, synthesis and reactions (free radical reactions)], and cycloakanes. Stereochemistry (Optical isomers, racemic modification, nomenclature of configurations). Alkenes, alkadienes and alkynes. Alkyl halides (nomenclature, preparation and chemical reactions (SN1, SN2, E1, E2). Arenes and aromatic compounds (Kekule structure, Huckel rule, Electrophilic aromatic substitution and orientation).

CPC 203 Pharmaceutical Analytical Chemistry-II (2+1)

Complexometric titrations and oxidation-reduction titrations (electrical properties of redox systems, Nernest equation factors affecting oxidation potential, redox titration curves, pharmaceutical application on redox reaction), Electrochemistry (potentiometry, conductometry; and polarography).

CPC 204 Pharmaceutical Organic Chemistry- II (2 +1)

This course involves different classes of organic compounds: aryl halides, Alcohols, Phenols, ethers & epoxides, aldehydes, ketones, carboxylic acid & acid derivatives, sulphonic acids, and nitrogenous compounds.

CPC 305 Pharmaceutical Organic Chemistry- III (2+ 1)

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 UV, infrared (IR), nuclear magnetic resonance (NMR) and mass spectrometry (MS) for the structural elucidation of organic compounds.

CPC 506 Medicinal Chemistry- I (2+1)

The prime objective of this course is to enable students to gain an understanding of the physicochemical properties of drugs and their metabolic biotransformation. The course handles different classes of drugs including the drugs affecting the autonomic nervous system (ANS), drugs controlling pain and inflammation (NSAIDs, local anaesthetics and rheumatoid drugs).

CPC 607 Medicinal Chemistry -II (2+1)

The course is tailored to assist the students to gain the drugs affecting the cardiovascular system (CVS), central nervous system (CNS), neurodegenerative disorders and . antihistamines (H1,H2 blockers and antiulcer PPTs). Moreover, narcotic analgesics, are also handled.

CPC 608 Quality Control of Pharmaceuticals (2+1)

Good Analytical Practice and Sampling: Introduction, Sampling of pharmaceuticals and related materials, Type of sampling tools, Sampling plans , Documentation , Validation of analytical methods according to ICH Guidelines Q2 R1. Compendial testing , Validation of analytical methods, Data elements required for assay validation. . Drug stability, Stability testing , Forced degradation studies , stability indicating assay methods for drugs according to ICH Q1 R2 Guidelines. Stress conditions for drug degradation according to ICH Q1 R2 Guidelines. Factors affecting drug degradation, Drug expiration, Drug withdrawal from the market. Pharmaceutical regulations according to FDA & EMA (European medicine agency) and ISO and BSI. Drug-excipient interactions and adduct formation; analytical techniques used to detect drug-excipient compatibility, mechanism of drug-excipient interactions, examples . Official methods of analysis applied to raw materials and end products.

CPC 809 Medicinal Chemistry -III (2+1)

This course handle different classes of chemotherapeutic agents including antibiotics, antiviral, antifungals, antiparasitics and various anticancer therapies, steroidal hormones and related drugs (Diabetes, thyroid and calcium regulating agents are also covered.

CPB 201 Cell Biology (1 + 1)

The cell theory and cell structure – transport of biomolecules across membranes – Intercellular communication – DNA structure replication and genetic code - Cell cycle and control of the nucleus - macromolecules of the cell) - DNA and genetic code - Cell cycle and control of cell number – Rna structure and transcription – from gene to protein (Translation)

CPB 302 Biochemistry- I (2+1)

Amino acids as precursors for biosynthesis of biomolecules –biologically important peptides-protenis structure and function ,– Carbohydrates structure and function – Lipids structure and function (physiologically important lipid molecules – cholesterol and steroids – lipoprotein function – Enzymology (enzyme kinetics – regulation – enzyme inhibitors as drugs) - Hemoglobin and porphyrins (Hb derivatives and types– metabolism of Hb and regulation) – vitamins structure and function – Biological oxidation and ATP synthesis

CPB 303 Basic Pharmacology (2 + 0)

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. 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.

CPB 404 Pharmacology- I (2 + 1)

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

CPB 405 Biochemistry- II (2 + 1)

Metabolism of dietary fuels (carbohydrates, lipids and proteins) – Integration of metabolism (Feed/fast cycle – diabetes mellitus – obesity) and Hormonal regulation
– Nitrogen metabolism and nitrogen balance - Free radicals and antioxidants..

CPB 506 Pharmacology II (2 + 1)

This course integrates principles of pharmacology with conceptual knowledge of physiology and pathophysiology disease processes regarding drugs acting on central nervous system, gastro-intestinal and pulmonary systems. The anti-inflammatory, analgesics as well as gout treatments are also within the scope of the course.

CPB 607 Pharmacology- III (2 + 0)

This course integrates principles of pharmacology with conceptual knowledge of physiology and pathophysiology disease processes regarding drugs acting on endocrine system. Chemotherapeutic drugs including antimicrobials, anticancer and immunosuppressant are within the scope of the course. Stem cell therapy is also included.

CPB 708 Drug information (1+1)

This course includes an advanced application of the science of drug information in terms of: its practice within the drug information centers and various clinical sites. The course will focus on Drug information and poison information centers, different drug information resources, use of the internet for drug and research information, evaluating information on the web. The classification of study design and clinical trials, data presentation, and basic statistical concepts are detailed. Basics of pharmacoeconomic literature are described.

CPB 709 Biostatistics (1+0)

This course provides basic concepts of biostatistics and data analysis.

It includes introduction to descriptive and inferential statistics, interpretation of estimates, confidence intervals and significance tests, elementary concepts of probability and sampling; binomial and normal distribution, basic concepts of hypothesis testing, estimation and confidence intervals, t-test and chi-square test, linear regression theory and the analysis of variance.

