



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

PHY102 General Physics (2)

First Semester 2020-2021

**Course Catalog**

3 Credit Hours. This course is an introduction to electricity and magnetism. Many concepts from General Physics I will be used in this course such as: kinematics, Newton's laws of motion, work and energy. The course uses geometry and trigonometry, vectors and some calculus. The course is intended to provide student with a fundamental understanding of the laws of physics with applications to our everyday life and major.

**Text Book**

<b>Title</b>	Physics for Scientists and Engineers
<b>Author(s)</b>	Raymond A. Serway & John W. Jewett
<b>Edition</b>	9th Edition
<b>Short Name</b>	Serway
<b>Other Information</b>	

**Course References**

Short name	Book name	Author(s)	Edition	Other Information
Giancoli	1. Physics for Scientists & Engineers with Modern Physics	Douglas C.	4th Edition	
Young	University Physics	Young & Freedman	14th Edition	

**Instructor**

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Instructor	
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Class Schedule & Room
<p>Section 1: Lecture Time: Sun, Tue : 08:30 - 10:00 Room: منصة الكترونية</p> <p>Section 2: Lecture Time: Sun, Tue : 10:00 - 11:30 Room: منصة الكترونية</p> <p>Section 3: Lecture Time: Sun, Tue : 11:30 - 13:00 Room: منصة الكترونية</p> <p>Section 4: Lecture Time: Sun, Tue : 14:30 - 16:00 Room: منصة الكترونية</p> <p>Section 5: Lecture Time: Mon, Wed : 08:30 - 10:00 Room: منصة الكترونية</p> <p>Section 6: Lecture Time: Mon, Wed : 10:00 - 11:30 Room: منصة الكترونية</p>

Prerequisites		
Line Number	Course Name	Prerequisite Type
921010	PHY101 General Physics (1)	Prerequisite / Study

Tentative List of Topics Covered		
Weeks	Topic	References

Weeks 1, 2	Electric Fields: Properties of electric charges, insulators and conductors, coulomb's law, electric field of point charges, electric field of a continuous charge distribution, electric field lines, motion of charged particles in a uniform electric field.	<b>Ch23 From Serway</b>
Weeks 3, 4	Gauss's Law: Electric flux, Gauss's law, applications of Gauss's law to charged insulators, conductors in electrostatic equilibrium.	<b>Ch24 From Serway</b>
Weeks 5, 6	Electrical Potential: Potential difference and electrical potential, potential difference in a uniform electric field, electric potential and potential energy due to point charges, Electric potential due to continuous charge distribution, obtaining electric field from electric potential, potential of charged conductor.	<b>Ch25 From Serway</b>
Weeks 7, 8	Capacitance and Dielectrics: Definition of capacitance, calculation of capacitance, combinations of capacitors, energy stored in a charged capacitor, capacitors with dielectrics	<b>Ch26 From Serway</b>
Week 9	Current and Resistance: Electric current, resistance and Ohm's law, electrical energy and power.	<b>Ch27 From Serway</b>
Weeks 10, 11	Direct Current Circuits: Electromotive force, resistors in series and parallel, Kirchhoff's rules, resistance-capacitance circuits	<b>Ch28 From Serway</b>
Weeks 12, 13	Magnetic fields: Definition and properties of magnetic field, magnetic force on a current-carrying conductor, torque on a current loop in a uniform magnetic field, motion of a charged particle in a uniform magnetic field, the Hall effect	<b>Ch29 From Serway</b>
Week 14	Sources of the Magnetic Field: The Biot-Savart law, the magnetic force between two parallel conductors, Ampere's law, the magnetic field of a solenoid, magnetic flux, Gauss's law in magnetism	<b>Ch30 From Serway</b>
Week 15	Faraday's law: Faraday's law in induction, motional electromotive force, Lenz's law, induced electromotive forces and electric fields	<b>Ch31 From Serway</b>
Week 16	Final exams starts	

<b>Mapping of Course Outcomes to Program Student Outcomes</b>	<b>Course Outcome Weight (Out of 100%)</b>	<b>Assessment method</b>
Be able to calculate the electric field and the electric potential for a point charge and for simple continuous charge distributions using Coulomb's law and Gauss's law. [31]	38%	
Comprehend the concepts of capacitance and resistance and be able to analyze multi-loop circuits and RC circuits using Kirchhoff's rules. [31]	38%	
Be able to calculate the magnetic force and the magnetic field and comprehend Faraday's law of induction. [31]	24%	

<b>Relationship to Program Student Outcomes (Out of 100%)</b>					
1	2	3	4	5	6
100					

<b>Evaluation</b>
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Assessment Tool	Weight
First	25%
Second	25%
Final	50%

Policy	
student behavior	As students in a technical program are preparing for a professional career, all students are expected to conduct themselves, in both manner and dress, as professionals. Eating, drinking, or the consumption of any tobacco products is prohibited during class meetings (lecture hall, classroom, laboratory, or field). Doing so may result in the student's dismissal from that class period and will count as an unexcused absence. Cell phones, pagers, and similar devices must be turned off during the instruction time. Use of or disruption of class by these devices will result in the confiscation of the device by the instructor, and may result in the student's dismissal from that class period.
Attendance	Students are required to attend scheduled lectures and to work on class and lab/field assignments as scheduled by the professor. Students are required to attend their scheduled sections for lectures, and examinations (unless authorized by the professor). Since class sessions start on certain time, students are expected to be punctual. There will be no late entries once a class has begun. In this case, student's absence will be counted as unexcused and will receive a zero for any assignments due. If a student must leave class early during a regularly scheduled meeting, he/she must discuss reasons with the professor. If a student must miss a scheduled class meeting due to an acceptable, verifiable time conflict, he/she must resolve the time conflict prior to class.
Honesty Policy & Discipline (Due Process)	Honesty and integrity are major elements in professional behavior and are expected of each student. Any assignment (including those in electronic media) submitted by a student must be of the student's original authorship. Representation of another's work as his/her own shall constitute plagiarism. Cheating, in any form, is considered unacceptable behavior within all University courses. Students having academic problems should consult with their advisor or a college counselor. Instances of cheating will be dealt with in accordance to University policy. Standards of academic honesty and due process procedures for JUST are located in the Rules, Regulations & Expectations section of the student.
Safety Guidelines	Certain class assignments may require the student to be absent from the professor's immediate supervision. Whether the student is under immediate supervision or not, safe conduct and safe use of equipment shall be the ultimate rule. Failure to comply with prudent safety practice and/or willful disregard for class participants and/or equipment may be cause for immediate dismissal from that particular class session by the professor.
Attendance	Attendance at the lectures is required
course materials	the lectures will sometimes cover material not in the textbook
Office hours	You may visit me during office hours for any reason without an appointment. You can come at other times also, but make an appointment so that you can be sure to catch me. You can contact us by email
course information	Organizational material for the course, including the course description and syllabus, the course calendar, and times of office hours and help sessions.

Exams	There will be three examinations, two during the semester and one cumulative final examination. The three exams will be based on the textbook and lectures. Examinations will be written with the assumption you have read the assigned sections of the book, completed homework and attended the lectures. Both quantitative and conceptual questions will appear on the examinations, as this reflects the content of the course.
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