



**A- COURSE TITLE, CODE, ACADEMIC YEAR:**

**Medical Immunology**

**B- COURSE INFORMATION:**

| Course Code        | Course Title       | Credit Units |        |                         | Study Level                       | Pre-requisites |
|--------------------|--------------------|--------------|--------|-------------------------|-----------------------------------|----------------|
|                    |                    | Total        | Theory | Practical               |                                   |                |
| MLT423             | Medical Immunology | 3            | 2      | 1                       | Level 7<br>(4 <sup>th</sup> year) | None           |
| Course Coordinator |                    | Extension    |        | Email Address           |                                   |                |
| Dr. Bandar Suliman |                    | 3666         |        | bsuliman@taibahu.edu.sa |                                   |                |

**C- COURSE DESCRIPTION:**

This course is designed to provide a basis of terminology relevant to the basis concepts of immunology. It commences with the important components (cell; tissue; antibody; immunoglobulin) involved in host defense against infectious agents. Introductory lectures serve to describe and differentiate between natural defense (innate) mechanism and adaptive immunity mediated by functional B and T lymphocytes and their products. Subsequently, cellular interactions, especially the differentiation of helper T cells subsets and the production of relevant cytokines, will be described. This will include the mechanisms of T cell activation and regulation. Finally, clinical immunology will be discussed; autoimmunity and autoimmune disease; hypersensitivity reaction, including atopic disorders and asthma; mechanisms of transplant rejection; and immunodeficiency disorders. Vaccines will be discussed from their historical development to state of the art strategies being currently employed to create new vaccines or improve the ones currently existing. We will also focus on strategies used by pathogens to escape the host response.

**D- COURSE OBJECTIVES:**

- 1- To acquaint the students with the basic and clinical aspects of immunology including diagnostic technologies, laboratory management and research methodologies.
- 2- To describe and differentiate between natural (innate) defense mechanisms and adaptive immunity.
- 3- To highlight the mediators of humoral immunity (antibodies; immunoglobulins) and B cell development.
- 4- To study the cellular interactions, especially the differentiation of helper T cells subsets and the production of relevant cytokines.
- 5- To discuss about the clinical immunology: autoimmunity and autoimmune disease; hypersensitivity reaction, including atopic disorders and asthma; mechanisms of transplant rejection; immune response to microbes, tumor, and immunodeficiency disorders.
- 6- To orient the students for laboratory-based career paths such as biomedical and translational research.
- 7- To explore the nature of antigen-antibody interactions through various serological tests.
- 8- To conduct laboratory tests that help in diagnosis and detection of disease.
- 9- To acquire communication through the presentations in various aspects of clinical immunology.



| <b>E- THEORY TOPICS:</b> |                                       |               |
|--------------------------|---------------------------------------|---------------|
| Week                     | Theory Topic                          | Contact Hours |
| 1                        | Introduction to Immunity              | 2             |
| 2                        | Innate Immunity                       | 2             |
| 3                        | Innate immune functions               | 2             |
| 4                        | The Adaptive Immunity                 | 2             |
| 5                        | Cellular development of immune system | 2             |
| 6                        | Activation of Immune response         | 2             |
| 7                        | Effector functions of immune system   | 2             |
| 8                        | Regulation of Immune response         | 2             |
| 9                        | Immunity and Health (Case studies)    | 2             |
| 10                       | Hypersensitivity Reactions            | 2             |
| 11                       | Immunodeficiency                      | 2             |
| 12                       | Autoimmunity                          | 2             |
| 13                       | Transplantation                       | 2             |
| 14                       | Cancer immunity                       | 2             |
| 15                       | Revision                              | 2             |

| <b>F- PRACTICAL SESSIONS:</b> |                                                                       |               |
|-------------------------------|-----------------------------------------------------------------------|---------------|
| Week                          | Practical Session                                                     | Contact Hours |
| 1                             | Introduction & orientation to the practical immunology / lab safety   | 2             |
| 2                             | Serological pipetting + The principles of dilutions / serial dilution | 2             |
| 3                             | Direct agglutination tests                                            | 2             |
| 4                             | Indirect agglutination tests                                          | 2             |
| 5                             | Phagocytosis tests                                                    | 2             |
| 6                             | Immunofluorescence & other serological tests                          | 2             |
| 7                             | Precipitation reactions                                               | 2             |
| 8                             | Methods to assess complement activity                                 | 2             |
| 9                             | Immuno-electrophoresis & Immunoblotting                               | 2             |
| 10                            | Laboratory diagnosis of hypersensitivity                              | 2             |
| 11                            | Laboratory diagnosis of immunodeficiency                              | 2             |
| 12                            | Laboratory diagnosis of autoimmune diseases                           | 2             |



|    |                                             |   |
|----|---------------------------------------------|---|
| 13 | Methods used in transplantation             | 2 |
| 14 | Cluster of differentiation & flow cytometry | 2 |
| 15 | Revision                                    | 2 |