CPB 810 Clinical Biochemistry (2 + 1)

Organ function and laboratory diagnostic tests (liver – kidney – heart – pancreas – bone) – Plasma proteins and albumin/globulin ratio – Types and lab differentiation of hyperlipidemia - Examples of different diseases (case study – interpretation of analytical data) - Handling, preservation, storage and analysis of biological samples - Abnormalities of urine analysis – Blood analysis and complete blood count – Tumor markers – Endocrinology (classification of hormones - mechanisms of action – dysfunction) - Electrolytes, blood gases and acid-base balance - Recent diagnostic biomarkers.

CPB 911 Basic & clinical Toxicology (2 + 0)

To ensure that the students have the necessary knowledge & skills, as well as comprehensive understanding of the basics of toxicology enabling them to have detailed knowledge and to develop professional competence in the recognition, solving, and discussion of different toxicological cases. It includes: basics and concepts of toxicology including the mechanism of toxicity, target organ and treatment of toxicity. Toxic groups including heavy metals, toxic gases, animal, plant and marine poisons, pesticides and radiation hazards are covered. Environmental, occupational, reproductive and genetic toxicology as well as drug abuse are included. Postmortem sampling for detection of poisons, methods of detection, interpretation of results and writing of a report are also covered.

CPB 012 Clinical Nutrition (1+1)

Measures of healthy life-style – Macronutrients and calculation of calories – Basal metabolic rate (BMR) - R**commended daily allowance (RDA) –** Nutritional requirement for pediatrics and geriatrics - Vitamins and minerals (role in metabolism – clinical significance) – Gut microbiota and human health – Enteral and parenteral nutrition - Dietary care for patients with obesity, diabetes mellitus, cardiovascular, renal and hepatic disorders – Dietary care for cancer patients - Dietary care for sports` men - Dietary care for pregnant and lactating women – Nutrigenomics.

CPT 101 Pharmacy Orientation: (1+0)

This is a course to acquaint the beginning pharmacy student with the multiple aspects of the profession of pharmacy, including the mission of pharmacy, role of pharmacist in society and pharmacy careers, classification of medications, interpretation of prescriptions and medication orders, general dispensing procedure and factors affecting drug dosage, sources of drugs, different dosage forms and various routes of administration. In addition to the history of pharmacy practice in various civilizations

CPT 202 Physical Pharmacy: (2+1)

This course provides students with knowledge of physical and chemical principles essential for the design and formulation of pharmaceutical products. Students are introduced to the fundamental concepts of states of matter, Phase equilibrium, colligative properties, isotonicity solubility,

dissolution, partition coefficient, surface and interfacial phenomena, surface active agents, adsorption and its application in pharmacy and rheological behaviour of dosage forms.

CPT 303 Pharmaceutical Dosage Forms -I: (2+1)

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.

CPT 404 Pharmaceutical Dosage Forms -II: (2+1)

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.

CPT 505 Pharmaceutical Dosage Forms- III: (2+1)

The course introduces the students to the kinetics of drug decomposition including rate and order of the reaction, determination of the half-life, expiry date and shelf-life by different methods, stability testing, and in-vitro possible drug/excipients interactions . It also describes the principles and techniques involved in the formulation, and manufacturing of solid dosage forms including powders, granules, tablets, capsules and suppositories.

CPT 606 Pharmaceutical Technology : (2+1)

The course provides students with an introduction to industrial pharmacy. It deals with the principles of various unit operations such as heat transfer, evaporation, drying, distillation, filtration, centrifugation, crystallization, extraction, size reduction, size separation, size analysis and size enlargement. It focuses on the application of these unit operations in pharmaceutical industry with emphasis on the equipment and machines used during the production of different dosage forms.

CPT 707 Advanced Drug Delivery Systems: (2+0)

A continued study of pharmaceutical dosage forms with emphasis on novel and targeted drug delivery systems. Discussions focusing on transforming proteins, genes, and other biotechnology driven compounds into therapeutic products including the role of molecular modeling and new drug therapies in fabricating rational drug delivery systems are included.
The course covers targeted nanocarrier-based delivery Systems and other advanced therapy medicinal products such as gene therapy medicinal products (GTMPs), somatic cell therapy medicinal products

(sCTMPs), and tissue-engineered products (TEPs). In addition to formulation aspects of biotechnology derived pharmaceuticals, it also covers the application of polymers and excipients to solve problems/issues concerning the optimization of absorption, selective transport, and targeting.

CPT 708 Biopharmaceutics & Pharmacokinetics: (2+1)

The course is concerned with the exploration and examination of the physicochemical properties of drugs in the physiological environment and their impact on product performance. It explores the principles of biopharmaceutics and strategies for enhancing drug delivery and bioavailability .Also it introduces the students to basic pharmacokinetic parameters and mathematical aspects. General principles of pharmacokinetic models are presented as they pertain to the process of absorption, distribution and elimination of drugs in humans and the significance of these processes in drug therapy. Topics also emphasize linear and nonlinear metabolic clearance kinetics, drug-drug interaction mechanisms and kinetics, in vitro-in vivo predictions, pharmacogenetics and other sources of inter-individual variability.

CPG 101 Pharmacognosy- I (2+1)

Based on the Egyptian flora and other florae 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 leaves, flower, seeds, bark and wood 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.

CPG 202 Pharmacognosy- II (2+1)

Based on the Egyptian flora and other florae 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.

CPG 403 Phytochemistry- I (2+1)

Based on complementary medicine and Egyptian medicinal plants that can be used as natural extracts, bioactive raw materials and phytochemical standards to serve the pharmaceuticals, cosmetics and food industries in Egypt.. The course aims to gain the students the knowledge and experience those enable them to understand, describe and deal with the chemistry and Pharmaceutical uses of volatile oils, resins and resin combinations, carbohydrates, glycosides, and bitters of plant or animals as well as techniques for their, isolation, identification and determination from their respective sources.Clinical applications will be correlated with various clinical analyses.

