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**COURSE DESCRIPTIONS**

<b>Faculty</b>	Allied Medical Sciences				
<b>Department</b>	Medical laboratory science	<b>NQF level</b>	7		
<b>Course Title</b>	Methodology & Ethics of Scientific Research	<b>Code</b>	187108	<b>Prerequisite</b>	100 CH
<b>Credit Hours</b>	1	<b>Theory</b>	1	<b>Practical</b>	0
<b>Course Leader</b>		<b>email</b>			
<b>Lecturers</b>	Prof. Dr. Osama Althunibat	<b>emails</b>	<a href="mailto:O.Althunibat@jadara.edu.jo">O.Althunibat@jadara.edu.jo</a>		
<b>Lecture time</b>	Mon. @ 18:00 -19:00	<b>Classroom</b>	Microsoft Teams	<b>Attendance</b>	Fill time
<b>Semester</b>	1 <sup>st</sup> sem 2024/2025	<b>Production</b>	2021	<b>Updated</b>	Oct. 2024
<b>Type of Teaching</b>	<input type="checkbox"/> Face to Face <input type="checkbox"/> Blended <input checked="" type="checkbox"/> Online				

**Short Description**

The course provides students with knowledge and skills of research methodology and ethics of scientific research. This include generating and writing a research questions/problem, hypothesis, performing a literature review, choosing the correct study designs for a research project, data collection and analysis, grant proposal writing, and communicating the research study findings.

**Course Objectives**

At the end of the course, students are expected to develop an understanding of certain core concepts of research methodology including:

1. Understand and explain basic steps of scientific research process
2. Suggest and discuss scientific questions in the student field of study
3. Learn to write a scientific research proposal.
4. Learn to prepare a scientific poster

**Course Intended Learning Outcomes (CILOs)**
**A. Knowledge - Theoretical Understanding**

- a1. Explain the basic steps of scientific research methodology
- a2. outline the different variables present in scientific research

**B. Knowledge - Practical Application**

<b>C. Skills - Generic Problem Solving and Analytical Skills</b>
b1. Analyze the different types of scientific research and how they are conducted
<b>D. Skills - Communication, ICT, and Numeracy</b>
b2. prove the ability to discuss scientific questions in the student field of study.
<b>E. Competence: Autonomy, Responsibility, and Context</b>
c1. Adapt the knowledge gained from this course, in learning how to write a scientific research proposal and a scientific poster
c2. Adapt the knowledge gained from this course, in learning how to give a scientific presentation
<b>Teaching and Learning Methods</b>
<input type="checkbox"/> Face to Face Lectures <input checked="" type="checkbox"/> Brain Storming <input type="checkbox"/> Synchronous remote <input type="checkbox"/> Asynchronous remote <input type="checkbox"/> Using Video <input checked="" type="checkbox"/> Discussions. <input checked="" type="checkbox"/> Research Project <input checked="" type="checkbox"/> Case Study <input type="checkbox"/> Field visit. <input checked="" type="checkbox"/> Problem solving
<b>Assessment Methods</b>
<input checked="" type="checkbox"/> Formative Assessment <input type="checkbox"/> Quiz <input type="checkbox"/> Lab Exam <input type="checkbox"/> Homework <input type="checkbox"/> Project Assessment. <input type="checkbox"/> Oral Presentation <input checked="" type="checkbox"/> Midterm <input checked="" type="checkbox"/> Final Exam

Course Contents					
Week	Hours	CILOs	Topics	Teaching & Learning Methods	Assessment Methods
1.	1	a1	- Introduction - Scientific Research - Types of research studies	Lectures, presentations and paper discussions Lectures which include: Discussions. Examples and Demonstrations	Final exam
2.	1	a1	Components of the Research process: research: question/problem	Lectures, presentations and paper discussions Lectures which include: Discussions. Examples and Demonstrations	Final exam & presentation
3.	1	a1,a2	Research design	Lectures, presentations and paper discussions Lectures which include: Discussions. Examples and Demonstrations	Final exam & presentation
4.	1	a1,a2	Research proposal	Lectures, presentations and paper discussions Lectures which include: Discussions. Examples and Demonstrations	Final exam & assignment
5.	1	a1,a2	Data collection and analysis	Lectures, presentations and paper discussions	Final exam

				Lectures which include: Discussions. Examples and Demonstrations	
6.	1	a1,a2,b1, b2	Research findings communication	Lectures, presentations and paper discussions Lectures which include: Discussions. Examples and Demonstrations	Final exam
7.	1	a1,a2,b1, b2	Scientific poster preparation	Lectures, presentations and paper discussions Lectures which include: Discussions. Examples and Demonstrations	Final exam & poster preparation
8.	1	b1,b2,c1	Ethics in scientific research	Lectures, presentations and paper discussions Lectures which include: Discussions. Examples and Demonstrations	Final exam
9.	1	c1,c2	Students' poster presentation	Data show and PowerPoint presentations	Presentation
10.	1	c1,c2	Students' poster presentation	Data show and PowerPoint presentations	Presentation
11.	1	c1,c2	Students' poster presentation	Data show and PowerPoint presentations	presentation
12.	1	c1,c2	Students' poster presentation	Data show and PowerPoint presentations	presentation
13.	1	c1,c2	Students' poster presentation	Data show and PowerPoint presentations	presentation
14.	1	c1,c2	Students' poster presentation	Data show and PowerPoint presentations	presentation
15.	1	c1,c2	Students' poster presentation	Data show and PowerPoint presentations	presentation
16.	1	a1,b1,b2, c1,c2	<b>Final Exam: As per the university final exams timetable</b>		

Infrastructure	
<b>Textbook</b>	Dunn, Peter K. <b>Scientific Research and Methodology: An introduction to quantitative research in science and health</b> , 2021.
<b>References</b>	<b>Principles of Research Methodology: A Guide for Clinical Investigators.</b> Phyllis G. Supino and Jeffrey S. Borer, 2012  Laake, Petter, Haakon Breien Benestad, and Bjorn Reino Olsen, eds. <b>Research methodology in the medical and biological sciences.</b> Academic Press, 2007.
<b>Required reading</b>	
<b>Electronic materials</b>	Provided to the students through JU e-learning website.
<b>Other</b>	In addition to the above, the students will be provided with handouts by the lecturer.

Course Assessment Plan								
Assessment Method		Grade	CILOs				c1	c2
			a1	a2	b1	b2		
<b>First (Midterm)</b>		30%	5	5	5	5	5	
<b>Second (if applicable)</b>								
<b>Final Exam</b>		40%	5	5	10	10	6	4
<b>Coursework</b>		30%						
<b>Coursework assessment methods</b>	Assignments	10%		5			5	
	Case study							
	Discussion and interaction							
	Group work activities							
	Lab tests and assignments							
	Presentations	20%						20
	Quizzes							
<b>Total</b>			10	15	15	15	16	29

Plagiarism
<p>Plagiarism is claiming that someone else's work is your own. The department has a strict policy regarding plagiarism and, if plagiarism is indeed discovered, this policy will be applied. Note that punishments apply also to anyone assisting another to commit plagiarism (for example by knowingly allowing someone to copy your code).</p> <p>Plagiarism is different from group work in which a number of individuals share ideas on how to carry out the coursework. You are strongly encouraged to work in small groups, and you will certainly not be penalized for doing so. This means that you may work together on the program. What is important is that you have a full understanding of all aspects of the completed program. In order to allow proper assessment that this is indeed the case, you must adhere strictly to the course work requirements as outlined above and detailed in the coursework problem description. These requirements are in place to encourage individual understanding, facilitate individual assessment, and deter plagiarism.</p>