Course Profile

Course Name:-	**PHYSICS-I**
Course Code:-	**PHY 104**
Academic Year:-	**1434-35**
Semester:-	**First**

Course Overview

This course is introducing the following topics-Introduction to Physics and electricity; Electric fields, Coulomb's law (statement, equation and problems), Gauss' Law (statement, equation and problems), electric potential, capacitance (series and parallel) and dielectric, currents and resistance (Ohm's law), electrical energy and power, direct current circuits, Kirchhoff's rules, magnetic fields, motion of charged particle in a magnetic field, sources of the magnetic field, Faraday's law of induction (statement, equation and problems), Ampere's law, mutual inductance, alternating current circuits, the RLC series circuit(a resistor, an inductor, and a capacitor connected in series and parallel), power in an A.C. circuit, resonance in RLC services circuit.

Course Details	
Level:-	**3**
Credit:-	**3**
Pre-Requisites:-	**None**
Co- Requisites:-	**None**

Learning Outcomes of Course

After successful completion of this course, student will be able to-

1. Student can gain the knowledge of the basic concepts of Electricity and Magnetism
2. Student can understand the concepts and principles of Electricity and Magnetism through lectures, laboratory experiments and assessment tools.
3. Student can able to apply the basic principles of physics in solving problems in a structured process.
4. Student can able to analyze the physical problem and can express it in a mathematical equation.
5. Student gains an ability to conduct and work with standard instruments and can able to design the electrical circuits.

Course Assessment

Name of Assessment Task	Weight of Assessment	Week Due
1. Midterm Exam-1	**15%**	**7th week**
2. Midterm Exam-2	**15%**	**12th week**
3. Quizzes/ Assignments/ Seminar	**10%**	2,4,6,8,11
4. Lab	**20%**	15
5. Final Exam	**40%**	**Schedule by exam committee**

Assessment Task and Learning Outcomes Alignment

Assessment Task Name	Course Learning Outcomes					
	1	**2**	**3**	**4**	**5**	
1. Midterm Exam-1	√	√	√			
2. Midterm Exam-2	√	√	√	√	√	
3. Quizzes	√	√	√			
4. Assignments/Report/Seminar	√	√	√			
5. Final Exam	√	√	√	√	√	

Teaching Contact Details

Name of Course Coordinator:-	**Dr.D.Baba basha**
Email of Course Coordinator:-	**b.dudekula@mu.edu.sa**
Lab/Tutorial Instructor:-	**Dr.D.Baba basha**
Email of Lab/Tutorial Instructor:-	**b.dudekula@mu.edu.sa**
Office Hours:-	**Wed 10 AM to 12 Noon**
Office Number:-	**024-1-18-1**
Office Phone Number:-	**5386**

Details of Required Text Book

Book Name	Authors Name	Publisher	Year	Edition
Physics for Scientists and engineers	**Raymond A. Serway, John W. Jewett**	Thomson Brooks/ Cole Cengage Learning	**2013**	**9th Edition**

Details of Required Reference Books

Book Name	Authors Name	Publisher	Year	Edition
1. Fundamental of Physics	**HALLIDAY / RESNICK / JEARL WALKER**	**John Wiley & Sons, Inc.**	**2011**	**9th Edition**
2. Engineering physics	**R K GAUR S L GUPTA**	**DHANPAT RAI PUBLICATIONS**	**2001**	**8th Revised Edition**
3. Physics for Scientists &Engineers", Vol. 1	**Douglas C. Giancoli**	**Addison-Wesley**	**2007**	**4th Edition**

IT Resources

The following IT Resources will require to access-

1. Majma'ah University Faculty Email
2. Faculty Web Page
3. Projector
4. http://science.pppst.com/physics.html
5. http://physwiki.ucdavis.edu
6. http://www.physics.org
7. http://www.physicsclassroom.com/
8. http://www.phys4arab.net/

Course Schedule

Course Topics	Book's Chapter	Event Name	Week Due
Introduction to Electricity and magnetism	Electric fields	Brain storming and review of previous knowledge.	Week-1
Electric flux, Gauss's Law (statement, equation and problems)	**Gauss's Law**		Week-2
Electric Potential and potential	Electric	Quiz 1	Week-3

difference, potential difference in a uniform Electric field	potential		
Solving problems	Electric Potential Applications		Week-4
Definition of Capacitance, calculation of capacitance, combinations of capacitors, capacitors with dielectrics	Capacitance and dielectrics	Assignment 1	Week-5
		Written Assessment Due Sunday (16 March 2014) 10:00 PM	Week-6
Electric current, Resistance, ohms law, Electric power and electrical energy	Currents and resistance	First Midterm Test	Week-7
Electromotive force, Resistors in series and parallel, Kirchhoff's Rules	Direct current circuits		Week-8
Magnetic fields and forces, Motion of charged particle in a magnetic field,	Magnetic fields		Week-9
The Biot-Savart Law, Amperes Law	Sources of magnetic field	Quiz2	Week-10
		Written Assessment Due Sunday (20 April 2014) 10:00 AM	Week-11
Faraday's Law of induction(statement, equation and problems),	Faraday's law	Second Midterm Test	Week-12
Self-induction and inductance,RL circuits, Mutual inductance, RLC Circuit	Inductance	Assignment 2	Week-13
The RLC series circuit (a resistor, an inductor, and a capacitor connected in series and parallel), power in an A.C. circuit, resonance in RLC services circuit.	Alternating current circuits		Week-14
Review of the syllabus			Week-15
Final Examination			Exam Week

Referencing Style

The **American Psychological Association (APA)** referencing style must be use for all submissions of this course.