CPG 604 Phytochemistry- II (2+1)

The course aims to enable students to demonstrate knowledge of basic concepts of chemistry and bioactivities of alkaloids, tannins and antioxidants as well as chromatographic techniques for their isolation and identification. The course emphasizes on drugs with valuable use in the Egyptian and worldwide markets, such as anti-cancer agents, drugs affecting CNS, drugs ameliorating liver diseases and anti-inflammatory agents. Finally, the course focuses on the structure activity relationships (SAR) of these natural products derived compounds and their pharmacophoric features. Clinical applications will be correlated with various clinical analyses.

CPG 905 Phytotherapy (1+1)

The course aims to enable students to attain the systematic approach for herbal prescribing through a comparative study of both traditional and scientifically based uses of herbal drugs in the treatment of various clinical disorders. The course provides clinical pharmacy students with review of the available information on how botanicals may normalize an altered function. Approval by World Health Organization (WHO), German Federal Institute for Drugs and Medical Devices (Commission E) is the base for selection of the studied herbs. The herbal drugs treated in combined way relative to pharmacognosy, pharmacology and toxicology. Special concern is given to the possible mode of action of the herbal drugs based on experimental and clinical pharmacological studies.

Also the student should understand the basis of complementary and alternative medicine with emphasis on herbal remedies, nutritional supplements, homeopathies, aromatherapy & their effect on maintaining optimum health and prevention of chronic diseases.

CPM 401 General Microbiology and Immunology (2+1)

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 onHost parasite relationship, Non-specific and specific immunity, Mechanism of protective immunity. Molecular and cellular immunology, including antigen and antibody structure, function and reaction between them, effector mechanisms, complement, and cell mediated immunity. Active and passive immunization. Hypersensitivity and in vitro antigen antibody reactions, Immuno-deficiency disorders, Autoimmunity and auto-immune disease, organ transplantation.

CPM 502 Pharmaceutical Microbiology and Antimicrobials (2+1)

This course is designed to provide student with basic, practical and professional knowledge on antimicrobial agents, either antibiotics or non-antibiotics. Different sterilization methods and their application scope will be studied in this course.

CPM 703 Parasitology & Virology (2 +1)

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 cover laboratory diagnosis of human parasitic infections.

The other part of the course provides students with the essential knowledge to recognize the epidemiology, mechanisms of pathogenesis, clinical picture, methods of laboratory diagnosis, treatment, prevention and control measures of RNA and DNA viral infections in humans.

CPM 704 Medical Microbiology (2+1)

To educate students about the basic features of general bacteriology, virology and mycology.

- To familiarize students with the common infections and diseases of medical importance, their microbial causes, as well as laboratory diagnosis, treatment, prevention and control of such diseases.

CPM 805 Public Health and Preventive medicine (2+0)

The course introduces students to the global public health and the Sustainable Development Goals (SDGs). It also includes the fundamentals of epidemiology, communicable and non-communicable diseases and their control with special emphasis on antibiotic resistance and antibiotic stewardship as well as emerging pathogens. The course also covers nutritional health, occupational medicine and women's, children's and adolescent's health and the relationship between the environment and public health. It is anticipated that students will achieve an understanding of the optimal environmental conditions for improved public health such as air, food and water purity and sanitary water disposal. The ability to understand and evaluate the biological and chemical basis for health threats emanating from the environment is also gained.

CPM 906 Biotechnology (2+1)

The biotechnology subject is crucial for pharmacy students. It mainly aims to provide sufficient foundation for the student on how to learn the concept of the biotechnology, its main components, optimization of fermentation, bioconversion biodegradation and bioremediation – gene therapy and genetic engineering. It simply puts the student on the track of the hot topic and the coming near future of the pharmaceutical industries.

CMD 101 Medical Terminology (1 + 0)

To ensure that the students have the necessary competency enabling them to recognize, analyze, synthesize, and apply medical terms as well as universally approved abbreviations related to the

health profession, medical and paramedical. This course deals with basic components of medical terms (roots, prefixes, suffixes, and linking or combining vowels) and how does the medical terminology work by combining these basic components. The course also includes commonly used prefixes, and roots of body system, as well as the commonly used medical abbreviations .

CMD 202 Anatomy and Histology (2 +1)

The aim of the course is to provide the students with competency concerning the appropriate functions of cells, tissues, organs and body system. The course also enables the student to integrate physiological data and mechanisms with ongoing taught sciences: anatomy and histology. Histology part includes cytology, epithelium, C.T., blood, muscle, vascular, lymphatic, respiratory, gastrointestinal and endocrine systems. Anatomy part includes introduction to human anatomy, tissues of the body, skeletal system, articular system, muscular system, digestive system, cardiovascular, respiratory system, lymphatic system, urinary system, genital system, nervous and endocrine systems.

CMD 303 Physiology (2 + 0)

To ensure that the students have the necessary knowledge & skills enabling them to develop professional competency in the recognition & discussion of different physiological and Pathophysiology aspects of the major body organs and system pertinent to this course and in the application of such competencies in the specialist areas. 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.

CMD 404 Pathophysiology (2 + 0)

The basic concepts of pathophysiology at the cellular level related to injury, the self-defense mechanism, mutation, and cellular proliferation, and the pathological factors that influence the disease process. Clinical manifestations associated with the diseased organ(s).

CMD 505 Pathology (1 + 1)

The study of biochemical, structural and functional changes in cells, tissues and organs, which are caused by diseases

CMD 706 First Aid and Basic Life Support (BLS) (1 + 1)

After completing the course, the student should be able to know how to deal with medical emergency based on the different courses. It includes: introduction & accidents, first aid ABCs, medical emergencies, effect of temperature, transportation of an injured casualty & first aid kit, respiratory emergencies, fractures and dislocations, bleeding and surgical emergencies, burns and scalds, animal bites or stings and poisoning.

