

وصف البرنامج:

يهدف برنامج ماجستير الكيمياء الحيوية إلي دعم القدرة الأكاديمية والبحثية للطلاب وتأهيله لممارسة البحث العملي إلي جانب إكتساب مهارات نوعية إكلينيكية متميزة بما يضمن إعداد خريجين ذوي قاعدة علمية وخبرة ميدانية متطورة. ولا تقف أهداف البرنامج عند مجالات فهم آليات حدوث الأمراض والإكتشاف المبكر لها بل تتعداها لخدمة المجتمع والطب الشرعي كما هو الحال في تحاليل السموم والدواء في الدم وتحاليل الهرمونات الدقيقة وتحاليل إثبات البنوة والنسب وتحاليل الإنجاب وتشخيص العقم وفهم أسبابه. وبناءً عليه فإن هذا البرنامج - عند إتمامه - يتيح فرصاً للخريجين للعمل في المستشفيات ومعامل التحاليل الخاصة ومراكز البحوث وأقسام التسجيل الدوائي فضلاً عن المؤسسات التعليمية. ويشرف على هذا البرنامج قسم الأدوية والسموم والكيمياء الحيوية . تبين الجداول التالية الساعات المعتمدة المطلوبة للحصول على درجة ماجستير العلوم الصيدلانية في الكيمياء الحيوية مع توضيح المقررات الدراسية و عدد الساعات المعتمدة وتوزيع درجات الإمتحان لكل مقرر .

الفصل الأول

Code	Course		Credit		Course Assessment			
			Lect	Pract	Course Work	Pract Exam	Written Exam	Total
PCR 801	Scientific Writing	Compulsory	1	0	10	-	40	50
PCR 802	Ethics of Scientific Research		1	0	10	-	40	50
PCR 803	Pharmaceutical Statistics		2	0	20	-	80	100
PHL 851	Advanced Biochemistry		2	0	20	-	80	100
PHL 852	Chemical Pathology		2	0	20	-	80	100
PHL 853	Biochemical Methods and Techniques		2	0	20	-	80	100
PHL 854	Molecular Biology		2	0	20	-	80	100
Total Credits			12		Total Marks			600

الفصل الثاني

Code	Course		Credit		Course Assessment			
			Lect	Pract	Course Work	Pract Exam	Written Exam	Total
PHL 855	Advanced Biochemistry	Com	3	0	30	-	120	150

PHL 856	Seminar		1	0	10	-	40	50
PHL 857	Clinical Nutrition	Elective	2	0	20	-	80	100
PHL 858	Impact of Nutrients and Drugs on Laboratory Data		2	0	20	-	80	100
PHL 900	Thesis		6					
Total Credits			12		Total Marks		300	

بالإضافة الى 24 ساعة معتمدة "رسالة" توزع على فصلين دراسيين إضافيين على الأقل.

PROGRAM COURSES

PCR 801: SCIENTIFIC WRITING (1+0)

Course Description

This course aims to demystify the writing process and teach the fundamentals of effective scientific writing. Instructions will focus primarily on the process of writing and publishing scientific manuscripts but grant writing will also be addressed. The course will be presented in two segments: Part (1) teaches students how to write effectively, concisely, and clearly and part (2) takes them through the preparation of an actual scientific manuscript or grant.

PCR 802: ETHICS OF SCIENTIFIC RESEARCH (1+0)

Course Description

The course is essentially intended for graduate students in the biomedical sciences. This course delineates important ethical issues of scientific investigation, including intellectual property, plagiarism, conflict of interest, human and animal subjects, and record keeping.

PCR 803: PHARMACEUTICAL STATISTICS (2+0)

Course Description

An intensive introductory course in statistical methods used in applied research. Emphasis is placed on the principles of statistical reasoning, underlying assumptions, and careful interpretation of results. Topics covered include descriptive statistics, graphical displays of data, introduction to probability, expectations and variance of random variables, confidence intervals and tests for means, differences of means, proportions, differences of proportions, chi-square tests for categorical variables, regression and multiple regressions, an introduction to analysis of variance.

