

NED University of Engineering and Technology, Karachi.

Department _____

Programme _____



F/QSP 11/17/00

Course Profile

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| COURSE CODE & TITLE PH-112 (APPLIED PHYSICS) | SEMESTER <input type="checkbox"/> SPRING <input type="checkbox"/> FALL | CREDIT HOURS TH <input type="checkbox"/> 3 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> 0 PR <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 1 <input type="checkbox"/> 0 |
| PREREQUISITE COURSE(S) None | DATE OF APPROVAL | BATCH |

COURSE CONTENTS

| S. No. | Topic | Contents | Remarks (if any) |
|--------|------------------------------|---|--|
| 1 | Electrostatics and Magnetism | Coulombs Law. Electrostatic potential energy of discrete charges. Continuous charge distribution. Gauss's Law. Electric field around conductors. | Physics (Volume 2) by Halliday, Resnick & Krane |
| 2 | Electrostatics and Magnetism | Magnetic fields. Magnetic force on current. Hall effect. Biot-Savart Law. Ampere's Law. Fields of rings and coils. | Physics (Volume 2) by Halliday, Resnick & Krane. |
| 3 | Electrostatics and Magnetism | Magnetic dipole. Diamagnetism, Paramagnetism and Ferromagnetism. | Physics (Volume 2) by Halliday, Resnick & Krane. |
| 4 | Semiconductor Physics | Energy levels in a semiconductor. Hole concept. Intrinsic and Extrinsic regions. Law of Mass Action. P-N junction. Transistor | Electronic Devices, Thomas L. Floyd, Pearson, 2019 |
| 5 | Waves and Oscillations | Simple Harmonic Oscillator, Damped Harmonic Oscillation, Forced Oscillation and Resonance, | Physics (Volume 1) by Halliday, Resnick & Krane |
| 6 | Waves and Oscillations | Type of Waves. Superposition Principle, Wave Speed on a stretched string. | Physics (Volume 1) by Halliday, Resnick & Krane. |
| 7 | Optics and Lasers | Two-slit interference. Huygens Principle. Single-slit diffraction. Resolving power of optical instruments. Principles for laser action, Types of laser, Application of laser. | Physics (Volume 2) by Halliday, Resnick & Krane. |
| 8 | Modern Physics | Planck's explanations of black body radiation Photoelectric effect, Compton effect. Bohr's theory of Hydrogen atom | Physics (Volume 2) by Halliday, Resnick & Krane. |
| 9 | Modern Physics | Atomic spectra, Reduce mass, De-Broglie hypothesis, Electron | Physics (Volume 2) by Halliday, Resnick & Krane. |

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|-----------|----------------|---|--|
| | | microscope, Atomic Nucleus and Properties of Nucleus, Radioactive Decay | |
| 10 | Modern Physics | Radioactive Dating, Radiation Detection Instruments, Nuclear Reactions and Nuclear Reactor, Nuclear Fusion. | Physics (Volume 2) by Halliday, Resnick & Krane. |

COURSE LEARNING OUTCOME AND ITS MAPPING WITH PROGRAMME LEARNING OUTCOME

| Sr. No. | CLOs | Taxonomy level | Programme learning outcome (PLO) |
|--|---|----------------|----------------------------------|
| At the end of the course, the student will be able to: | | | |
| 1 | DISCUSS principle of physics; and explain the concept of classical and modern physics to solve related problems | C2 | PLO-1 |
| 2 | USE the concept of classical physics for engineering problems | C3 | PLO-2 |
| 3 | APPLY the concept of Modern physics to solve physical problem | C3 | PLO-2 |
| 3 | PRACTICE of operating equipment/tools to understand principles of physics under supervision. | P3 | PLO-1 |

REMARKS (if any): *Suggested PLO's

Recommended by : _____

(Chairperson/Date)

Approved by : _____

(Dean/Date)