CPP 501 Community Pharmacy Practice (1+1)

This course includes the study of the clinical situations that can be handled by the pharmacist in the community pharmacy (referral or using OTC medications) including upper respiratory tract, gastrointestinal, and musculosketal symptoms, skin, eyes, and ears, and childhood symptoms.

CPP 602 Hospital Pharmacy (1+1)

Organization and structure of a hospital pharmacy, hospital pharmacy facilities and services (inpatient and outpatient services), transfer of care, patient's medication record, and rational medication use, hospital formulary, pharmacy and therapeutic committee, I.V. admixtures and incompatibilities, parenteral nutrition, handling of cytotoxic drugs, therapeutic drug monitoring, patient counselling and safety, and risk management

CPP 603 Clinical Pharmacy Practice (2+1)

This course includes the definition and concepts of clinical pharmacy and pharmaceutical care, case history and case presentation, medication history taking, clinical problem solving, and therapeutic planning, clinical rounding and assessment of patient compliance. Principles of special care populations (geriatric, pediatric, pregnancy, and lactation). Drug-related problems and drug interactions . Interpretation of clinical laboratory data and physical examination.

CPP 804 Management of endocrine &renal diseases (2+1)

This course includes the Pathophysiology, causes, clinical presentation, diagnosis and application of pharmaceutical care plans in different endocrinologic disorders (Diabetes, thyroid disorder, caushing syndrome,...) and different renal disorders and related fluid and electrolyte disturbances (acute and chronic renal failure, uremic syndrome, kidney stones, ..). The course develops the students' ability to design, monitor, refine safe and cost-effective treatment plans and provide appropriate information to patient, caregivers, and health professionals.

CPP 805 Management of oncological diseases and radio pharmacy (2+1)

Cancer aetiology, risk factors, cancer staging and grading, diagnosis, prognosis, optimizing chemotherapeutic regimens, different types of tumours (solid and hematologic) and their management, toxicities of chemotherapy, supportive treatment, pharmaceutical care and patient's support measures. This course also includes studying radioactive isotopes which process medical applications and precautions of their usage.

CPP 806 Clinical Pharmacokinetics (2+1)

Introduction to clinical pharmacokinetics and its applications, pharmacokinetics, non-compartmental pharmacokinetics and moment analysis. Drug distribution and drug clearance mechanisms, IV infusion kinetics and kinetics following extra-vascular dosing, metabolite kinetics, multiple dose kinetics, non-linear pharmacokinetics, dosage regimen design, dosage individualization of drugs of narrow therapeutic index especially in patients with compromised renal and hepatic function.

CPP 907 Management of neuropsychiatry diseases (1+1)

This course aims to provide the student with the knowledge in, pathophysiology, clinical interpretation, pharmacotherapy and management of neuropsychiatric diseases (e. .g mental health disorders, schizophrenia, depression, anxiety, seizure disorders, parkinsonism, migraines, dementia and Alzheimer's disease). Sedative and hypnotics, general anesthetics, opioid analgesics and non steroidal anti-inflammatory drugs.

CPP 908 Management of critical care patients (1+1)

This course aims to provide the student with the knowledge in, pathophysiology, clinical interpretation, pharmacotherapy and management of critical care illness (e.g. medical and surgical crises, trauma patients, supportive care, ICU infections, burns, neuro-critical care, cardiovascular critical care, sepsis, septic shock, pain and analgesia, bleeding disorders and anticoagulation, nutritional support and therapy, hemodynamic monitoring, fluid and electrolyte disorders).

CPP 009 Management of dermatological, reproductive and musculoskeletal diseases (1+1)

Skin structure and function, primary and secondary lesions. Most popular skin diseases: infective and non-infective types and their differentiation. Sexually transmitted diseases, male infertility, and women health. Musculoskeletal disorders are also included.

CPP 010 Management of Pediatric diseases (1+1)

Nutritional requirements in neonates and infants, nutritional disorders, neonatology, infectious diseases in pediatrics, congenital heart diseases, endocrine, neurological, haematologic, renal, and respiratory disorders, pediatric emergencies.

CPP 011 Management of Cardiovascular diseases (2+1)

Main diseases affecting the cardiovascular system, symptoms, prognosis, pharmacological and non-pharmacological management, patient counseling and monitoring of dyslipidaemias, hypertension, coronary artery disease, acute coronary syndromes, heart failure, dysrhythmias, thromboembolic disorders, and stroke.

CPP 012 Management of Gastrointestinal diseases (2+1)

Hepatic disorders including viral hepatitis, pancreatitis, gastrointestinal bleeding, peptic ulcer, gastro-esophageal reflux disease, inflammatory bowel diseases and irritable bowel syndrome as well as gastrointestinal symptoms including nausea, vomiting, constipation, and diarrhea.

CPP 013 Management of Respiratory diseases (2+1)

Epidemiology, aetiology, pathophysiology, clinical manifestation, investigations, treatment, monitoring, and patient counseling of bronchial asthma, chronic obstructive pulmonary disease, pulmonary hypertension, cystic fibrosis, upper and lower respiratory tract infections, and drug-induced respiratory problems.

CPP 014 Clinical Research and Pharmacovigilance (1+0)

This course introduces the student to the basic principles of clinical research, design of research studies, types of research studies, clinical trials, statistical presentation of research data and ethical

guidelines in drug research. This course also provides the student's with understanding of pharmacovigilance importance, concept, processes, systems, global safety standards and regulations and reporting systems.

CPP 015 Professional practice & Clinical skills (1+0)

Students are introduced to professional problem solving and decision making appropriate to the patient. The course is based on simulated case management format with emphasis on aspects of drug delivery and formulation, the role of the pharmacist in optimizing the use of medicines and improving health outcomes whether over-the-counter (OTC) medications or chronic disease state management, extemporaneous dispensing issues and calculations and some legal and ethical aspects of dispensing and related pharmacy practice issues.

