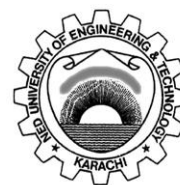


# NED University of Engineering and Technology, Karachi.

Department of  
Bachelors in

## Course Profile



F/QSP 11/17/00

<b>COURSE CODE&amp; TITLE</b> PH-122 (Applied Physics)	<b>SEMESTER</b> <input type="checkbox"/> SPRING <input checked="" type="checkbox"/> FALL	<b>CREDIT HOURS</b> TH <input checked="" type="checkbox"/> 3 <input 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
<b>PREREQUISITE COURSE(S)</b> NIL	<b>DATE OF APPROVAL</b>	<b>BATCH</b>

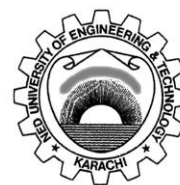
### COURSE CONTENTS

S. No.	Topic	Contents	Remarks (if any)
1	Units, Errors and Graphs	Types of Errors and Error Calculation, Graphical Techniques	<ul style="list-style-type: none"> <li>• Holiday resnick and krane volume 1,2: Chapter 12</li> <li>• Short case study on inventory Management (from Book 1 pg. 546)</li> </ul>
2	Vector Analysis	Coordinate Systems, Review of vectors, Vector Differentiation (Ordinary and Partial Differentiation), Gradient, Curl & Divergence, Vector Integrations, Line Integrals, Surface Integral	
3	Mechanics	Motion under Constant Acceleration, Newton Laws and their Applications, Frictional Forces, Work-Energy Theorem, Law of Conservation of Mechanical Energy, Angular Momentum.	Holiday resnick and krane volume 1 chapter 2,4 R.A serway and j.jweet edition 8
4	Electrostatics & Magnetism	Coulombs Law, Continuous charge distribution, Electrostatic potential energy of discrete charges, Gauss's Law and applications, Magnetic force on current, Hall effect, Biot-Savart Law, Ampere's Law, Field of rings and coils, Magnetic dipole, Diamagnetism, Para-magnetism and Ferromagnetism.	Holiday resnick volume 2
5	Semiconductors	Energy levels in a semiconductor, Hole concept, Intrinsic and Extrinsic regions, p-n junction, Transistor	Basic Electronics Floyd
6	Wave & Oscillations	Simple Harmonic Oscillator, Damped Harmonic Oscillation, Forced Oscillation and Resonance, Type of Waves and Superposition Principle, Wave Speed on a stretched string.	Holiday resnick volume 1
7	Optics	Huygens Principle, Single-Slit Diffraction, Resolving power of Optical instrument	Holiday resnick volume 1
8	LASER	Principals for laser action, Types of lasers,	Holiday resnick

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		Applications of laser	volume 1
9	Modern Physics	Planck's explanations of Black Body Radiation, Bohr's atomic model, Photoelectric Effect, Compton Effect, Atomic Spectra, Reduced Mass, Principle of uncertainty, DE Broglie wave	Haliday resnick volume 2
10	Nuclear Physics	Atomic Nucleus and Properties of Nucleus, Radioactive Dating, Nuclear Reactions and Nuclear Reactor, Nuclear Fusion	Haliday resnick volume 2

### TEXTBOOKS (Book Name, Authors, edition, Publisher, Year)

1. D. Halliday, R. Resnick and Krane, "Physics", John Wiley & Sons, volume 1, 11<sup>th</sup> ed. 2020.
2. D. Halliday, R. Resnick and Krane, "Physics", John Wiley & Sons, volume 2, 11<sup>th</sup> ed. 2020.
3. R. A. Serway and J. W. Jewett, "Physics for Scientists and Engineers", Golden Sunburst Series, 10th ed. 2019.
4. Electronic Devices, Thomas L. Floyd, Pearson, 2019.

### 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	C 2	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	C 3	PLO-2
4	PRACTICE of operating equipment/tools to understand principles of physics under supervision	P 3	PLO-1

### REMARKS \*Suggested PLO's

Recommended by : \_\_\_\_\_

(Chairperson/Date)

Approved by : \_\_\_\_\_

(Dean/Date)