مركز الاعتماد وضمان الجودة
ACCREDITATION & QUALITY ASSURANCE CENTER

Course Syllabus

1	**Course title**	Practical Physics V	
2	**Course number**	0342411	
3	**Credit hours**	2	
	Contact hours (theory, practical)	6 practical	
4	**Prerequisites/corequisites**		
5	**Program title**	Physics	
6	**Program code**		
7	**Awarding institution**		
8	**School**	Science	
9	**Department**	Physics	
10	**Course level**	3ed year	
11	**Year of study and semester(s)**	1st Sem 2023/2024	
12	**Other department(s) involved in teaching the course**	None	
13	**Main teaching language**	Arabic + English	
14	**Delivery method**	☒Face to face learning ☐Blended ☐Fully online	
15	**Online platforms(s)**	☐Moodle ☒Microsoft Teams ☐Skype ☐Zoom ☐Others……	
16	**Issuing/Revision Date**	November 2023	

17 Course Coordinator:

Name: Bashar Lahlouh	Contact hours: 10 – 11 am (Everyday)
Office number: 206	Phone number: 22043
Email: bashar_lahlouh@ju.edu.jo	

18 Other instructors:

Name:

Office number:

Phone number:

Email:

Contact hours:

Name:

Office number:

Phone number:

Email:

Contact hours:

19 Course Description:

This lab gives physics student a direct interaction with advanced modern physics concepts. In this lab students get a direct hands-on experience on many advanced concepts of physics such as: spin and orbital angular momentum, Planck's constant, birefringence, polarization, Gamma ray, Beta particle, X-ray diffraction, elementary charge, Boltzmann constant, and resonance.

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20 Course aims and outcomes:

A- Aims:

The course aims to give the students a direct interaction with advanced physics concepts.

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.

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:

Program SLOs / Course SLOs	SLO (1)	SLO (2)	SLO (3)	SLO (4)	SLO (5)	SLO (6)	SLO (7)	SLO (8)	SLO (9)
1. Be able to discuss and defend their understanding of modern physics concepts.	✓	✓							
2. Measure some of the basic quantities in modern physics.	✓	✓							
3. Handle large amount of data using proper techniques and software packages.			✓	✓					
4. Professional experiment reporting, and scientific data analysis.			✓	✓					

5. Ability to work and communicate with teammates and classmates during the lab sessions.							✓	✓	
6. Proper discussion and referencing of the experimental results.							✓		✓

21. Topic Outline and Schedule:

Week	Lecture	Topic	Intended Learning Outcome	Learning Methods (Face to Face/Blended/ Fully Online)	Platform	Synchronous / Asynchronous Lecturing	Evaluation Methods	Resources
1								
		Introduction		Face to face			Oral discussion and experimental report	Lab Manual+ Physics' Major Text Books
2								
		Zeeman Effect		Face to face			Oral discussion and	Lab Manual+ Physics'

							experimental report	Major Text Books
Week	**Lecture**	**Topic**	**Intended Learning Outcome**	**Learning Methods (Face to Face/Blended/ Fully Online)**	**Platform**	**Synchronous / Asynchronous Lecturing**	**Evaluation Methods**	**Resources**
3								
		ESR		Face to face			Oral discussion and experimental report	Lab Manual+ Physics' Major Text Books
4								
		Gamma Ray spectroscopy		Face to face			Oral discussion and experimental report	Lab Manual+ Physics' Major Text Books
5								
		Beta Ray spectroscopy		Face to face			Oral discussion and experimental report	Lab Manual+ Physics' Major Text Books
6								
		e/k		Face to face			Oral discussion and experime	Lab Manual+ Physics' Major Text Books

							ntal report	
7								
		Faraday Effect		Face to face			Oral discussion and experimental report	Lab Manual+ Physics' Major Text Books
8								
		X-ray diffraction		Face to face			Oral discussion and experimental report	Lab Manual+ Physics' Major Text Books
9								
		Photon-Polarization		Face to face			Oral discussion and experimental report	Lab Manual+ Physics' Major Text Books
10								
		Kerr Effect		Face to face			Oral discussion and experimental report	Lab Manual+ Physics' Major Text Books

11								
12								
13								
14								
15								

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
Lab reports and personal discussions	40%			every week	
Oral exam discussion on each experiment for each student.	20%			every week	
Final Exam	40%			End of semester	

23 Course Requirements

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

A fully furnished lab is available for the students:

Each of the mentioned experiments has its full setup as described in the lab manual.

24 Course Policies:

A- Attendance policies: Student's should attend every lab session; you cannot miss more than two lab sessions with a proper excuse.

B- Absences from exams and submitting assignments on time: No late assignments are accepted. If you miss the final exam, then you can submit you excuse for evaluation and a make up exam will be offered.

C- Health and safety procedures: You must follow all safety measures during all lab sessions. High voltage equipment and radioactive sources are common in this lab.

D- Honesty policy regarding cheating, plagiarism, misbehavior: all students are expected to have the highest levels of honesty and no plagiarism is tolerated in any of the lab reports.

E- Grading policy: Every student will be able to see his/her oral evaluation grade and graded reports are returned as soon as possible.

F- Available university services that support achievement in the course: A fully furnished lab is available for the students.

25 References:

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

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The Lab manual

B- Recommended books, materials, and media:

* Physics for Scientists and Engineers, Serway, (any edition)

*Modern Physics, Anderson

*Introduction to Solid State Physics, C. Kittel

*Introduction to Quantum Mechanics. D. J. Griffiths

*Youtube and internet resources.

26 Additional information:

Name of Course Coordinator: Bashar Lahlouh Signature: ---------- Date: ----------
Head of Curriculum Committee/Department: ---------- Signature: ----------
Head of Department: ---------- Signature: ----------
Head of Curriculum Committee/Faculty: ---------- Signature: ----------
Dean: ---------- Signature: ----------