#### G- ASSESSMENT TASKS:

| # | Type of assessment task       | Week       | Total Grades |
|---|-------------------------------|------------|--------------|
| 1 | Assignment submission         | Week 10    | 10%          |
| 2 | Midterm examination (written) | Week 8     | 15%          |
| 3 | Scratch card assessment       | Week 2-13  | 5 %          |
| 4 | Final practical exam          | Week 16    | 30%          |
| 5 | Final written examination     | Week 17-18 | 40%          |

#### H- LEARNING RESOURCES:

##### 1- Required textbook:

- Lecture Notes: Immunology, 7<sup>th</sup> Edition, Ian Todd and Gavin Spickett, 2015, Wiley Blackwell

##### 2- Essential references:

- Essentials of Clinical Immunology, 6<sup>th</sup> Edition, Helen Chapel, Mansel Haeney, Siraj Misbah and Neil Snowden, 2014, Wiley-Blackwell
- Microbiology and Immunology Online by Richard Hunt et al. - University of South Carolina, 2004



## GENERAL POLICY AND PROCEDURE

### A. Attending policy:

- A 100% attendance rate is required during this course.
- Any absence requires an official acceptable excuse (NO later than 2 weeks).
- Student who is absent reach 10% is required to contact immediately his/her advisory supervisor and sign first warning form.
- Student who is absent reach 15% is required to contact immediately his/her advisory supervisor and sign the second warning form.
- Student who is absent reach 25% will be banned from attending the final exam and disqualified from this particular course.

### B. Quizzes and Exams

- The type and due date of quizzes and exams are presented in the student course outline.
- If absent from midterm exam or quizzes with a legitimate reason, student may apply for a postponed examination. However, the head of the department is responsible for making the final decision about accepting the student request.
- If absent from midterm exam or quizzes without any legitimate reason, student will not be able to repeat the midterm exam or quizzes.
- During exams and quizzes, student must enter the classroom with ONLY a pen. No scientific materials or MOBILE phone is allowed in the class during exam period. Student who found with scientific materials or MOBILE phone will considered cheating and will fail the exam.
- Cheating or attempt of cheating in Quizzes or exams student will not be excused and will fail in the course (المادة التاسعة من لائحة التأديب الطلابي بجامعة طيبة)

### C. Final exam:

- Students are not allowed to enter the final exam after 30 min from the starting time.
- Students are not allowed to leave the final exam before 30 min from the starting time.
- Student must carry his/her national ID to enter the final exam.
- Cheating in Quizzes or exams student will not be excused and will fail in the course
- Cheating or attempt of cheating in Final exams student will not be excused and will
  - 1- Fail in the course (المادة التاسعة من لائحة التأديب الطلابي بجامعة طيبة)
  - 2- Get excluded from the University for the next semester
  - 3- Prohibited from entering summer term for that year.



#### D. Assignment

- Assignment MUST be submitted on due date even if the student was absent.
- Students MUST refer to the assignment formatting guidelines, writing guidelines, and marking guide in each course outline.
- Assignments are returned with the marking guide to students within three weeks unless otherwise advised.
- Cheating in assignment (eg. exceeding the plagiarism allowable %) ZERO in their assignment (المادة التاسعة من لائحة التأديب الطلابي بجامعة طيبة)
- Cheating in assignment for the second time, student will not be excused and will fail in the course (المادة التاسعة من لائحة التأديب الطلابي بجامعة طيبة)

