# COURSE PLAN

**FIRST: BASIC INFORMATION**

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|---|---|
| **College** | |
| College | : Medicine |
| Department | : Basic Medical Sciences |
| **Course** | |
| Course Title | : Introduction to medical immunology |
| Course Code | : 31504301 |
| Credit Hours | : 2 |
| Prerequisite | : None |
| **Instructor** | |
| Name | : Ali Al Khader Course coordinator |
| Office No. | : |
| Tel (Ext) | : 3574 |
| E-mail | : ali.alkhader@bau.edu.jo |
| Office Hours | : Sunday , Tuesday, Thursday 9-11<br>Monday and Wednesday 2-3 |

Class Times

| Buiding | Day | Start Time | End Time | Room No. |
|---|---|---|---|---|
| Lecture Hall Complex | Sunday & Tuesday | 2:00 | 3:00 | 2 |

**Text Books**

1. Immunology. T Doan, R Melvod, S Viselli, C Waltenbaugh. Lippincott Williams & Wilkins Publishers. Latest Edition.

2. Handouts prepared by the lecturers

**SECOND: PROFESSIONAL INFORMATION**

**COURSE DESCRIPTION**

This course covers the study of immune system components (cells, tissues, and proteins), innate immunity, antigens, immunoglobulins, complement and serological reactions, in addition to major histocompatibility complex. The course also covers the development of T and B lymphocytes, generation of the immune response, tolerance, autoimmunity, hypersensitivity, immunohematology, transplantation, immunodeficiency, Tumor immunology and applications of immune responses.

## COURSE OBJECTIVES

By the end of this course, students are expected to:

- Identify the cells and tissues of the immune system.
- Understand the mechanisms of innate immunity.
- Know the structure and function of antigens and immunoglobulins.
- Understand complement and serological reactions.
- Know the structure and roles of MHC molecules.
- Understand the development of T and B lymphocytes.
- Understand mechanisms of immune response.
- Understand tolerance and autoimmunity.
- Understand hypersensitivity reactions.
- Know about immunohematology.
- Know about transplantation.
- Know about immunodeficiencies.
- Know immunology applications in vaccinations.
- Understand tumor immunology
- Clinical applications

## COURSE LEARNING OUTCOMES

1) Knowledge and Understanding
   1. The cells and tissues of the immune system.
   2. The mechanisms of innate immunity.
   3. The structure and function of antigens and immunoglobulins.
   4. Complement and serological reactions.
   5. The structure and roles of MHC molecules.
   6. The development of T and B lymphocytes.
   7. Mechanisms of immune response.
   8. Tolerance and autoimmunity.
   9. Hypersensitivity reactions.
   10. Immunohematology.
   11. Transplantation.
   12. Immunodeficiencies.
   13. Immunology applications in vaccinations.
   14. Tumor immunology
   15. Clinical applications

2) Professional Skills

The student should be able to correlate between immunobiology and disorders of immune system, in addition to immunotechniques

3) Competences (Transferable skill and attributes)
The student should be able to correlate between the principles of cellular and molecular immunology with clinical applications in health and disease and laboratory medicine

**COURSE SYLLABUS**

| No | Lecture Title | Learning Objectives |
|---|---|---|
| **1st week** | | - |
| 1 | Introduction | - Course orientation<br>- Overview: Cells and tissues of the immune system |
| 2 | Innate immunity 1 | *Components of Innate Immune system* |
| **2nd week** | | |
| 3 | Innate immunity 2 | *-Cellular Receptors for Microbes, Products of Damaged Cells, and Foreign Substances*<br>*- Reactions of Innate Immunity* |
| 4 | Antigens | -Antigen processing and presentation |
| **3rd week** | | |
| 5 | Major histocompatibility complex (MHC) | MHC |
| 6 | Immunoglobulins 1 | -The structure of a typical antibody molecule<br>-Interaction between the antibody and specific antigen |