Course Assessment Task

Assessment Name:-	Midterm Exam-1
Description of Task Assessment:-	**1.** This assignment is aligned to learning outcomes 1, 2, 3 and 5. In that regard, the assignment contains questions that assess: The student knowledge on the basic concepts and principles of physics in particular electricity and Magnetism. **2.** Students should be familiar with Coulomb's law and they should be able to calculate forces between static charges **3.** They should understand the concept of the electric field and they should be able to calculate electric fields from given charge distributions. **4.** Students should understand the physical information contained in Gauss's law and they should be able to apply this law to the calculation of field distributions in systems with specified symmetry. **5.** They should be able to calculate the work done when a charge is moved in an electric field and connection that this has with electrostatic potential. **6.** Students should be able to find the electric field for a system when the electrostatic potential is specified. **7.** Students should be familiar with the concept of a capacitor and its capacitance. **8.** They should understand the idea of regarding an electric field as containing energy. They should be able to calculate that electrical energy and power of electrical circuits in simple cases The complete details of the assessment task are

	provided in Module.
Task Assessment Due Week/Date:-	**7th Week**
Return Week/Date to Students:-	8th Week
Weight of Task Assessment:-	15%
List of Learning Outcomes Assessed:-	**1.** Gain the knowledge of the basic concepts of Electricity and Magnetism **2.** Understand the concepts and principles of Electricity and Magnetism through lectures, laboratory experiments and assessment tools. **3.** Apply the basic principles of physics in solving problems in a structured process. 5. Gains an ability to conduct and work with standard instruments and can able to design the electrical circuits.

Assessment Name:-	Midterm Exam-2
Description of Task Assessment:-	1. This assignment is aligned to learning outcomes 1, 2, 3, 4 and 5. In that regard, the assignment contains questions that assess: The student knowledge on the basic concepts and principles of physics in particular electricity and Magnetism. 2. Students should be familiar with the definition of electric current and electric current density. 3. They should understand the physical origin of the electrical conductivity of metals and the collision model for Ohm's law. 4. They should be able to relate resistivity to power dissipation. 5. Students should understand the physical origin of Kirchhoff's two circuit laws and be able to use them in solving circuit network problems 6. Students should be familiar with the Biot-Savart law and be able to calculate the magnetic field and magnetic forces in flowing currents. 7. They should understand the concept of the

	magnetic field and be able to calculate this from given current distributions. 8. Students should be familiar with the Lorentz force formula and the should be able to use it in calculating the force on a charged particle in an electric and magnetic fields. 9. Students should understand how Ampere's law arises as a consequence of the Biot-savart law. 10. Students should know about the divergence and the curl of the magnetic field. 11. Students should be familiar with the static properties of electric and magnetic fields. 12. They should understand Faraday's law of electromagnetic induction and how it relates to the curl of the electric field. 13. They should be able to design Resonance Circuits The complete details of the assessment task are provided in Module.
Task Assessment Due Week/Date:-	**12th Week**
Return Week/Date to Students:-	13th Week
Weight of Task Assessment:-	15%
List of Learning Outcomes Assessed:-	1. Gain the knowledge of the basic concepts of Electricity and Magnetism 2. Understand the concepts and principles of Electricity and Magnetism through lectures, laboratory experiments and assessment tools. 3. Apply the basic principles of physics in solving problems in a structured process. 4. Analyze the physical problem and can express it in a mathematical equation. 5. Student gains an ability to conduct and work with standard instruments and can able to design the electrical resonance circuits.

Assessment Name:-	**Assignment /Quiz**
Description of Task Assessment:-	**Quiz will be written Exam and Assignment will be open book exam**
Task Assessment Due Week/Date:-	**2,4,6,8,11**
Return Week/Date to Students:-	**Next Day**
Weight of Task Assessment:-	**10%**
List of Learning Outcomes Assessed:-	1. Gain the knowledge of the basic concepts of Electricity and Magnetism 2. Understand the concepts and principles of Electricity and Magnetism through lectures, laboratory experiments and assessment tools. 3. Apply the basic principles of physics in solving problems in a structured process.

Assessment Name:-	Final Exam
Weight of Task Assessment:-	**40%**
Duration:-	**3 hrs**
Warning:-	**Nil**
List of Learning Outcomes Assessed:-	1.Student can gain the knowledge of the basic concepts of Electricity and Magnetism 2.Student can understand the concepts and principles of Electricity and Magnetism through lectures, laboratory experiments and assessment tools. 3. Student can able to apply the basic principles of physics in solving problems in a structured process. 4. Student can able to analyze the physical problem and can express it in a mathematical equation. 5. Student gains an ability to conduct and work with standard instruments and can able to design the A.C & D.C electrical circuits.