GEN 001 Information Technology (1+1)

This course tends to provide students with a brief introduction to the world of computers and the concept of information technology including: number systems and data representation, computer system components: hardware & software, storage and input/output systems, Operating systems and Utility Systems, software applications. Also it gives an overview about computer networks and internet: data communication, transmission modes, transmission media, computer networks, internet protocol, and internet services. It practices some computer applications in the laboratory such as Internet Access, word processing and power point. It gives students a practical experience on developing projects related to the specialty.

GEN 002 English language (1) (1+1)

This is the first course in the English course series — students will learn to develop skills in listening, speaking, reading, and writing, with a special. emphasis on reading. The structure of the course is designed such that the students will develop both listening and writing abilities through examples ‘ brought from articles taken from a variety of literatures, and from writing assignments. Both listening and speaking skills are developed by practicing , . with experienced English Coordinator. (This course will help students prepare for external examination).

CMS 102 Mathematics (1+0)

Functions and graphs, limits and continuity, differentiation, exponential, logarithmic, and trigonometric functions, integration, basic differential equations, functions of several variables and problems related to them, probability and random variables, and hypothesis testing.

CNP 101 Human Rights and Fighting Corruption (1 + 0)

يغطي هذا المقررالموضوعات التالية: حقوق الإنسان في القانون الجنائى, حق الإنسان فى تغيير جنسيته أو التخلى عن إحدى جنسياته, المواثيق الدولية المتعلقة بحماية حقوق الإنسان, علاقة العولمة والتنمية بالحقوق الاقتصادية والاجتماعية والثقافية,

الحقوق الاقتصاديةوالاجتماعيةوالثقافية للإنسان, حقوق الإنسان فى الشريعة الإسلامية, حقوق المرأةفى قانونى العمل والتأمين الاجتماعى, حقوق الإنسان فى التقاضى, الحقوق المدنية والسياسية للإنسان

GEN 101 English language (2) (1+1)

This course specifically emphasizes an ability to use English for technical purposes such as preparation of project proposals and reports, professional oral presentation, etc. Case studies will be taken from technical articles. The ' main emphasis is an upgrading academic writing skill.

CNP 302 Psychology (1+0)

The course introduces different principles, theories and vocabulary of psychology as a science. The course also aims to provide students with basic concepts of social psychology, medical sociology and interpersonal communication which relate to the pharmacy practice system that involves patients, pharmacists, physicians, nurses and other health care professionals.

CNP 303 Scientific Writing and Communication skills (2 + 0)

This course is designed to introduce students to the principles of good scientific writing, to be familiar with basic structure of scientific reports and research articles. It covers methods of paraphrasing, common mistakes in scientific writing, different writing styles, how to write a scientific report, proposal and manuscript, appropriate use of tables and figures in data presentation and evaluation of literature and information sources. In addition it 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 language); active listening skills; communication styles and presentation skills. Communication skills in diverse pharmacy practice setting will be discussed

CNP 904 Marketing & Pharmacoeconomics (2 + 0)

Marketing

The objective of this course is to introduce students to the concepts, analyses, and activities that comprise marketing management, and to provide practice in assessing and solving marketing problems. The course is also a foundation for advanced electives in Marketing as well as other business/social disciplines. Topics include marketing strategy, customer behavior, segmentation, market research, product management, pricing, promotion, sales force management and competitive analysis.

Pharmacoeconomics

the basic concepts of health economics, learning basic terms of health economics and understand key principles. Topics cover the economic mechanisms of health care markets as market failures, and government intervention. The course covers the key components of health care financing, and some methods of how to contain health care expenditure. Alongside the major definitions in health technology assessment, students should have an overview about different types of economic evaluation, budget impact analysis and their uses. Moreover, students should get familiar with different methods of pricing among which value-based pricing.

CNP 905 Pharmaceutical Legislations and Practice ethics (1 + 0)

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.

CNP 906 Entrepreneurship (2 + 0)

This course outlines the process of designing, launching and running a new business, which is often initially a small business. The people who create these businesses are called entrepreneurs. Entrepreneurship has been described as the "capacity and willingness to develop, organize and manage a business venture along with any of its risks in order to make a profit. While definitions of entrepreneurship typically focus on the launching and running of businesses, due to the high risks involved in launching a start-up, a significant proportion of start-up businesses have to close due to "lack of funding, bad business decisions, an economic crisis, lack of market demand, or a combination of all of these

Description of Faculty Elective Courses

CPC E010 Advanced Pharmaceutical Analysis - Spectroscopy (1+1)

This course includes advanced pharmaceutical applications of different instrumental methods of analysis including UV/visible spectrophotometry, spectrofluorimetry, chemiluminescence, atomic spectroscopy and mass spectrometry). In addition, the course includes information about advanced instrumental techniques using spectroscopic detection.

CPC E011 Food Analysis (1+1)

This course deals with the principles involved in the analysis of different food products. It provides information on techniques needed to analyze foods for chemical and physical properties. This includes general information on regulations, labeling and sampling of food products. In addition, it provides the principles of specific methods used to determine physical characteristics and chemical composition of several food components such as lipids, proteins, carbohydrates…etc.

CPC E012 Drug Design (1+1)

The course is designed to familiarize the students with drug design and molecular modelling covering structure-based and ligand-based drug design. This also includes the process of drug discovery and development from target identification until approval of a new drug. Much concern is given to lead structure identification, optimization and targeting certain receptors and enzymes active sites. Additionally, the course addresses the study of molecular docking, pharmacophore generation, and molecular modifications including prodrug design, stereochemistry alterations, isosteric replacement, drug metabolism and Quantitative Structure-activity relationship (QSAR).

CPG E06 Biotechnology of Natural products (1+1)

The course covers an introduction to different techniques for in vitro production of plant secondary metabolites. Tools, techniques and applications of plant tissue culture in production of plant secondary metabolites and nutraceuticals will be discussed. Biotransformation of natural substances using microbial and enzyme systems will also be covered by the course.

