Code	Subject Title	Cr. Hrs	Semester
PHY-201	Concepts of Modern Physics	3	III
Year	Discipline		
2	Physics		

Quantum physics: Thermal radiation (black body radiation), quantization of energy, The photoelectric effect, Einstein's photon theory, the Compton effect, line spectra, wave behavior of particles, Testing de Broglie's hypothesis, waves, waves packets and particles, Heisenberg's uncertainty principle, Wave function, Schrödinger equation, trapped particles and probability densities, the correspondence principle, dual nature of matter (waves and particles).

Atomic physics: The atomic structure of hydrogen, Bohr's theory, angular momentum of electrons, electron spin, X-ray spectrum, development of periodic table, laser.

Nuclear physics: Discovering the nucleus, some nuclear properties, radioactive decay, measuring ionizing radiation, natural radioactivity, nuclear reaction.

Energy from the nucleus, nuclear fission, nuclear reactor, thermonuclear fusion, controlled thermonuclear fusion.

Solid state physics: Electrons in solids, free electron gas, semiconductors and insulators, semiconductor devices, superconductivity.

Books Recommended:

1. *Physics Vol. II (extended)* by Resnick, Halliday and Krane, 4th Edition, John Wiley and Sons Inc, New York, 1992.
2. *Physics Vol.II (extended)* by Resnick, Halliday and Krane, 5th Edition, John Wiley and Sons Inc, New York, 2002.
3. *Fundamental of Physics* by Halliday Resnick and Krane, 5th Edition, John Wiley and Sons Inc, New York, 1999.
4. *University Physics* 8th Edition by Sears, Zemansky and Young, Addison-Wesley, Reading (MA), USA, 2000.
5. *Physics* by Alonso and Finn: Addison-Wesley, Reading (MA), USA, 1999.
6. *Concepts of Modern Physics* by A. Beiser: McGraw-Hill, New York, USA, 1988.