Jordan University of Science and Technology
Faculty of Science & Arts
Physics Department

PHY331 Electromagnetic Theory (1)
First Semester 2020-2021

Course Catalog
3 Credit Hours. review vector and scaler calculus. Understand the fundamentals of Electrostatics. Solve the Laplace equation in one-two and three dimensions. Understand the characteristics of materials and their interactions with electric fields. calculates the magnetic field for homogeneous and non-homogeneous environments by using vector potential and dipole moment.

Text Book	
Title	Introduction to Electrodynamics
Author(s)	David Griffiths
Edition	4th Edition
Short Name	Griffiths
Other Information	

Course References

Short name	Book name	Author(s)	Edition	Other Information
Milford	Foundation of Electromagnetic Theory	Reitz, Milford and Christy.	4th Edition	
Schwartz	Principles of Electrodynamics	Melvin Schwartz	1st Edition	

Instructor	
Name	**Dr. Maen Gharaibeh**
Office Location	PH3 L1
Office Hours	Sun : 12:00 - 13:00 Mon : 11:00 - 12:00 Mon : 15:00 - 16:00 Tue : 15:00 - 16:00 Thu : 08:30 - 10:30
Email	magh@just.edu.jo

Class Schedule & Room

Section 1:
 Lecture Time: Sun, Tue : 13:00 - 14:30
 Room: منصة الكترونية

Prerequisites

Line Number	Course Name	Prerequisite Type
923010	PHY301 Mathematical Physics (2)	Prerequisite / Pass

Tentative List of Topics Covered

Weeks	Topic	References
Weeks 1, 2	Differential and Integral Calculus, Dirac delta function and theory of vector fields	**Ch1** From **Griffiths**
Weeks 3, 4, 5	Electrostatic fields, Divergence and Curl of Electrostatic, Electric potential and conductors	**Ch2** From **Griffiths**
Weeks 6, 7, 8	Laplace?s equation, Method of images, Separation of variables, Multipole Expansion	**Ch3** From **Griffiths**
Weeks 8, 9, 10	Polarization ,Electric Displacement ,Linear Dielectrics	**Ch4** From **Griffiths**
Weeks 12, 13, 14, 15	Lorentz Force law, Biot-Savart law ,Divergence and Curl of magnetic field, Magnetic vector potential	**Ch5** From **Griffiths**

Mapping of Course Outcomes to Program Student Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
Calculate the electric field and electric potential for stationary charges [31]	25%	Midterm
solve simple electrostatic boundary value problems [31]	25%	Midterm
Understand the behavior of the electric field in Dielectric materials [31]	25%	Final
calculate the magnetic field and magnetic vector potential for different current distributions [31]	25%	Final

Relationship to Program Student Outcomes (Out of 100%)

1	2	3	4	5	6
100					

Evaluation

Assessment Tool	Weight

Midterm	50%
Final	50%

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