CPG E07 Production and Manufacture of Medicinal plants (1+1)

This course will cover the commercial production of medicinal plants, cultivation, collection, drying, preservation, extraction, quality control, and final packaging of entire or powdered forms or extracts. The course will also cover the good manufacturing practices for production and quality control of herbal preparations. The national and international legal regulations of herbal medicines industry and distribution will also be discussed.

CPG E08 Chromatography and Separation Techniques (1+1)

This course will cover different chromatographic techniques used for separation and purification of natural products. These will include open column chromatography, thin layer chromatography droplet counter current, ion exchange, gel chromatography and electrophoresis. An introduction to gas chromatography (GC) and high performance liquid chromatography (HPLC) and hyphenated chromatographic techniques will also be covered by the course.

CPT E09 Applied Industrial Pharmacy (1+1)

This course will expose students to the principals of pharmaceutical processes (weighing, mixing, grinding particle size enlargement, crystalline forms, drying, packaging ... etc) involved in the manufacture of various pharmaceuticals. In particular, the key variables for each process will be discussed as well as their impact on the physicochemical properties of the active pharmaceutical ingredients.

CPT E010 Good Manufacturing Practices (1+1)

This course will cover the components of quality management system and its applications in pharmaceutical industry. This will include organizational structure of pharmaceutical firms, current good manufacturing practice provisions of GMP regarding (starting materials, personnel, building and facilities, complaints, product recalls, packaging and labeling operations), documentations, self-inspection and quality audits, validation process (types of process validation, validation of sterile production process and facilities; equipment qualification and validation of various manufacturing processes).

CPT E011 Cosmetic Preparations (1+1)

This course provides students with an understanding of the fundamentals of cosmetology including: history of cosmetology, life management skills, along with conducting professional work habits in a salon setting. An introduction to the basic fundamentals of hair, skin and nail care, hair styling and shaping, manicures and pedicures, chemical and thermal services and wigs.

CPB E013 Drug Abuse (1+1)

This course covers the understanding that drug abuse initially is a voluntary behavior, define drug addiction as the continued compulsive, drug abuse despite known adverse health or social consequences, drug abuse and addiction are associated with long-term physical and functional changes in the brain, and recognize that addiction is influenced by biological factors and herbal and chemical drug abuse (types, effects and treatments**).**

CPB E014 Interpretation of laboratory data (1+1)

The course is designed to give precise information about definition and concepts of common laboratory data. Electrolytes and mineral and their interpretations, laboratory tests concerning Lipid Disorders, Blood coagulation disorder, acid base imbalance and their interpretations. The student will be familiarized with interpretation of laboratory data involving vital organs as kidney function tests, liver function tests and heart , interpretation of laboratory data involving Gastroenterological diseases (Peptic ulcer) , hematological disorder (anemia and its types), endocrine disorders and rheumatic diseases.

CPM E07 Antimicrobial stewardship (1+1)

Antibiotics are among the most frequently prescribed classes of drugs, in both the outpatient and inpatient settings. Inappropriate use may not harm only the individual patient but contributes to

antibiotic resistance among bacteria. Therefore, antimicrobial stewardship is a way to optimize the use of antimicrobials to prevent the development of resistance and improve patient outcomes. The course covers the basic principles of appropriate antibiotic use, how to apply these principles to manage common infections, and how to develop and maintain an antimicrobial stewardship program.

CPM E08 Infection Control (1+1)

Microbiology and Infection Control provides the students with the skills and knowledge about infection prevention and control, outbreak investigation and management, and surveillance techniques. The principles of infection control will be coupled with the science of microbial transmission and reproduction. Students will be familiarized with the use of personal protective equipment and strategies to prevent the spread of infectious disease to healthcare workers and patients.

CPM E09 Bioinformatics (1+1)

The course covers an in-depth knowledge of the bioinformatics with particular emphasis on database, Information Retrieval from Biological Databases, Protein Family Databases, Protein Structure Basics, Determination of Protein Three-Dimensional Structure Genome Mapping, Assembly, and Comparison, Microarray-Based Approach

CPP E016 Geriatric pharmacotherapy (1+1)

The course provides a study of the physical and psychiatric assessment of geriatric patients, polypharmacy and inappropriate medications, nutrition and dietary supplement in the elderly, and adverse drug events. Summarize pharmacotherapy for disease states and syndromes common in the elderly population, including but not limited to pressure sores, constipation, cardiovascular disease, diabetes, malnutrition, delirium, behavioral and psychological complications of dementia

CPP E017 Pharmacogenomics and precision pharmacy (1+1)

This course introduces students to the emerging fields of pharmacogenomics and personalized `precision' medicine that are now transforming the face of modern health care. Powerful modern technologies revolutionizing genomics and molecular medicine are creating unprecedented opportunities for patient-specific treatments and health care. The course helps students build their knowledge and understanding of these new fields and develop professional evidence-based approaches to keep apace of these fast-moving areas into the future

8- Evaluation of achievement of program:

Evaluator	Tool

1-Senior students	• Questionnaires • Meetings with bachelor students
2-Alumni	• Questionnaires • Meetings with graduates
3-Stakeholders	• Questionnaires for staff members • Questionnaires for Labor market organizations members, Heads and managers of the business sector • Comments and Feedback of the meetings with • Labor market organizations Members
4-Internal Evaluator	Reviewing / Report
5-External Evaluators	Reviewing / Report
6- Statistics	Students' grades Rate of program completion/ graduation Rate of pass/failure
Sample size of questioners = 20% of population	

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I. Matrix between Program Learning Outcomes vs. Teaching and Learning Methods

Attachment 3: ***Matrix of methods of learning and assessments Strategies program's LOs***

