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 FirstYear 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 II

Name of the Programme	Duration	Semester	Subject
B.Sc. In Physics	Six Semesters	I	Physics
Course Code	**Title**	**Credits**	
USPHT12		2 for USPHT12	

Learning Outcomes:

After successful completion of this course students will be able to

1. Understand nuclear properties and nuclear behavior.
2. Understand the type isotopes and their applications.
3. Understand in detail basics of electronics and digital electronics
4. Demonstrate and understand the quantum mechanical concepts.
5. Demonstrate quantitative problem solving skills in all the topics covered.

Unit I **15 lectures**

1. Electrostatics: Coulomb's Law, electric lines of force, Electric Field, Electric Potential, Energy stored in a discrete charge distribution, Problems based on discrete charge distribution.
2. Magnetostatics: Biot Savart's Law, magnetic lines of force, Lorentz force, applications

3. Faraday's law

Unit II **15 lectures**

Basic concepts – electron volt, energy/velocity gained by a charged particle accelerated by a PD, X-rays – production, X-ray spectrum, properties and Applications of X-Rays.

Concept of photon, photoelectric effect

Rutherford experiment, concept of nucleus, isotope, isobar, isotone, amu, Basic properties of nuclei, Composition, Charge, Size, density of nucleus, Mass defect and Binding energy, Packing fraction. Concept of natural radioactivity, properties of α, β, γ-rays, law of radioactive decay, nuclear reactions.

Unit III **15 lectures**

1. Digital electronics: Logic gates, Voltage levels of logic gates, NAND / NOR as universal building blocks. EX-OR gate: logic expression, symbol, truth table, implementation using basic gates, Boolean algebra, De-Morgan laws, Sum-of-products (SOP) and product-of-sums (POS) methods and its realization, parity generator/checker

2. Binary, Decimal and Hexadecimal number system and inter-conversion (without fractional numbers),Binary addition/subtraction

References:

1. D. Chattopadhyay, P C Rakshit , Electricity and Magnetism 7th Ed. New Central Bookagency
2. David J. Griffiths: Introduction to Electrodynamics, Prentice Hall India(EEE) 3rd Ed.
3. BSS: N Subrahmanyam, Brijlal and Seshan, Atomic and Nuclear Physics Revised Ed.Reprint 2012, S. Chand
4. Arthur Beiser, Perspectives of Modern Physics : Tata McGraw Hill
5. A P Malvino, Digital Principles and Applications: Tata McGraw Hill.
6. VKM: V K Mehta and R Mehta Electronics Principals, MulticolouredRevised 11th Ed.reprint in 2012 ,S Chand.
7. Tokhiem, Digital electronics, 4thed, McGraw Hill International Edition.