# Philadelphia University
# Faculty of Pharmacy
# Second Semester 2016/2017

## Course Syllabus

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| **Course Title:** **Microbiology and Immunology** | **Course code:** **510332** |
| **Course Level: Third year** | **Course prerequisite (s) and/or co requisite (s):** **General Biology 240101** |
| **Credit hours: 2** | **Lecture Times:** **Section 1: Sunday, Tuesday 9:10:10:00** **Section 2: Sunday, Tuesday 11:10-12:00** **Section 3: Sunday / Tuesday 12:10-13:00** **Section 4: Monday, Wednesday 9:45-10:45** |

## Academic Staff Specifics

| Name | Rank | Office Number and Location | Office Hours | E-mail Address |
|---|---|---|---|---|
| Dr. Nabil A.S NIMER | Assistant Professor | P523 | | n_nimer@philadelphia.edu.jo |

## Course module description:

**The course covers the morphology of microorganisms(size, shape, staining reaction and structure), physiology (reproduction, growth, nutrition, cultivation, metabolism), physical factors affecting growth, host parasite relationship, virulence factors, disease development and host response to microbial invasion, and mechanisms of resistance. Relevant groups of microorganisms i.e. bacteria, fungi, viruses and parasites are considered. The course also covers a clear ideas about immunity to microbial infections, the principles of innate immunity (phagocytosis, complement system, interferon), and adaptive immunity (passive and active immunity), cell-mediated & humeral immune responses are also considered.**

**Course module objectives and knowledge outcome:**

**-The course is designed to acquaint students with the microbial world. The ways by which microorganisms affect human lives and welfare are stressed and the basic immune system in relation to microbial pathogens.**

**-Learning outcomes:**

**Knowledge and understanding**

**-Students will acquire the knowledge of how to handle microorganisms, utilize their behavior and capabilities to avoid their harm or manipulate them for welfare.**
**-Student will understand physical and chemical factors which affect microorganisms, principles of chemotherapy, microbial genetics, Pathogenicity, and microbial disease and mechanisms of resistance**
**-Students will able to differentiate between innate (specific) and adaptive (non specific) immunity.**

**- Cognitive skills (thinking and analysis).**

**Students will be able to explain appearance of epidemics and emerging infectious diseases, necessity of developing newer chemotherapeutics and limiting development of resistance**

**- Communication skills (personal and academic).**

**We hope that students will practice independent thinking and convey their thoughts to their tutors. They will search or are given problems and asked to find solutions for them. Students will be encouraged to express themselves more effectively and speak with more confidence and listen carefully to build rapport.**

**> Practical and subject specific skills (Transferable Skills).**

**-Practical evaluation of feasibility of student s proposal to tackle a problem**

**Course/ module components**

- **Main Text Book.**

**1.Microbiology: an introduction, Totroa, Funke &Case, Benjamine Cunnings. 11edition, 2013, ISBN-13: 978-0-321-92915-0**

**Teaching methods:**

**The 45 hours in total will be mainly lectures with few tutorials and including two one hour exams. In addition to lectures and seminars, students are asked to write research on topic they choose from a list of subjects**.

**Assessment instruments**

**Short reports and/ or presentations, and/ or Short research projects**
**Quizzes.**
**Home works**
**Final examination**:

| **Allocation of Marks** | |
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| **Assessment Instruments** | **Mark** |
| First examination | **20%** |
| Second examination | **20%** |
| Reports, Research Projects, Quizzes, Home works, Projects | **20%** |
| Final examination: 50 marks | **40%** |
| Total | **100** |

## Course/module academic calendar

| week | Basic and support material to be covered |
|---|---|
| **(1)** | Introduction to Microbiology, Classification of microbes & Taxonomy, Brief History of Microbiology Microbial world, the ways by which microorganisms affect human lives & welfare, microbes & human diseases beneficial effect of microorganisms |
| **(2)** | Eukaryotes& Prokaryotes, Fungi, bacteria, viruses, parasites |
| **(3)** | Observing microorganisms through a microscope, bacterial cell structure, morphology microbial metabolism |
| **(4)** | Microbial growth, reproduction & cultivation |
| **(5)** | Physical factors that affect growth: oxygen, temp., $CO_2$, pH, osmotic pressure, light, & radiation |
| **(6)**<br>**First examination** | Antimicrobial chemotherapy |
| **(7)** | Normal microflora, opportunist pathogen, true pathogens, diseases & their classification |
| **(8)** | Host parasite relationship, mechanisms of virulence |
| **(9)** | Mechanisms of virulence & mechanisms of resistance |
| **(10)** | Basic concepts in immunology, innate immunity, first line defenses (physical , and chemical factors) |
| **(11)**<br>**Second examination** | Second line defenses (phagocytosis, complement system, interferon, inflammation |
| **(12)** | Adaptive immunity, antibody, antigen binding site, active and passive immunity |
| **(13)** | Naturally and artificially acquired immunity, memory cells, secondary immune response |

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| **(14)** | Humoral & cell mediated immune response |
| **(15)** | Specimen examination, Immunization, vaccination program |
| **(16)**<br>**Final Examination** | |

**Expected workload:**

**On average students need to spend 3 hours of study and preparation for each 50-minute lecture/tutorial.**

**Attendance policy:**
**Absence from lectures and/or tutorials shall not exceed 15%. Students who exceed the 15% limit without a medical or emergency excuse acceptable to and approved by the Dean of the faculty of science shall not be allowed to take the final examination and shall receive a mark of zero for the course. If the excuse is approved by the Dean, the student shall be considered to have withdrawn from the course.**