



**Jordan University of Science and Technology**  
**Faculty of Pharmacy**  
**Pharmacy Department**

PHAR717 Biomarkers In Clinical Research - JNQF Level: 9

First Semester 2024-2025

**Course Catalog**

2 Credit Hours. This course will cover biomarkers and their applications in clinical research. It will emphasize on quantitative and qualitative tests used to assess biomarkers. In addition, it focuses on the analysis and interpretation of biomarkers data in relation to drug efficacy and safety as well as clinical outcomes.

**Teaching Method:** On Campus

**Text Book**

<b>Title</b>	Biomarkers in Clinical Drug Development
<b>Author(s)</b>	John Bloom and Richard A. Dean
<b>Edition</b>	1st Edition
<b>Short Name</b>	Ref #1
<b>Other Information</b>	

**Course References**

Short name	Book name	Author(s)	Edition	Other Information
Ref#2	Biomarkers in Drug Discovery and Development: A Handbook of Practice, Application, and Strategy	Ramin Rahbari, Jonathan Van Niewaal	1st Edition	
Ref #3	The Handbook of Biomarkers	Kewal K. Jain	3rd Edition	

**Instructor**

<b>Name</b>	Prof. Nour Al-Sawalha
<b>Office Location</b>	-
<b>Office Hours</b>	
<b>Email</b>	nasawalha@just.edu.jo

**Class Schedule & Room**

Section 1:  
Lecture Time: Wed : 11:30 - 13:30  
Room: U

**Tentative List of Topics Covered**

Weeks	Topic	References
Weeks 1, 2	Introduction to Biomarkers	From Ref #1, From Ref#2, From Ref #3
Weeks 3, 4	The Clinical Laboratory and Collection of Biomarker Data	From Ref #1, From Ref#2, From Ref #3
Weeks 5, 6	Validation of the biomarkers	From Ref #1, From Ref#2, From Ref #3
Weeks 8, 9	Quantitative and Qualitative Tests for Biomarkers	From Ref #1, From Ref#2, From Ref #3
Weeks 10, 11	Biomarkers in Drug Efficacy and Safety	From Ref #1, From Ref#2, From Ref #3
Weeks 12, 13	Biomarkers and Clinical Outcomes	From Ref #1, From Ref#2, From Ref #3
Week 14	Biomarkers and Ethical Issues	From Ref #1, From Ref#2, From Ref #3

Weeks 15, 16	Project	
Week 7	Midterm Exam	

Mapping of Course Outcomes to Program Outcomes and NQF Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
Explain the role of biomarkers in clinical research and the processes involved in the clinical laboratory, including the collection and management of biomarker data [1PLO-PET1.1] [1L9K2]	24%	Midterm exam, Final exam
Describe the used quantitative and qualitative assays to assess biomarkers and their validation processes, demonstrating advanced research skills. [1PLO-PET2.3] [1L9K2, 1L9S2]	25%	Participation and Discussions, Midterm exam, Final exam
Assess the significance of biomarkers in drug efficacy, safety, and clinical outcomes, along with the ethical considerations in their application. [1PLO-PET1.1] [1L9K2]	36%	Participation and Discussions, Final exam
Demonstrate the ability to present information on biomarkers in specific diseases effectively [1PLO-PET3.1] [1L9C2, 1L9C6]	15%	Project

PLO1.1	PLO2.1	PLO3.2	PLO3.3	PLO2.2	PLO2.3	PLO2.4	PLO3.1	PLO3.4	PLO3.5	PLO3.6	PLO4.1	PLO4.2	PLO4.3	PLO4.4	PLO5.1	PLO-PT1.1	PLO-PT2.1	PLO-PT2.2	PLO-PT3.1

Relationship to NQF Outcomes (Out of 100%)			
L9K2	L9S2	L9C2	L9C6
72.5	12.5	7.5	7.5

Evaluation	
Assessment Tool	Weight
Participation and Discussions	10%
Midterm exam	25%
Project	15%
Final exam	50%

Policy	
Communicating with Instructors	*Students should communicate through their official JUST emails. Communication through personal email accounts (yahoo, Gmail, Hotmail, etc.) or social media will NOT be accepted, and no response will be provided. *Students are required to check their emails and the E-learning page of the course regularly for announcements and notifications.
Exams	*All exams are closed books and notes. *The final exam is comprehensive (covers all the material). *The midterm incomplete exam need approval from the departments? heads. *The final incomplete exams need approval from the dean.
Cheating	Prohibited; The commitment of the acts of cheating and deceit such as copying during examinations, altering examinations for re-grade, plagiarism of homework assignments, and in any way representing the work of others as your own is dishonest and will not be tolerated. Standard JUST policy will be applied. المادة 7: إذا ضبط الطالب أثناء الامتحان أو الاختبار متلبساً بالغش فتوقع عليه العقوبات التالية مجتمعة: أ-اعتباره راسباً في ذلك الامتحان أو الاختبار. ب-الغاء تسجيله في بقية المساقات المسجل لها في ذلك الفصل. ج- فصله من الجامعة لمدة فصل دراسي واحد، و هو الفصل التالي للفصل الذي ضبط فيه.
Attendance	*Attendance is mandatory and will be recorded regularly. *Excellent attendance is expected. *Students who miss more than 20% of the classes will be dropped from the course as per JUST policy. *If you miss class, it is your responsibility to find out about any announcements or assignments you may have missed.
Active learning and students' participation	*Students are expected to actively participate in class discussions.
Withdraw	Last day to drop the course is before the twelve (12th) week of the current semester

Classroom Etiquette	<ul style="list-style-type: none"> <li>*Respect <ul style="list-style-type: none"> <li>o Respect people, places, and things.</li> <li>o Raise your hand to speak.</li> <li>o Listen respectfully.</li> <li>o Food and drink are not permitted in class.</li> <li>o Do not engage in aside conversations.</li> </ul> </li> <li>*Participation or Disruption: <ul style="list-style-type: none"> <li>o Do not hesitate to ask questions at any time, especially if you are unsure of something.</li> <li>o Listen to other students' questions to avoid asking the same question five minutes later.</li> <li>o Allow your classmates to participate in class discussions and refrain from taking advantage of all opportunities for active participation.</li> </ul> </li> <li>*Cell Phones and Electronic Devices: <ul style="list-style-type: none"> <li>o Texting is not permitted in class.</li> <li>o The use of cell phones, smartphones, or other mobile communication devices is disruptive and is therefore prohibited during class without permission.</li> <li>o Your phone should be turned off. If you must keep your phone on, you should set it to vibrate or silent mode and leave class if you receive an emergency call.</li> <li>o Except in emergencies, those using such devices must leave the classroom for the remainder of the class period.</li> <li>o Do not use your laptop in class for browsing the Internet or using social media while in class.</li> </ul> </li> <li>*Missing a Class <ul style="list-style-type: none"> <li>o Do not miss classes. It is not appropriate to ask the professor if you missed anything important if you miss class. Obviously, something of importance was missed, you missed a whole class!</li> <li>o Whenever you are absent from class, it is your responsibility to make up the work and to get notes, not your professor?s.</li> <li>o If you need to leave early, notify the instructor.</li> </ul> </li> <li>*Be Punctual <ul style="list-style-type: none"> <li>o Make sure you arrive to class on time.</li> </ul> </li> </ul>
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