

## Course Syllabus

1	Course title	Biotechnology in Immune Chemistry.
2	Course number	0304932
3	Credit hours (theory, practical)	3
	Contact hours (theory, practical)	3hrs weekly
4	Prerequisites/corequisites	0344443 or equivalent
5	Program title	Doctorate of philosophy in Biological Sciences
6	Program code	0304
7	Awarding institution	The University of Jordan
8	School	Science
9	Department	Biological sciences
10	Level of course	Ph. D
11	Year of study and semester (s)	Spring2013-2014
12	Final Qualification	
13	Other department (s) involved in teaching the course	None
14	Language of Instruction	English
15	Date of production/revision	12/2020

### 16. Course Coordinator:

Mona R. Hassuneh.  
Office number: Biological Sciences Building, Room # 113  
Office hours: Sunday and Thursday (2-3), or by appointment  
Tel.: 5355000 ext.: 22229  
E-mail: m.hassuneh@ju.edu.jo  
mona.hassuneh@gmail.com

### 17. Other instructors:

None

### 18. Course Description:

The course aims to introduce Biological Graduate Students to immunological techniques much needed in various fields of biological research. Such as Flowcytometry, monoclonal antibody production, ELISA, Immunohistochemistry and Immunoblotting.

### 19. Course aims and outcomes:

**A- Aims:**

This course aims to present advanced and cutting-edge concepts of immunology. Also, it aims to acquaint students with immunological technologies that are applied in biological, biomedical research and pharmaceutical industry. During this course, students are requested to submit a research proposal in one of the current heated research areas with experimental design that employ immunological techniques discussed during the course. Moreover, students will be required to present a cutting-edge research articles related to material covered each week.

**B- Intended Learning Outcomes (ILOs):** Upon successful completion of this course students will be able to

1. Describe the Immune system.
2. Distinguish between various humoral and cellular immunity effector mechanisms.
3. Acquire in depth knowledge cellular immunological techniques and their applications
4. Acquire in depth knowledge about molecular techniques in immunology research.
5. Acquire in depth knowledge of Enzyme linked and other Immunosorbent assays and monoclonal antibodies production and their various applications
6. Development of writing skills and communications of issues related to Immunology.

**20. Topic Outline and Schedule:**

Topic	Week	Instructor	Achieved ILOs	Evaluation Methods	Reference
Basic Concepts in Immunology	1	Mona R. Hassuneh	1	Midterm and Final Exam	
Innate Immunity: The First Lines of Defense	2	Mona R. Hassuneh	2	Midterm and Final Exam	
The Induced Responses of Innate Immunity	3	Mona R. Hassuneh	2, 5, 6	Exams, Presentation	
Antigen Recognition by B-cell and T-cell Receptors	4	Mona R. Hassuneh	2, 5, 6	Exams, Presentation	
Antigen Presentation to T Lymphocytes	5	Mona R. Hassuneh	1, 2, 6	Exams, Presentation	
T Cell-Mediated Immunity	6	Mona R. Hassuneh	1, 2, 6	Exams, Presentation	
The Humoral Immune Response	7-8	Mona R. Hassuneh	1, 2, 5, 6	Exams, Presentation	
Cellular Immunological Assay (Cell mediated cytotoxicity, Cell proliferation, plaque forming cell Assays)	(Week 9- midterm) 10	Mona R. Hassuneh	1 - 6	Exams, Presentation, Research proposal	
Enzyme Linked Immunosorbent Assay (ELISA) Concepts and applications	11	Mona R. Hassuneh	3 - 6	Exams, Presentation, Research proposal	
Flowcytometry Concepts and Application	12	Mona R. Hassuneh	3 - 6	Exams, Presentation,	

				Research proposal		
Molecular Techniques in Immunology (PCR, Microarray and MicroRNA)	13	Mona R. Hassuneh	3 - 6	Exams, Presentation, Research proposal		
Monoclonal Antibodies Technology and Applications	14	Mona R. Hassuneh	3 - 6	Exams, Presentation, Research proposal		
Student Research Article presentations.	15	Mona R. Hassuneh	3 - 6	Exams, Research proposal		

### 21. Teaching Methods and Assignments:

<p>Development of ILOs is promoted through the following teaching and learning methods:</p> <ol style="list-style-type: none"> <li>I. Classical lectures</li> <li>II. Exams</li> <li>III. Presentations and Research proposal</li> <li>IV. Audio-visual materials (Audio and Video)</li> </ol>
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### 22. Evaluation Methods and Course Requirements:

<p>Opportunities to demonstrate achievement of the ILOs are provided through the following assessment methods and requirements:</p> <ol style="list-style-type: none"> <li>1. Exams</li> <li>2. Presentations.</li> <li>3. Research proposal</li> </ol>
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### 23. Course Policies:

<p>A- Attendance policies: Regular class attendance is expected.</p> <p>B- Absences from exams and handing in assignments on time: Reporting a valid reason of absence is accepted.</p> <p>C- Health and safety procedures: All students should comply with the university Health and safety procedures</p> <p>D- Honesty policy regarding cheating, plagiarism, misbehaviour: All students should comply with the university Honesty policy regarding cheating, plagiarism, misbehaviour</p> <p>E- Grading policy: First hour exam 15 %, Second hour exam: 15 %, midterm exam, final exam 40%, presentation, term paper 15% and 15%, respectively.</p> <p>F- Available university services that support achievement in the course: Data Show Projector, internet access</p> <p>F- Available university services that support achievement in the course:</p>
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### 24. Required equipment: (Facilities, Tools, Labs, Training....)

Data Show Projector, internet access

**25. References:**

Required book (s), assigned reading and audio-visuals:

Text Book:

- Murphy, Kenneth. Janeway's immunobiology. Garland Science, 2011.
- Current Protocols in Immunology. John Wiley & Sons, 1999-2014.

Recommended books, materials, and media:

- Internet search, PubMed and other search engines

**26. Additional information:**

Name of Course Coordinator: -----Signature: ----- Date: -----

Head of curriculum committee/Department: ----- Signature: -----

Head of Department: ----- Signature: -----

Head of curriculum committee/Faculty: ----- Signature: -----

Dean: -----Signature: -----