SECOND-YEAR OF BACHELOR OF SCIENCE Physics (MAJOR AND MINOR) REVISED SYLLABUS ACCORDING TO CBCS NEP2020

COURSE TITLE: ***Vocational Skill Course***

SEMESTER-III

W.E.F. 2024-2025

RECOMMENDED BY THE BOARD OF STUDIES IN PHYSICS
AND
APPROVED BY THE ACADEMIC COUNCIL

Devrukh Shikshan Prasarak Mandal's
Nya. Tatyasaheb Athalye Arts, Ved. S. R. Sapre Commerce, and Vid. Dadasaheb Pitre Science College (Autonomous), Devrukh.

Tal. Sangameshwar, Dist. Ratnagiri-415804, Maharashtra, India

Academic Council Item No:

Name of the Implementing Institute	:	Nya. Tatyasaheb Athalye Arts, Ved. S. R. Sapre Commerce, and Vid. Dadasaheb Pitre Science College (Autonomous), Devrukh. Tal. Sangameshwar, Dist. Ratnagiri-415804,
Name of the Parent University	:	University of Mumbai
Name of the Programme	:	Bachelor of Science
Name of the Department	:	Physics
Name of the Class	:	Second Year
Semester	:	Third
No. of Credits	:	02
Title of the Course	:	**Basic Skills in Electricity**
Course Code	:	PHVS201
Name of the Vertical in adherence to NEP 2020	:	Major
Eligibility for Admission	:	Any student admitted to Second Year of B.Sc. Degree Programme in adherence to Rules and Regulations of the University of Mumbai and Government of Maharashtra
Passing Marks	:	40%
Mode of Assessment	:	Formative and Summative
Level	:	UG
Pattern of Marks Distribution for SEE	:	60:40
Status	:	NEP-CBCS
To be implemented from Academic Year	:	2024-2025
Ordinances /Regulations (if any)		

Syllabus for Second Year of Bachelor of Science in Physics

(With effect from the academic year 2024-2025)

SEMESTER-III **Paper No.– 1**

Course Title: Physics-I **No. of Credits - 02**

Type of Vertical: Major and Minor **COURSE CODE: S201PHT**

Learning Outcomes Based on BLOOM's Taxonomy:

After completing the course, the learner will be able to…		
Course Learning Outcome No.	Blooms Taxonomy	Course Learning Outcome
CLO-01	Remember	To develop analytical abilities towards real world problems.
CLO-02	Understand	To familiarize with basic skills related to electricity.
CLO-03	Apply	To enrich knowledge through performing practical's and applying concepts in practices.

Syllabus for Second Year of Bachelor of Science in Physics

(With effect from the academic year 2024-2025)

SEMESTER-III **Paper No.– 1**

Course Title: Basic Skills in Electricity **No. of Credits - 02**

Type of Vertical: Major **COURSE CODE: PHVS201**

COURSE CONTENT			
Module No.	**Content**	**Credits**	**No. of Hours**
I	**Electrical Measurement** Conductors & cables, Wire joints, Soldering Study of Ammeter and Voltmeter, their connection & calibration. Basics of Electricity and Magnetism Energy consumption & monthly billing. Transformer	01	15
	Batteries Various types of batteries, Lead Acid Cells Battery ratings. Maintenance and methods of charging and discharging of Lead Acid Cells used in Inverters. Repair and testing of batteries. Connection of batteries to Inverters and UPS.		
	DC Motors Construction & Principle of DC Motors, BLDC Motors & applications Types- Series, Shunt & Compound Motors, Characteristics curve, Applications. Necessity of starter, Construction and Working of starters (3 / 4 point), Troubleshooting – Care & maintenance. Advantages & Disadvantages		
	Cable Faults and Fire Fighting Single / Three Phase Cables, Uses and Advantages. Cable Faults and Fault Finding. Repair of Cable Faults and cable jointing. Earthing, fuse and MCB. Fire Fighting, Safety handling Tools & Equipment. Rescue of person who is in contact with live wire, Treat a person for electric shock/ injury		
	Basic Home Appliances Study of circuit diagrams of heating appliances. Study of circuit diagrams of motorized appliances. Localization of faults in home appliances & their remedies.		
II	**Practicals** Knowledge of AC and DC current and voltage along with their sources. Learning & identifying types of cables. Soldering Conversion of Galvanometer to Ammeter and Voltmeter. Using Ammeter and Voltmeter.	01	30
	Demonstration of Working of Lead Acid Cells. Learning Maintenance of Batteries Connection of Batteries		
	Identification of parts of DC motors. Characteristics curve & Efficiency of DC Motor Dismantling & Re assembling of DC motor.		
	Fire Extinguishers & its Types General Safety of Tools & Equipment Rescue of person who is in contact with live wire First aid in case of electric shock/ injury Demonstration of wiring in home		
	Heating appliances such as Iron, Heaters & Geysers. Motorized appliances such as Mixer, Grinder, Washing Machine, Hand Drill, table fan.		
	Total	**02**	**30**

Access to the Course

The course is available for all the students admitted for Second Year Bachelor of Science.

Methods of Assessment

The assessment pattern would be 40:60, 60% for Semester End Examination (SEE) and 40% for Continuous Internal Assessment (CIA). The structure of the SEE and CIA would be as recommended by the Board of Studies and approved by the Board of Examination and the Academic Council of the college.

References:

1. Mittal, A K, “Electrician Theory”, Arihant Publishers (Hindi), India, 2019.

2. Agrawal Priti, “Electrician Theory I-II)”, Neelkanth Publishers, India, 2018.

3. Dahiya Satish, “Electrician Practical I-II)”, Neelkanth Publishers, India, 2018.

Suggested equivalent online courses:

1. Basic Electric Circuits by Prof. Ankush Sharma, IIT Kanpur
https://onlinecourses.nptel.ac.in/noc19_ee36/preview

2. Fundamental Concepts of Electricity by A M Kulkarni, IIT Bombay
https://onlinecourses.swayam2.ac.in/arp19_ap95/preview