

وصف البرنامج:

يهدف ماجستير العلوم الصيدلانية في الميكروبيولوجيا والمناعة الى تقديم الباحث الى مجموعه من الأساسيات المتقدمة والتطبيقات المختلفة في مجال الميكروبيولوجيا والمناعة عن طريق فهم عميق للوسائل البحثية والطرق التكنولوجية الحديثة. والمجالات البحثية سوف تتناول الامراض المعدية وميكانيكية المرض و الوسائل المتقدمة لتشخيصها و أنواع المناعة بالإضافة الى الأبحاث التي تتناول إكتشاف علاجات لهذه الأمراض و إنتاج البروتينات بواسطة التكنولوجيا الحيوية كما يدخل كذلك ضمن هذه الأبحاث دور الميكروبيولوجيا في الصناعة الصيدلانية لتكون ذات جودة عالية تتطلب دراية و خبرة بوسائل المراقبة الميكروبيولوجيا. ويشرف على هذا البرنامج قسم الميكروبيولوجيا والمناعة . تبين الجداول التالية الساعات المعتمدة المطلوبة للحصول على درجة ماجستير العلوم الصيدلانية في الميكروبيولوجيا والمناعة 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
PMI 871	Advanced General Microbiology		3	0	30	-	120	150
PMI 872	Molecular Genetics		2	0	20	-	80	100
PMI 873	Genomics and Bioinformatics		3	0	30	-	120	150
Total Credits			12		Total Marks			600

الفصل الثاني

Code	Course		Credit		Course Assessment			
			Lect	Pract	Course Work	Pract Exam	Written Exam	Total
PMI 874	Advanced Biotechnology	Compulsory	2	0	20	-	80	100
PMI 875	Infection and Immunity		2	0	20	-	80	100

PMI 876	Laboratory Techniques in Molecular Genetics	Elective	0	2	20	80	-	100
PMI 877	Microbiological Quality Control and Assurance of Pharmaceuticals		1	1	10	40	50	100
PMI 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.

PMI 871: ADVANCED GENERAL MICROBIOLOGY (3+0)

Course Description

Overview of the microbial world including a survey of the structure, functioning, and diversity of microorganisms. Introduction to the fundamental concepts of the microbial physiology, ecology, genetics, and pathogenesis. Essential aspects of bacterial growth, including energy metabolism, biosynthesis of macromolecule precursors and their assembly into macromolecules, and the integration of these processes by various regulatory mechanisms.

PMI 872: MOLECULAR GENETICS (2+0)

Course Description

In depth study of genome organization, rearrangement, replication and expression in prokaryotic cell and eukaryotic cells and viruses with an emphasis on regulatory mechanisms. Organization and expression of genetic information in microbial organisms. Aspects of bacterial and lower eukaryotic systems as well as of plasmid, transposon, and viral entities pertinent to those hosts. Molecular genetics Recombinant DNA techniques and methods of nucleic acid isolation and characterization. Gene regulation, genome project, and model organisms utilized in research studies, cytogenetics, cellular genomic instability in carcinogenesis.

PMI 873: GENOMICS AND BIOINFORMATICS (3+0)

Course Description

This course should introduce students to the fundamental theories and practices of bioinformatics. Lectures focus on the basic knowledge required in this field, including the need for databases, access to genome information, sources of data, and tools for data mining. The course also covers the identification of both lower order and higher order informational patterns in DNA and approaches to linking genome data to information on gene function. Emphasis will be placed on how to use the databases and tools. Students should use the PERL programming language in this course.

PMI 874: ADVANCED BIOTECHNOLOGY (2+0)

Course Description

This course introduces students to the different aspects of the biotechnology including principles of recombinant DNA technology, protein engineering, directed mutagenesis, manipulation of gene expression, microbial synthesis of biologics, biomass utilization, large scale production of proteins, transgenic animals, and the human genome project. The course also covers fermentation production of organic acids, amino acids, enzymes, vitamins, and antibiotics and the application in the medical field.

PMI 875: INFECTION AND IMMUNITY (2+0)

Course Description

Study of mechanism of microbial pathogenicity including both overt microbial factors and complex interactions with the host that produce symptoms of disease. The cellular, biochemical, molecular, and genetic basis for modern understanding of microbial disease will be included. An in-depth study of advanced topics in immunology, primarily focusing on the genetics, mechanisms,

and regulation of the immune system. In addition, the immune response during a variety of disease conditions (infectious and non-infectious) will be discussed.

PMI 876: LABORATORY TECHNIQUES (0+2)

Course Description

Theory and application of modern biological instrumentation and techniques. Basic and advanced skills including usage, maintenance, calibration of biological instruments and validation. It introduces students to the experimental methods used in investigation and research in microbiology and immunology. The laboratory section will provide students with hands-on experimentations in major techniques in molecular biology such as DNA and RNA isolation, protein purification, quality control. DNA and protein electrophoresis, nucleic acid hybridization and polymerase chain reaction etc...

PMI 877: MICROBIOLOGICAL QUALITY CONTROL AND ASSURANCE OF PHARMACEUTICALS (1+1)

Course description:

This course deals with contamination, spoilage of pharmaceuticals and their control. Enumeration and identification of microorganism using both traditional and rapid methods as well as the pharmacopaeial methods for detection of the specified organism. Bioburden testing, pharmacopial methods for microbial limit of non sterile products. Examination of sterile and non sterile products, validation of the above processes. Bacterial endotoxins/pyrogens detection and depyrogenation Processes. Microbiological quality assurance of water and environmental monitoring. Pharmacopial, industrial and governmental regulations and guidelines for quality assurance