Teaching & Learning Methods	1-1-1	1-1-2	1-1-3	1-1-4	1-1-5	1-1-6	1-1-7	2-1-1	2-1-2	2-1-3	2-2-1	2-2-2	2-2-3	2-2-4	2-3-1	2-3-2	2-4-1	2-4-2	2-4-3	2-4-4	2-5-1	2-5-2	2-5-3	2-6-1	2-6-2	3-1-1	3-1-2	3-1-3	3-1-4	3-2-1	3-2-2	3-2-3	3-2-4	3-2-5	3-2-6	4-1-1	4-1-2	4-1-3	4-2-1	4-2-2	4-3-1	4-3-2
Lectures	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓			✓	✓	✓	✓				✓	✓	✓	✓		✓	✓	✓											
Practical Sessions	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Tutorial Sessions	✓	✓	✓	✓	✓	✓			✓	✓			✓	✓			✓	✓	✓		✓	✓				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Assignments	✓	✓	✓	✓	✓	✓	✓			✓			✓	✓		✓	✓		✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓				✓	✓	✓	✓		✓	✓
Research Projects	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓				✓	✓	✓	✓		✓	✓
Case Studies		✓		✓	✓	✓	✓			✓		✓	✓	✓			✓		✓	✓			✓			✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
Group Presentation	✓	✓	✓	✓	✓	✓	✓			✓		✓	✓				✓		✓	✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Group Discussion	✓	✓	✓	✓	✓	✓		✓	✓	✓		✓	✓				✓		✓	✓				✓	✓	✓	✓		✓	✓	✓	✓				✓	✓	✓	✓		✓	
Interactive Learning	✓	✓	✓	✓			✓	✓	✓	✓	✓		✓	✓			✓	✓	✓	✓				✓	✓	✓	✓		✓	✓	✓				✓		✓	✓	✓		
Videos	✓		✓	✓			✓			✓	✓	✓	✓	✓	✓	✓	✓	✓						✓	✓			✓											✓		
Flipped Classroom	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓					✓	✓					✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Role Play	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓					✓	✓							✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Simulation	✓	✓	✓	✓			✓	✓	✓	✓				✓	✓	✓	✓	✓	✓	✓												✓	✓	✓			✓	✓	✓		
Virtual Labs	✓	✓	✓	✓			✓				✓	✓	✓		✓	✓	✓											✓									✓		✓		
Site Visits	✓	✓		✓			✓			✓	✓	✓	✓	✓	✓	✓	✓		✓	✓						✓	✓	✓	✓	✓								✓			
Applied Research Project	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Field Training		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓					✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓		✓	✓
Internship	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

II. Matrix between Program Learning Outcomes vs. Assessment Methods

Attachment 3: ***Matrix of methods of learning and assessments Strategies program's LOs***

Matrix between program learning outcomes vs. assessment methods

Assessment Methods	1-1-1	1-1-2	1-1-3	1-1-4	1-1-5	1-1-6	1-1-7	2-1-1	2-1-2	2-1-3	2-2-1	2-2-2	2-2-3	2-2-4	2-3-1	2-3-2	2-4-1	2-4-2	2-4-3	2-4-4	2-5-1	2-5-2	2-5-3	2-6-1	2-6-2	3-1-1	3-1-2	3-1-3	3-1-4	3-2-1	3-2-2	3-2-3	3-2-4	3-2-5	3-2-6	4-1-1	4-1-2	4-1-3	4-2-1	4-2-2	4-3-1	4-3-2
Written exams (Paper or online)	✓	✓		✓			✓						✓	✓			✓	✓	✓	✓				✓	✓	✓	✓		✓	✓					✓						
Laboratory exams (Using checklist)		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓				✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		✓		
Final oral exams (Using Viva cards)	✓	✓	✓	✓			✓					✓	✓	✓			✓	✓	✓	✓				✓	✓	✓	✓		✓	✓							✓	✓			
Quizzes	✓	✓	✓	✓			✓					✓	✓	✓			✓	✓	✓	✓				✓	✓	✓	✓		✓	✓					✓						
Assignments	✓	✓		✓	✓	✓	✓					✓	✓	✓			✓	✓	✓			✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓
Field training		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓		✓				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓
Research project	✓	✓	✓	✓	✓	✓	✓	✓			✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Applied Research Project	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Internship	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Self-assessment		✓	✓	✓																																			✓	✓
Peer-assessment		✓	✓	✓																															✓				✓	
Portfolio																																						✓		✓	✓
OSCE	✓		✓				✓	✓	✓	✓							✓		✓				✓			✓			✓	✓	✓	✓	✓	✓	✓	✓	✓				
OSPE	✓			✓	✓	✓		✓	✓	✓							✓		✓				✓				✓	✓							✓	✓					
OSLE	✓			✓	✓	✓		✓	✓	✓							✓		✓				✓				✓	✓							✓	✓					
TOSCE	✓		✓		✓		✓				✓	✓	✓	✓	✓	✓	✓			✓	✓	✓		✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓		✓		