PHL 851: ADVANCED BIOCHEMISTRY (2+0)

Course Description

This course introduces the student to: Cell overview and chemistry of biomolecules and how this relates to cell structure/function, cell division- cell cycle- carcinogenesis and apoptosis. The course deals also with proteins and proteomics: protein structure and chemistry include structural motifs, ligand binding, conformational changes, chemical modification, protein folding, structure prediction by molecular modeling, post-translational modifications, protein-protein interaction and metalloproteins. It covers also the structure, mechanism and biological interactions of enzymes with regard to chemical principles of kinetics and reactions

PHL 852: CHEMICAL PATHOLOGY (2+0)

Course Description

Upon completion of this course, students shall be conversant with the role of biochemical pathways in maintaining healthy cells/tissues; and body functions, pathophysiological lesions evoked by altered, mutated key biochemical effectors. The course covers also the role of cell cycle machinery, biochemical triggers, mutations and environmental factors (carcinogens). In addition to inborn errors of metabolism, accentuated by a case study approach, cellular mechanisms of metabolic diseases, tolerance, and non-tolerance of nutrients in evoking diseases. The role oxidative stress in disease induction and possible biochemical mechanisms. Practical aspect handles real clinical case studies as a PBL approach.

PHL 853: BIOCHEMICAL METHODS AND TECHNIQUES (2+0)

Course Description

Upon completion of this course, students shall dominate the following:
Modern biochemical techniques for analysis of different biochemical molecules. Laboratory safety, centrifugation, data analysis, use of radioisotopes, bioinformatics and a selection of protein characterization techniques, chromatography, gel electrophoresis, ELISA techniques and mass spectrometry.

PHL 854: MOLECULAR BIOLOGY (2+0)

Course Description

This course introduces the student to: Chemical structure and physical characterization of nucleic acids, DNA topology, the synthesis of nucleotides, DNA, RNA and proteins. Nucleic acid-protein interaction, as relates to transcription and chromosome structure. Control mechanisms of transcription and gene expression. Molecular biology techniques (Recombinant DNA and cloning of DNA molecules and their applications (e.g. PCR).

PHL 855: ADVANCED BIOCHEMISTRY (3+0)

Course Description

This course entitles the students to be fluent with the term Energy and its integration with metabolism. It deals also with the regulation of metabolism and signal transduction the structure, function, compartmentation of selected metabolic pathways in microbes, plants and animals

(carbohydrate metabolism, lipid and steroidogenesis (biosynthesis) and nitrogen metabolism. In addition, it explains signal transduction pathways from the membrane to nucleus and structure and function of protein kinases and protein phosphatases, modulation of transcription factors. The focus will be also on metabolism of individual biomolecules and integration among various metabolic pathways as well as hormonal actions and their metabolic roles.

PHL 856: SEMINAR (1+0)

Course Description

This course targets broadening student knowledge and professional skills, augmenting their exposure to relevant, up-to-date, specific, multifaceted literature articles and reviews. This knowledge will be presented and discussed periodically with guidance from the instructors.

PHL 857: CLINICAL NUTRITION: ROLE IN HEALTH AND DISEASE (2+0)

Course Description

Because nutrition is an essential partner in health and disease, this course was designed to fortify the students with crucial concepts and applications of nutrition, as delineated hereunder: General and specific definitions in the context of nutrition. Role and differential needs for macronutrients and micronutrients. Disorders and risk of nutrient deficiency. Nutrient interactions with medicines and their sequelae. Role and needs of nutrients in common metabolic, cardiovascular, and CNS disorders. Human body weight standards, controlling factors and disorders. Obesity: definition, etiology, risk managements

PHL 858: IMPACT OF NUTRIENTS AND DRUGS ON LABORATORY DATA (2+0)

Course Description

Upon termination of this provision, students shall be able to dominate the clinical significance of biochemical lab test results and interactions of drugs with lab tests. The effect of diet and dietary modifications on lab results will be also explained. Caution relating to use of drugs or nutrients in special population (elderly- races- diabetes- cystic fibrosis- phenylketonurics).