GUJARAT TECHNOLOGICAL UNIVERSITY
B.E. SEMESTER : 3
ENVIRONMENTAL SCIENCE & TECHNOLOGY

Subject name : **APPLIED PHYSICS**

Sr. No.	Course contents
01.	**Color Physics & Color Harmony** Introduction-geometric & chromatic attributes Radiation & illumination, SPD, CT & CCT, Sources & illuminants. Need for artificial sources – various ways of producing light & different artificial sources, Lamp efficacy & color rendering properties of sources. Interaction of radiation with matter – gloss & diffused reflectance, absorption of light in sample, Various transitions in molecule, Beer – Lambert law & its verification, deviation from Beer – Lambert law, Additivity of absorbance, mixture analysis, absorbance & scattering in the sample – Kubelka – Munk theory. Perception of colour in eye/brain, various colour theories. Additive – active mixing, colour specification systems – Munsell colour order system, CIE system, colour spaces,colour difference formulae.
02	**Quantum mechanics** Introduction to quantum physics (Plank effect, Compton effect, photoelectric effect), De Broglie hypothesis, wave – particle duality, Uncertainty principle, Schrodinger's wave equation, wave function, atomic orbital, spectra of atoms.
03	**Electricity & Magnetism** Motion of charged particles in electric & magnetic fields. Cyclotron, Magnetic & electrostatic focusing, Cathode ray tube & its application for determination of e/m, Functions & block diagram of CRO, Positive rays, Thomson parabolic method, Isotopes, Mass spectrograph: Aston & Bainbridge mass spectrograph.

Reference Books:

1. Zollinger Heinrich Zurich Verlag,Color : A Multidisciplinary Approach, Helvetica Chemical Act, 2nd Ed, 1999
2. The color Science of Dyes & Pigments , R.McLaren Bristol ,Adam Hilger Ltd, 2nd Ed,1983
3. Industrial Color Technology, Johnson R.M., Sartzman M.,, American Chemical Society Washington D.C., 1971
4. Computer Color Analysis: Textile Applications, Sule A.D., New Age International Ltd., New Delhi, 1st Ed,1997
5. Colour Physics for Industry, R. McDonald, Society for Dyers and Colourists, 2nd edition, 1997
6. Principles of Colour Technology, (Billmeyer & Saltzman's), R S Berns, John Wiley and Sons, 3rd edition, 2000,
7. Solid State Physics, Kittel S.,Wiley India, 7th Ed,2007

6 Concepts of Modern Physics, Beiser A., Tata McGraw Hill Book Company, 6th, 2003

7 Engineering Physics, R. K. Gaur & S. L. Gupta, Dhanpat Rai Publications, New Delhi. 1st Ed.,2003

8 The Colour Science of Dyes and Pigments, R McLaren Bristol, Adam Hilger Ltd, 1983

9 Industrial Colour Technology, Johnson R M, Sartzman M , American Chemical Society, Washington d c, 1971

10 Theory of Colouration of Textiles, Johnson A s, SDC Publications, Bradford, 2nd Ed, 1989

11 Modern Physics, Kenneth S Krane, John Wiley & Sons, 2nd Ed, 2012

12 Quantum Mechanics, G Aruldas, 2nd Ed,2000

13 Quantum Mechanics, A Ghatak & Lokanathan, Tata McGraw Hill Book Company, 2003

14 Quantum Mechanics of Atoms, Molecules, Solids, Nuclei & Particles, R Eisberg & R Resnick, John Wiley & Sons, 1998

APPROPRIATE NUMBER OF PRACTICALS WILL BE CONDUCTED AS PER THE THEORY SYLLABUS