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| **4th week** | | |
| 7 | Immunoglobulins 2 | - Diversity of immunoglobulins: VDJ recombination |
| 8 | Complement system | - The three pathways of complement activation |
| **5th week** | | |
| 9 | Development of T and B lymphocytes | Lymphocytes in bone marrow and thymus<br>Positive and negative selection of lymphocytes<br>Survival and maturation of lymphocytes |
| 10 | Generation of the immune response 1 | - T Cell-Mediated Immunity and cytotoxicity<br>- Macrophage activation by armed CD4 TH1 cells |
| **6th week** | | |
| 11 | Generation of the immune response 2 | - Humoral Immune Response<br>- Infectious agents and how they cause disease |
| 12 | Generation of the immune response 3 | - The course of the adaptive response to infection<br>- The mucosal immune system<br>- Immunological memory |
| **7th week** | | |
| 13 | Tolerance and autoimmunity 1 | Immunologic Tolerance<br>*-Central Tolerance*<br>*-Peripheral Tolerance*<br>Mechanisms of Autoimmunity: General Principles<br>General Features of Autoimmune |

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| | | Diseases |
| 14 | Tolerance and autoimmunity 2 | -SLE<br><br>-Rheumatoid arthritis |
| **8th week** | | |
| 15 | Tolerance and autoimmunity 3 | - Sjogren syndrome<br>- Systemic sclerosis |
| | **Midterm exam (50%)** | |
| **9th week** | | |
| 16 | Hypersensitivity 1 | - Classification<br>- Type I and type II |
| 17 | Hypersensitivity 2 | - Type III and type IV |
| **10th week** | | - |
| 18 | Immunohematology | - A brief introduction to blood banking |
| 19 | Transplantation | - *Recognition of Graft Alloantigens by T and B Lymphocytes*<br>*- T Cell–Mediated Reactions*<br>*- Antibody-Mediated Reactions* |
| **11th week** | | |
| 20 | Immunodeficiency 1 | Primary immunodeficiency disorders |
| 21 | Immunodeficiency 2 | Secondary immunodeficiency |
| **12th week** | | |
| 22 | Immunodeficiency 3 | AIDS..continued |
| 23 | Vaccinations(د.حاتم جابر) | Applied vaccinology |

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| **13th week** | | |
| 24 | Tumor immunology | Important mechanisms and clinical applications |
| 25 | **Revision** | **Revision** |

**COURSE LEARNING RESOURCES**

Lectures

**ONLINE RESOURCES**

**ASSESSMANT TOOLS**

**(Write assessment tools that will be used to test students ability to understand the course material and gain the skills and competencies stated in learning outcomes**

| **ASSESSMENT TOOLS** | **%** |
|---|---|
| Mid Exam | 50 |
| Final Exam | 50 |
| **TOTAL MARKS** | 100 |

**THIRD: COURSE RULES**

**ATTENDANCE RULES**

Attendance and participation are extremely important, and the usual University rules will apply. Attendance will be recorded for each class. Absence of 10% will result in a first written warning. Absence of 15% of the course will result in a second warning. Absence of 15% or more will result in forfeiting the course and the student will not be permitted to attend the final examination. Should a student encounter any special circumstances (i.e. medical or personal), he/she is encouraged to discuss this with the instructor and written proof will be required to delete any absences from his/her attendance records.

Use of Mobile Devices, Laptops, etc. During Class, unexpected noises and movement automatically divert and capture people's attention, which means you are affecting everyone's learning experience if your cell phone, laptop, etc. makes noise or is visually distracting during class. For this reason, students are required to turn off their mobile devices and close their laptops during class.

**REMARKS**

{The instructor can add any comments and directives such as the attendance policy and topics related to ethics} .

**COURSE COORDINATOR**

**Course Coordinator: Dr. Ali Al Khader - Department of Basic Sciences**

**Signature:** **Signature:**

**Date:** **Date:**