مركز الاعتماد وضمان الجودة
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Course Syllabus

1	**Course title**	Classical Electrodynamics I
2	**Course number**	0362753
3	**Credit hours**	3
	Contact hours (theory, practical)	3 hours weekly
4	**Prerequisites/corequisites**	None
5	**Program title**	Master's in physics
6	**Program code**	0362
7	**Awarding institution**	The University of Jordan
8	**School**	Science
9	**Department**	Physics
10	**Course level**	1st year
11	**Year of study and semester(s)**	1st sem, 2022/2023
١٢	**Other department(s) involved in teaching the course**	
١٣	**Main teaching language**	English
١٤	**Delivery method**	☒Face to face learning ☐Blended ☐Fully online
١٥	**Online platforms(s)**	☒Moodle ☒Microsoft Teams ☐Skype ☐Zoom ☐Others……
١٦	**Issuing/Revision Date**	3/11/2022

١٧ Course Coordinator:

Name: **Khaled Bodoor**	Contact hours: M & Wd : 14:00 – 15:30
Office number: 22333	Phone number:
Email: kbodoor@ju.edu.jo	

١٨ Other instructors:

Name:
Office number:
Phone number:
Email:
Contact hours:
Name:
Office number:
Phone number:
Email:
Contact hours:

١٩ Course Description:

As stated in the approved study plan.

This is an advanced physics course aiming at expanding student's knowledge in the subjects of electricity and magnetism. This course offers the classical point of view of this subject.

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٢٠ Course aims and outcomes:

A- Aims:

To give the students the proper mathematical and physics background in electricity and magnetism.

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. Understand and explain the physics laws governing the behavior of electromagnetic quantities.	✓	✓			✓	✓	✓	✓	✓
2. Explain Green's theorem; Use Green's functions to solve Poisson's equation, including problems involving boundary conditions on surfaces.	✓	✓	✓		✓	✓	✓	✓	
3. Understand matter interactions with electric fields, including macroscopic media and dielectrics.	✓	✓	✓		✓	✓	✓	✓	

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4. Understand matter interactions with electric fields	✓	✓	✓		✓	✓	✓	✓	
5. Understand currents and magnetic fields and solve problems requiring the calculation of magnetic fields.	✓	✓	✓		✓	✓	✓	✓	
6. Understand matter interactions with magnetic fields.	✓	✓	✓		✓	✓	✓	✓	
7. Magnetic field interactions and inductance	✓	✓	✓		✓	✓	✓	✓	
8. Perform multipole expansions of electrostatic fields.	✓	✓	✓		✓	✓	✓	✓	
9. Explain the physical meaning of Maxwell's equations.	✓	✓			✓	✓	✓	✓	

٢١. Topic Outline and Schedule:

Topic	Week	Instructor	Achieved ILOs	Evaluation Methods	Reference
Introduction to Electrostatics	**1 -2**	**Dr. Khaled Bodoor**	**1,2**	**In class discussion + short quiz/homework**	**Text book, Internet, Refs**
Boundary Value Problems in Electrostatics: I	**3-4**	**Dr. Khaled Bodoor**	**1,2**	**In class discussion + short quiz/homework+ 1st exam**	**Text book, Internet, Refs**
Boundary Value Problems in Electrostatics: II	**5-8**	**Dr. Khaled Bodoor**	**1,2**	**In class discussion + short quiz/homework**	**Text book, Internet, Refs**
Multipoles, Electrostatics of Macroscopic Media, Dielectrics	**9-11**	**Dr. Khaled Bodoor**	**3,4,8**	**In class discussion + short quiz/homework+ 2nd exam**	**Text book, Internet, Refs**
Magnetostatics, Faraday's Law, Quasi-static Fields	**12-15**	**Dr. Khaled Bodoor**	**5,6,7,8**	**In class discussion + short quiz/homework**	**Text book, Internet, Refs**
Maxwell's Equations, Macroscopic	**16**	**Dr. Khaled Bodoor**	**9**	**In class discussion + short quiz/homework**	**Text book, Internet, Refs**

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Electromagnetism, Conservation Laws					

٢٢ 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
Quizzes & Assignments	20	All topics	1,2,3,4,5, 6,7,8,9	Every week	On campus
1st Exam	20	Introduction to Electrostatics, Boundary Value Problems: I	1,2	7th week	On campus
2nd Exam	20	Boundary Value Problems: I, Multipoles, Electrostatics of Macroscopic Media, Dielectrics	3,4	11th week	On campus
Final Exam	40	COMPREHENSIVE	1,2,3,4,5, 6,7,8,9	16th week	On campus

٢٣ Course Requirements

Students are directed and encouraged to use all possible resources:
a) use the internet as a learning source.
b) a series of short movies is promoted

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c) students are encouraged to learn a suitable software package as a learning tool.

٢٤ Course Policies:

A- Attendance policies:

No more than 15% of classes can be missed under any circumstances. The students are supposed to be on time for each session and will not be admitted after 10 minutes from the starting time.

B- Absences from exams and submitting assignments on time:

Assignments are only taken if submitted on time and no make ups for short quizzes.

C- Health and safety procedures:

The lectures are located in proper locations for best lecturing conditions.

D- Honesty policy regarding cheating, plagiarism, misbehavior:

Any act of cheating or plagiarism is not tolerated and the students are clearly required to submit their own work.

E- Grading policy:

The grading for this course is divided into: 20% quizzes & assignments, 20% first exam, 20 % second exam, and 40% final exam.

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

Library & computer lab.

٢٥ References:

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

- Classical Electrodynamics, J. D. Jackson

B- Recommended books, materials, and media:

- Electricity and Magnetism, Edward Purcell
- Youtube, Internet sources,

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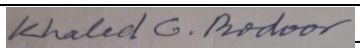
٢٦ Additional information:

Name of Course Coordinator: **Khaled Bodoor**------Signature:  ---- Date: **3/11/2022**----------
Head of Curriculum Committee/Department: ---------- Signature: ----------
Head of Department: ---------- Signature: ----------
Head of Curriculum Committee/Faculty: ---------- Signature: ----------
Dean: ---------- Signature: ----------