Academic Council Item No:_____

Devrukh Shikshan Prasarak Mandal's

Nya. TATYASAHEB ATHALYE ARTS, Ved. S.R. SAPRE COMMERCE & Vid. DADASAHEB PITRE SCIENCE COLLEGE, DEVRUKH [AUTONOMOUS]

Syllabus for F.Y. B.Sc.
Program: B.Sc.
Course: Physics
Credit Based Semester and Grading System with the Effect from
Academic Year 2020-21

Syllabus for B.Sc. Physics (Theory and Practical)
As per credit based system
First Year B.Sc.2020–2021.

The revised syllabus in Physics as per credit based system for the First Year B.Sc. Course will be implemented from the academic year **2020–2021.**

Preamble:

The systematic and planned curricula from these courses shall motivate and encourage learners to understand basic concepts of Physics.

Objectives:

- To develop analytical abilities towards real world problems
- To familiarize with current and recent scientific and technological developments
- To enrich knowledge through problem solving, hands on activities, study visits, projects etc.

Course code	Title	Credits
Semester I		
USPHT11		2
USPHT12		2
USPHP1	Practical I	2
		Total – 06
Semester II		
USPHT21		2
USPHT22		2
USPHP2	Practical II	2
		Total - 06

Semester I: Paper I

Name of the Programme	Duration	Semester	Subject
B.Sc. In Physics	Six Semesters	I	Physics
Course Code	**Title**	**Credits**	
USPHT11		2 for USPHT11	

Learning Outcomes:-

On successful completion of this course students will be able to:

1. Understand kinematical equations
2. Understand the concepts of friction and the concepts of elasticity, fluid mechanics and be able to perform calculations using them.
3. Understand the concepts of lens system, diffraction and interference.
4. Apply the laws of thermodynamics to formulate the relations necessary to analyse a thermodynamic process.
5. Demonstrate quantitative problem solving skills in all the topics covered

Unit - I **15 Lectures**

1. Physical quantities – Definitions and units

2. Functions and graphs - Graphs of linear, sin, cos, tan, and values for important angles, exponential, power, logarithmic, shfting of graph, using calculator

3. Determinants – evaluation, important properties.

4. Complex Numbers - Basics, conjugate, Euler Identity, polar representation, Division of complex numbers

5. Simple Harmonic Motion, Composition of two collinear SHMs of same period, Composition of two perpendicular SHMs of same period

Unit - II **15 Lectures**

1. Newton's Laws of motion.

Newton's Laws of motion, concept of inertia, momentum, Kinematical Equations.

2. Fluid Dynamics:

Equation of continuity, Bernoulli's Equation, Applications of Bernoulli's equation, streamline and turbulent flow, Concept of viscosity and coefficient of viscosity, Poiseuille's equation (without derivation)

3. Thermodynamics:

Thermodynamic systems, zeroth law, concept of heat, first law of thermodynamics, concept of ideal gas and ideal gas equation, internal energy, thermodynamic processes – relations between P, V, and T, work done, specific heats.

Unit - III **15 Lectures**

1. Electromagnetic Spectrum and Electromagnetic nature of light.

2. Refraction:

Basics of reflection, refraction, refractive index, deviation, dispersion, dispersive power, lensmaker equation, lens formula, importance of F and 2F in image formation, thick lens and cardinal points, equivalent focal length of coaxial combination of two thin lenses.

3. Lens Aberrations:

Spherical Aberration and ways to minimize it, Chromatic aberration – Axial chromatic aberration andconditions for achromatism in lenses, Ramsden eyepiece.

4. Interference of light:

Concept of division of wavefront and division of amplitude, Interference of light reflected from thin films, Wedge shaped film, Newton's Rings.

References:

1. Halliday, Resnick and Walker, Fundamental of Physics (extended) – (6th Ed.), John Wiley and Sons.
2. H. C. Verma, Concepts of Physics – (Part–I), 2002 Ed. BharatiBhavan Publishers.
3. Brijlal,Subramanyam and Avadhanulu A Textbook of Optics, 25th revised ed.(2012) S. Chand
4. Brijlal, Subramanyam and Hemne, Heat Thermodynamics and Statistical Physics, S Chand, Revised,Multi-coloured,2007 Ed.
5. Jenkins and White, Fundamentals of Optics by (4th Ed.), McGraw Hill International.
6. D S Mathur, Element of Properties of Matter, S Chand & Co.
7. C L Arora, Optics, S Chand.
8. Hans and Puri, Mechanics –, 2nd Ed. Tata McGraw Hill