

Planning and Quality Assurance Affairs

Form (A)

**Course Specifications**

**General Information**

|                                   |                    |
|-----------------------------------|--------------------|
| <b>Course name</b>                | General Physics(2) |
| <b>Course number</b>              | PHYS1302           |
| <b>Faculty</b>                    |                    |
| <b>Department</b>                 |                    |
| <b>Course type</b>                | College Needs      |
| <b>Course level</b>               | 1                  |
| <b>Credit hours (theoretical)</b> | 3                  |
| <b>Credit hours (practical)</b>   | 0                  |
| <b>Course Prerequisites</b>       |                    |

**Course Objectives**

- 1 - To learn concept of static charges and electrical forces, magnetic fields
- 2 - Learn concept of electric potential and equipotential surfaces
- 3 - Electric Flux and Gauss Law
- 4 - Capacitors and Dielectric Materials, storage of electrical energy
- 5 - Electric currents and electric circuits and their analysis

**Course Contents**

- 1 - Properties of Electric Charges, Charging Objects By Induction Coulomb's Law
- 2 - Electric Flux, Gauss's Law, Application of Gauss's Law to Various Charge Distributions
- 3 - Conductors in Electrostatic Equilibrium, Formal Derivation of Gauss's Law
- 4 - Potential Difference and, Electric Potential, Potential Differences in a Uniform Electric Field, Electric Potential and Potential Energy Due to Point Charges
- 5 - Obtaining the Value of the Electric Field from the Electric Potential Electric Potential Due to Continuous Charge Distributions
- 6 - Electric Potential Due to a Charged Conductor, The Millikan Oil-Drop Experiment, Applications of Electrostatics
- 7 - Definition of Capacitance, Calculating Capacitance, Combinations of Capacitors, Energy Stored in a Charged Capacitor, Capacitors with Dielectrics, Electric Dipole in an Electric Field,
- 8 - Electric Current, Resistance, A Model for Electrical Conduction, Resistance and Temperature, Superconductors, Electrical Power
- 9 - Electromotive Force, Resistors in Series and Parallel, Kirchoff's Rules
- 10 - RC Circuits, Electrical Meters
- 11 - Magnetic Fields and Forces, Magnetic Force Acting on a Current-Carrying Conductor, Torque on a Current Loop in a Uniform Magnetic Field
- 12 - Motion of a Charged Particle in a Uniform Magnetic Field, Applications Involving Charged Particles Moving in a Magnetic Field, The Hall Effect

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**Teaching and Learning Methods**

1 - The courses is given as lecture and discussion, where several problems on the material are solved at the end of each unit. In addition same assignments are given to the students as homework.

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**Teaching and Learning Methods for the Disabled Students**

1 - The courses is given as lecture and discussion, where several problems on the material are solved at the end of each unit. In addition same assignments are given to the students as homework.

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**Students Assessment**

| <u>Assessment Method</u> | <u>TIME</u> | <u>MARKS</u> |
|--------------------------|-------------|--------------|
| Homeworks                | one week    | 10%          |
| mid exams                | 2 hours     | 40%          |
| Final exam               | 2 hours     | 50%          |

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**Books and References**

Essential books , 9th edition Physics for Scientists and Engineers, Raymond A. Serway