RKUNIVERSITY	SYLLABUS
Course Title	**PHYSICS-II**
Course Code	BPH201
Course Credit	Lecture : 4
	Practical : 3
	Tutorial : 0
	Total : 7

Detailed Syllabus:

Sr. No	Name of chapter & Details	Session Allotted
	SECTION-I	
1	**Waves:** Wave motion, Differential equation of a wave motion, Particle velocity and wave velocity, Newton's formula for velocity of sound in air and velocity of sound in water, Laplace's correction , velocity of sound in isotropic solids, velocity of transverse waves along a stretched string, Laws of transverse vibrations of strings, Verifications of Laws of vibrations, Melde's experiment	**6**
2	**Optics** Dispersion, Dispersive Power, Fermat's Principle, Law of reflection & Law of refraction from Fermat's Principle ***Interference:-*** Interference, Conditions for interference of light, Types of Interference, Interference in thin films, Newton's rings, Determination of wave length of Sodium light using Newton's rings.	**8**
3	**Semiconductor Diode:** Semiconductor diode, Crystal diode rectifiers, Half wave rectifier, Efficiency of half wave rectifier, Full-wave rectifier, Centre-tap full wave rectifier, Full wave bridge rectifier, Efficiency of full-wave rectifier, Ripple factor, Comparison of rectifiers, Filter circuits, Types of filter Circuits , Voltage stabilization , Zener diode, Zener diode as voltage stabilizer.	**8**
4	**Special Purpose Diodes:** Light emitting diode, LED voltage and current, Advantages of LED, Multicolour LEDs , Applications of LED, Photo diode, Photo-diode operation, Characteristics of Photo-diode, Applications of Photo-diode, Optoisolator.	**6**

SECTION-II		
5	**Transistors:** Transistor, Transistor Action, Transistor connections, Common base connection, Characteristics of common base connection, Common emitter connection, Characteristics of common emitter connection, Common collector connection, Comparison of transistor connections, Commonly used Transistor connection, Transistors load line analysis , Operating point, Cut off and saturation points	**8**
6	**Crystallography:** Crystallography (Type of Solid, Periodic arrays of Atoms, Translation vector, Lattice & Basis, Crystal structures, Unit cell and Primitive cell), Bravais lattices in three dimensions, Miller indices , Some Crystal structures:– NaCl, CsCl, Diamond	**6**
7	**X-rays:** Production of X-rays, Origin of X-ray, X-ray Spectrum, Intensity Measurement of X-rays , Wave nature of X-ray, Laue's Spot & Uses, Bragg's Spectrometer, Theory of Diffraction , Bragg's Law, Compton effect, Properties of X-ray, Practical applications of X-rays industrial, scientific, medical).	**6**
8	**Natural Radioactivity:** Radioactivity, Natural and Artificial Radioactivity, General Properties of Radioactive Radiation, Properties of -rays, Properties of -rays, Properties of -rays, Radioactive Disintegration,7 Law of Radioactive Disintegration , Decay Constant, Half-life Period Average life	**8**

List of Practicals (6 hour per week)

1. Determined frequency of a tuning fork using Melde's Experiment.
2. Study reverse bias characteristic of a Zener Diode.
3. Determine wavelength of a light using Newton's Ring.
4. Study the Transistor Characteristic.
5. Study the forward bias characteristic of a P-N Junction diode.
6. Study the Diode as a Rectifier.
7. Find the magnetic moment using Deflection Magnetometer.
8. Find dispersive power a prism using Spectrometer.
9. Study Characteristic of Photodiode.
10. Study Dispersive curve of Prism.

Instructional Method and Pedagogy:

1.Lectures will be conducted with the aid of multi-media projector, black board, OHP etc.

2.Assignments based on course content will be given to the students at the end of each unit/topic and will be evaluated at regular interval.

3.Surprise tests/Quizzes/Tutorials will be conducted.

4.The course includes a laboratory, where students have an opportunity to build an appreciation for the concepts being taught in lectures.

5.Approximately ten experiments shall be there in the laboratory related to course contents.

Students Learning Outcomes:

At the end of the course the students will be able to:

- Understand basic concepts of waves, dispersion, reflection and refraction, semiconductor, there working and its application, crystal and its structure, X-ray, radioactivity
- Apply the concept of crystal structure, x-rays and radioactivity.
- Perform the practical of crystal, semiconductor.

  Conclude the result of reflection and refraction, structure of crystal.

Reference Books:

- Engineering Physics by R.K.Gaur, S.L.Gupta, Dhanpat Rai Publications.
- Principles of Electronics by V.K.Mehta & Rohit Mehta., S.Chand Company.
- Modern Physics by R.Murugeshan & Kiruthiga Sivaprasath, S.Chand Comp.
- Waves and Oscillations by Brij Lal and Subrahmaniam. S.Chand comp.
- Principles of Optics by Mathur & Pandya
- Atomic Physics by J.B.Rajam. S.Chand & Company Ltd
- Elements of Electronics by M.K.Bagde & S.P.Singh. S.Chand
- Electronic Devices & Circuits. By Allen Mottershed

Useful Web site for e-leaning

1. www.physic.about.com
2. www.physic.org
3. www.Physicsclassroom.com
4. www.howstuffworks.com
5. www.colorado.edu/physics/2000
6. www.ndrs.org. physic.com
7. www.physlinc.com
8. www.fearofphysics.com
9. www.hyper physics.com