



**THIRD YEAR BACHLOR OF SCIENCE MAJOR
PHYSICS REVISED SYLLABUS ACCORDING TO
CBCS NEP 2020**

**COUERSE TITLE: MEDICAL PHYSICS
SEMESTER: VI
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**

Semester VI**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 II
No. of Credits	:	02
Title of the Course	:	Medical Physics
Course Code	:	S317PHT
Name of the Vertical in adherence to NEP 2020	:	Elective II
Eligibility for Admission	:	Any student admitted to Third 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	:	5.5
Pattern of Marks Distribution for TE and CIA	:	60:40
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

Course Title: Medical Physics

Type of Vertical: Elective

Paper No – Elective II

No. of Credits – 02

Course Code: S317PHT

After completing the course, the learner will be to...

Course Outcome	Course Learning Outcome
CO-01	understand the Biomechanics of the Human Body
CO-02	study energy Dynamics and Thermoregulation in the Human Body
CO-03	describe physics of the Human Body's Pressure and Cardiovascular Systems
CO-04	Explain Acoustics, Optics, and Electrical Systems in Human Physiology
CO-05	Analysis Medical Imaging Techniques and Diagnostic Physics

Syllabus for Third Year of Bachelor of Science in Physics**(With effect from the academic year 2025-2026)****SEMESTER-VI****Paper No.– Elective II****Course Title: Medical Physics****No. of Credits - 02****Type of Vertical: Major****COURSE CODE: S317PHT**

COURSE CONTENT			
Module	Content	Credits	No. of Lectures
1	Physics of the body-i Mechanics of the body: Skeleton, forces, and body stability. Muscles and the dynamics of body movement, Physics of body crashing. Energy household of the body: Energy balance in the body, Energy consumption of the body, Heat losses of the body, Pressure system of the body: Physics of breathing, Physics of cardiovascular system. Physics of the body-ii Acoustics of the body: Nature and characteristics of sound, Production of speech, Physics of the ear, Diagnostics with sound and ultrasound. Optical system of the body: Physics of the eye. Electrical system of the body: Physics of the nervous system, Electrical signals and information transfer	01	15
2	Medical Imaging Techniques X-ray diagnostics and imaging, Physics of nuclear magnetic resonance (NMR) – NMR imaging – MRI Radiological imaging –Radiography – Filters – grids – cassette – X-ray film – film processing – fluoroscopy – computed tomography scanner – principle function – display – generations – mammography. Ultrasound imaging – magnetic resonance imaging – thyroid uptake system – Gamma camera (Only Principle, function and display)	01	15
	Total	02	30

References:

1. Medical Physics, J.R. Cameron and J.G.Skofronick, Wiley (1978)
2. The essential physics of Medical Imaging: Bushberg, Seibert, Leidholdt and Boone
3. Christensen's Physics of Diagnostic Radiology: Curry, Dowdey and Murry - Lippincot Williams and Wilkins (1990)
4. Physics of the human body, Irving P. Herman, Springer (2007).

Access to the Course

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

Methods of Assessment

The assessment pattern would be 60:40, 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.

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.