THIRD YEAR OF BACHELOR OF SCIENCE MAJOR PHYSICS REVISED SYLLABUS ACCORDING TO CBCS NEP2020

COURSE TITLE: MEDICAL PHYSICS LAB

SEMESTER-V W.E.F. 2025-2026

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.Sangmeshwar, Dist. Ratnagiri-415804, Maharashtra, India

Academic Council Item No: 02/2025

Name of the Implementing Institute	:	Nya. Tatyasaheb Athalye Arts, Ved. S. R. Sapre Commerce, and Vid. Dadasaheb Pitre Science College (Autonomous), Devrukh. Tal. Sangmeshwar, 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	:	Third Year
Semester	:	Sixth
Paper	:	Elective Practical II
No. of Credits	:	02
Title of the Course	:	**Medical Physics Lab**
Course Code	:	S318PHP
Name of the Vertical in adherence to NEP 2020	:	Elective
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	:	Summative at the end of semester
Level	:	5.5
Pattern of Marks Distribution for TE and CIA	:	100 %
Status	:	NEP-CBCS
To be implemented from Academic Year	:	2025-2026
Ordinances /Regulations (if any)		

Syllabus for Third Year of Bachelor of Science in Physics

(With effect from the academic year 2025-2026)

Semester: VI **Paper No : Elective Practical– II**

Course Title: Medical Physics Lab **No. of Credits – 02**

Type of Vertical: Elective **Course Code: S318PHP**

After completing the course, the learner will be able to…

Course Outcome	Course Learning Outcome
CO-01	Understand practical skills while performing experiments
CO-02	Understand the use of apparatus and their use without fear & hesitation
CO-03	Correlate the physics theory concepts to practical application
CO-04	Understand the concept of errors and their estimation.

1. The certified journal must contain a minimum of **12** experiments in semester-V.
2. A separate index and certificate in journal is must for each semester course.

Elelctive Practicals

1 Understanding the working of a manual Hg Blood Pressure monitor and measure the Blood Pressure
2 Understanding the working of a ECG monitor Machine
3 Installation planning of Diagnostic X-ray unit
4 Understanding the working of a manual optical eye-testing machine and to learn eye-testing procedure.
5 Correction of Myopia (short sightedness) using a combination of lenses on an optical bench/breadboard
6 Correction of Hypermetropia/Hyperopia (long sightedness) using a combination of lenses on an optical bench/breadboard.
7 To learn working of Thermoluminescent dosimeter (TLD) badges and measure the background radiation.
8 Familiarization with Geiger-Muller (GM) Counter and to measure background radiation.
9 Familiarization with Radiation meter and to measure background radiation.
10 Familiarization with the construction of speaker-receiver system and to design a speaker-receiver system of given specification.
11 Installation planning of Diagnostic CT scanner
12 Installation planning of PET-CT scanner
13 Reading and diagnosis of Various reports such as CBC, LFT, KFT, Lipid profile etc
14 Understanding of various reports such as ECG, X-ray, Sonography, EEG etc

References:

1. Basic Radiological Physics, Dr. K. Thayalan - Jayapee Brothers Medical Publishing Pvt. Ltd. New Delhi (2003)
2. Christensen's Physics of Diagnostic Radiology: Curry, Dowdey and Murry - Lippincot Williams and Wilkins (1990)
3. Physics of Radiation Therapy : F M Khan - Williams and Wilkins, 3rd edition (2003)
4. The essential physics of Medical Imaging: Bushberg, Seibert, Leidholdt and Boone Lippincot Williams and Wilkins, Second Edition (2002)

Access to the Course

The course is available for all the students admitted for third year of Bachelor of Science.

Methods of Assessment

Vocational Skill Courses, Skill Enhancement Courses and the courses having laboratory sessions shall be assessed at the end of each semester.

Pattern of Evaluation

The Examination/Evaluation pattern shall be framed by the Board of Examination with its final approval from the Academic Council of the College.