#### E. Plagiarism

- Plagiarism is a practice of taking someone else's work and presented as your own; such as quoting or paraphrasing someone else's words, works or research findings, without acknowledgement and referencing the source.
- Allowable % of plagiarism: 30%
- Things considered plagiarism or cheating:
  - Falsifying results of research studies.
  - Writing an assignment jointly and submitting it as the work of one individual unless it is clearly designated a group project.
  - Helping someone else to commit any dishonest act such as those listed above.
  - Quoting someone else's words without referencing
  - Copy/paste someone else's work without paraphrasing.
- The student MUST be aware of the consequences for misconduct can be severe, including exclusion from the University.
- Cheating in assignment (eg. exceeding the plagiarism allowable %) student will take ZERO in their assignment t (المادة التاسعة من لائحة التأديب الطلابي بجامعة طيبة)
- Cheating in assignment for the second time, student will not be excused and will fail in the course (المادة التاسعة من لائحة التأديب الطلابي بجامعة طيبة)

#### F. Late submission

- Assignment submitted after due date (4 pm) without approval of extension considered a late submission.
- A penalty of 5% per day of the total mark available for that assessment for each day it is late must be imposed.
- Students cannot avoid a late penalty by e-mailing their assessments to the Faculty unless online submission is an approved submission method for that piece of assessment.



### **G. Assignment extension – Special considerations**

- Student affected by serious illness or other factors outside of his/her control, can apply for special consideration.
- Student must fill a (**special consideration form**) and attach the supporting documents to submit a request for approval of late submission of assignments to the course coordinator.
- A student should not wait for their results to come out before applying for special consideration.
- Applications for special consideration will be assessed, where possible, within three working day of submission.
- Notification of the outcome of any application will be communicated by email to the student's email address.

### **H. Failure to submit**

- Students who fail to submit their course assignment will get ZERO in their assignment unless a request of extension was submitted.

### **I. Assignment formatting guidelines:**

- Typed on A4 paper
- Font either Times New Roman 12pt or Arial 11pt
- Cover sheet has student number, email address, course name and code, course coordinator's name, word count, submission date and title.
- 1.5 line spacing
- Extra space between paragraphs
- Page numbers, with the introduction starting on page one
- Referencing using Vancouver referencing or ABI:
- The assignment must include accurate citation referencing
- The assignment must include accurate reference list correct
- Must check spelling and grammar before submission
- There should be enough references included (1 reference/100 words suggested)



## J. Assignment writing guidelines:

### Assignment writing guidelines

**Due date:** Week 10 (Thursday)

**Mark:** 5 %

The aim: to assess students' level of competency in reading, understanding and summarizing immunology research articles.

**The Assignment:**

Choose a recent scientific research paper (NOT A REVIEW) published after 2016 from one of the following journals:

- Nature Immunology
- Journal of Immunology
- Immunology and Cell Biology
- Molecular Immunology
- Journal of Clinical Immunology
- Cancer Immunology, Immunotherapy
- Human Immunology
- Inflammation Research

Read the paper carefully understand it and summarize it in NO MORE THAN 2 PAGES using **YOUR OWN WORDS.**

Your assignment should include the following:

- Journal Name:
- Paper Title:
- Authors:
- Hypothesis:
- Aims:
- Introduction:
- Results:
- Conclusion:
- Your critical review:

*\* Questions that can help in building your critical point of view:*

*Is the sample number enough?*

*Is the study design appropriate?*

*Is there any other possible explanation for the result?*

*\*If you are interested in the method section, feel free to come and discuss it.*

## K. Marking guide for assignments:



| Student name:    |                                                              |                                                                                                             |                                                                                          |
|------------------|--------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
| Student ID:      |                                                              |                                                                                                             |                                                                                          |
|                  | Performance Indicator                                        | Details                                                                                                     | %                                                                                        |
| General criteria | Overall formatting                                           | Cover sheet (Assignment formatting guidelines)                                                              | 10%                                                                                      |
|                  | Appropriate use of language                                  | Good choice of words<br>Grammar, spelling and punctuation.<br>Structure and organization of sentences       | 20%                                                                                      |
|                  | Correct choice of references, referencing style and citation | Variety of books, journal article and appropriate websites<br>Correct citation<br>Correct referencing style | 10%                                                                                      |
|                  | Plagiarism %                                                 | 30 %                                                                                                        |                                                                                          |
|                  | Course specific criteria                                     | Clear understanding of the paper                                                                            | Hypothesis:<br>Aims<br>Introduction:<br>Results:<br>Conclusion:<br>Your critical review: |