

Course Syllabus

1	Course title	Scientific Research Methodologies
2	Course number	0302490
3	Credit hours	1
5	Contact hours (theory, practical)	Theory 1, Practical 3
4	Prerequisites/corequisites	Department approval / over 90 Credit hours
5	Program title	BSs
6	Program code	0302
7	Awarding institution	The University of Jordan
8	School	Science
9	Department	Physics
10	Course level	400-Fourth year level
11	Year of study and semester(s)	Second Semester 2023/2024
12	Other department(s) involved in teaching the course	-
13	Main teaching language	English
14	Delivery method	\square Face to face learning \square Blended \square Fully online
15	Online platforms(s)	□Moodle ⊠Microsoft Teams □Skype □Zoom □Others
16	Issuing/Revision Date	15-2-2024

ماد ودة	مركـز الاعـّ وضـمان الج	Course Co	ordinator:			
Nar	ne: Dr. Wa	alaa Al 7	Гатіті		Contact ho	ours: Sunday-Thursday 10-11
Off	ice number:	Dean of s	science buildin	ig-Ground F	loor	Phone number:065355000-Ext.22047
Em	ail: w.tamim	i@ju.edu.j	jo			

18 Other instructors:

Each project is supervised by a different faculty member according to his specialization and research interests

19 Course Description:

This course provides an in-depth exploration of foundational physics concepts and principles, enabling students to apply their academic experience to real-world physics problems. Students will gain proficiency in using a variety of instrumentation and measurement techniques, as well as computer software and computer-interfaced equipment for data collection and analysis. The course emphasizes the use of statistics and curve-fitting for experimental data analysis, preparing students for professional careers by providing hands-on experience. It also covers contemporary issues in physics and fosters a commitment to lifelong learning. Students will develop skills in writing scientific reports and theses, including proper formatting of equations, plots, and diagrams. Additionally, the course focuses on effective communication through oral presentations and instills an understanding of professional and ethical responsibilities.

20 Course aims and outcomes:

مركـز الاعتماد وضمان الجودة

A- Aims:

After successfully completing this course, the student will be able to:

(a) Demonstrate acquired depth of knowledge about foundational physics concepts and principles.

(b) Have an opportunity to apply his/her academic experience to physics related problems.

(c) Use a variety of instrumentation and measurement techniques.

(d) Use computer software and computer-interfaced equipment to collect and analyze data.

(e) Use statistics and curve-fitting to analyze experimental data.

(f) Gain hands-on experience necessary for the senior student's transition to professional status upon graduation.

(g) Develop a knowledge of contemporary issues and a recognition of the need for engaging in a lifelong learning

(h) Write scientific reports and thesis with proper use and formatting of equations, plots, and diagrams.

(i) Deliver an oral presentation of scientific work and communicate effectively.

(j) Develop an understanding of professional and ethical responsibility.

B- Students Learning Outcomes (SLOs):

For purposes of mapping the course SLOs to the physics program SLOs, at the successful completion of the physics program, graduates are expected to be able to:

SLO (1) Master professionally a broad set of knowledge concerning the fundamentals in the basic areas of physics: Quantum Mechanics, Classical Mechanics, Electrostatics and Magnetism, Thermal Physics, Optics, Theory of Special Relativity, Mathematical Physics, Electronics.

SLO (2) Apply knowledge of mathematics and fundamental concepts in the basic areas of physics to identify and solve physics related problems.

SLO (3) Utilize computers and available software in both data collections and data analysis.

SLO (4) Utilize standard laboratory equipment, modern instrumentation, and classical techniques to design and conduct experiments as well as to analyze and interpret data.

SLO (5) Develop a recognition of the need and ability to engage in life-long learning.

SLO (6) Demonstrate ability to use techniques, skills, and modern scientific tools necessary for professional practice.

SLO (7) Communicate clearly and effectively in both written and oral forms.

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SLO (8) Apply proficiently team-work skills and employ team-based learning strategies.

SLO (9) Apply professional and ethical responsibility to society.

Upon successful completion of this course, students will be able to:

Course SLOs (1) (2) (3) (4) (5) (6) (7) (8) (9) 1. Demonstrate acquired depth of knowledge about foundational physics concepts and principles. ✓ <th>Program SLOs</th> <th>SLO</th> <th>SLO</th> <th>SLO</th> <th>SLO</th> <th>SLO</th> <th>SLO</th> <th>SLO</th> <th>SLO</th> <th>SLO</th>	Program SLOs	SLO	SLO	SLO	SLO	SLO	SLO	SLO	SLO	SLO
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7. Write scientific reports and thesis	7. Write scientific reports and thesis									
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equations, plots, and diagrams.	equations, plots, and diagrams.									
8. Deliver an oral presentation of	8. Deliver an oral presentation of									
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مركز الاعتماد 21. Topic Outline and Schedule:

Week	Lecture	Торіс	Intended Learning Outcome	Learning Methods (Face to Face/Blended/ Fully Online)	Platform	Synchronous / Asynchronous Lecturing	Evaluation Methods	Resources
	1.1		1,2,6	F to F	teams			
1	1.2	Literature						
	1.3	Review +						
	2.1	research						
2	2.2	writing						
	2.3							
Week	Lecture	Торіс	Intended Learning Outcome	Learning Methods (Face to Face/Blended/ Fully Online)	Platform	Synchronous / Asynchronous Lecturing	Evaluation Methods	Resources
	3.1							
3	3.2	-						
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	6.1	discussions						
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22 Evaluation Methods:

Opportunities to demonstrate achievement of the SLOs are provided through the following assessment methods and requirements:

Evaluation Activity	Mark	Topic(s)	SLOs	Period (Week)	Platform
Literature Review	10	Research Topic	1,2,6,9	2 weeks	Face to Face
Weekly tasks commitment	20	Research Topic	1,2,3,4,5,6	16 weeks	Face to Face
Data analysis and results	20	Research Topic	3,4,5	4 weeks	Face to Face
Oral Presentation	15	Research Topic	8	3 weeks before the end of the semester	Face to Face
Report	35	Research Topic	7	Last week	Face to Face+ Elearning

23 Course Requirements

(e.g: students should have a computer, internet connection, webcam, account on a specific software/platform...etc):

Internet, computer.

24 Course Policies:

A- Attendance policies: Regular attendance at all learning activities is expected, and unsatisfactory attendance maylead to disciplinary action according to the University of Jordan regulations.

B- Absences from exams and submitting assignments on time: Students may be permitted to make up an exammissed due to illness or other legitimate absence. A doctor's certification before allowing a student to make up an exam due to illness is required.

C- Health and safety procedures:

D- Honesty policy regarding cheating, plagiarism, misbehavior: The University Of Jordan policy will be implemented

E- Grading policy: according to the table above.

F- Available university services that support achievement in the course:

25 References:

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

Depends on the research project.

B- Recommended books, materials, and media:

26 Additional information:

مركـز الاعـتماد وضمان الجودة	Name of Course Coordinator:	Signature: Date:						
	Head of Curriculum Committee/Department:	Signature:						
Hea -	ad of Department:	Signature:						
Hea -	ad of Curriculum Committee/Faculty:	Signature:						
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