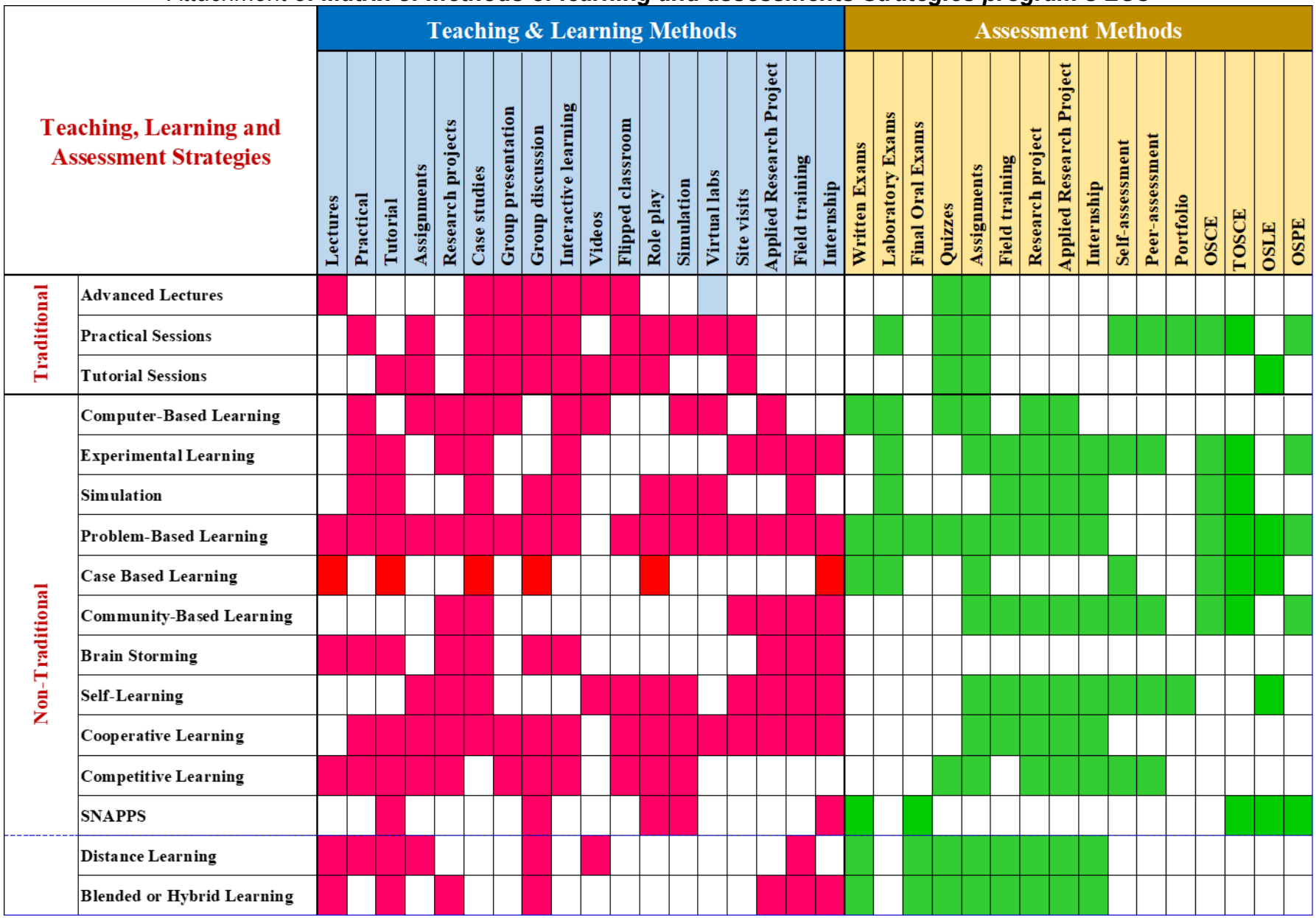
III. Matrix between Program Learning Outcomes vs. Teaching, Learning and Assessment Strategies

Attachment 3: ***Matrix of methods of learning and assessments Strategies program's LOs***

Matrix between program learning outcomes vs. Teaching and Learning Strategies

Teaching & Learning Methods	1-1-1	1-1-2	1-1-3	1-1-4	1-1-5	1-1-6	1-1-7	2-1-1	2-1-2	2-1-3	2-2-1	2-2-2	2-2-3	2-2-4	2-3-1	2-3-2	2-4-1	2-4-2	2-4-3	2-4-4	2-5-1	2-5-2	2-5-3	2-6-1	2-6-2	3-1-1	3-1-2	3-1-3	3-1-4	3-2-1	3-2-2	3-2-3	3-2-4	3-2-5	3-2-6	4-1-1	4-1-2	4-1-3	4-2-1	4-2-2	4-3-1	4-3-2
Advanced Lectures	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓				
Practical Sessions	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓					✓	✓	✓	✓	✓	✓	✓	✓	✓		
Tutorial Sessions	✓	✓	✓	✓	✓	✓	✓			✓			✓	✓		✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓				✓	✓	✓	✓	✓	✓
Computer-Based Learning	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓				✓	✓	✓	✓		✓	✓
Experiential Learning		✓		✓	✓	✓	✓			✓		✓	✓	✓			✓		✓	✓			✓			✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
Simulation	✓	✓		✓		✓	✓			✓		✓	✓				✓		✓	✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Problem-Based Learning	✓	✓	✓	✓	✓	✓		✓	✓			✓	✓				✓		✓	✓				✓	✓	✓	✓		✓	✓	✓	✓				✓	✓	✓	✓		✓	
Case Based Learning	✓	✓	✓	✓			✓	✓	✓	✓	✓		✓	✓			✓	✓	✓	✓				✓	✓	✓	✓		✓	✓	✓				✓			✓	✓	✓		
Community-Based Learning	✓		✓	✓			✓			✓	✓	✓	✓	✓	✓	✓	✓	✓						✓	✓			✓												✓		
Brain Storming	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓					✓	✓					✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓				
Self-Learning	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓					✓	✓						✓	✓		✓	✓	✓	✓	✓	✓	✓					✓		
Cooperative Learning	✓	✓	✓	✓			✓	✓	✓	✓				✓	✓	✓	✓	✓	✓	✓												✓	✓	✓			✓	✓	✓		
Competitive Learning	✓	✓	✓	✓			✓				✓	✓	✓		✓	✓	✓											✓										✓		✓		
SNAPPS	✓	✓		✓			✓			✓	✓	✓	✓			✓	✓		✓	✓					✓	✓	✓	✓	✓									✓			
Distance Learning	✓	✓	✓	✓	✓	✓	✓						✓		✓	✓	✓		✓	✓		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓						
Blended or Hybrid Learning		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓		✓	✓

Attachment 3: ***Matrix of methods of learning and assessments Strategies program's LOs***



*Attachment 3**: Matrix of methods of learning and assessments Strategies program's LOs***