



**Third-Year of Bachelor of Science
Major Physics
Revised syllabus according to CBCS NEP - 2020**

Course Title: Classical Mechanics

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**

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	:	Six
Paper	:	I
No. of Credits	:	02
Title of the Course	:	Classical Mechanics
Course Code	:	S310PHT
Name of the Vertical in adherence to NEP 2020	:	Major
Eligibility for Admission	:	Any student admitted to third year of BSc- Physics degree program in adherence to rules and regulations of the University of Mumbai and Govt. of Maharashtra
Passing Marks	:	40%
Mode of Assessment	:	Formative and Summative
Level	:	5.5
Pattern of Marks Distribution for SEE 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

Physics Paper – I

Course Title: Classical Mechanics

No. of Credits – 02

Type of Vertical: Major

COURSE CODE: S310PHT

Learning Outcomes Based on BLOOM's Taxonomy:

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

Course Learning Outcome No.	Course Learning Outcome
CLO-01	Understand various aspects of motion under central force
CLO-02	Understand the representation of motion in a rotating co-ordinate system
CLO-03	Understand the features of fluid motion.
CLO-04	Understand the treatment of rotation of a rigid body using inertia tensor
CLO-05	Derive equations related to the theory
CLO-06	Solve analytical problems using Lagrangian method
CLO-07	Solve numerical problems related to various topics

Syllabus for Third Year of Bachelor of Science in Physics**(With effect from the academic year 2025-2026)****SEMESTER - VI****Physics Paper – I****Course Title: Classical Mechanics****Credits – 02****Type of Vertical: Major****COURSE CODE: S310PHT**

COURSE CONTENT			
Module	Content	Credits	Lectures
1	1. Motion under a central force, the central force inversely proportional to the square of the distance, Elliptic orbits, The Kepler problem. Ref -- KRS: 3.13 to 3.15 2. Moving origin of coordinates, Rotating coordinate systems, Laws of motion on the rotating earth, The Foucault pendulum, Larmor's theorem. Ref -- KRS: 7.1 to 7.5 3. D'Alembert's principle, Constraints, Examples of holonomic constraints, examples of nonholonomic constraints, degrees of freedom and generalized coordinates, virtual displacement, virtual work, D'Alembert's principle, illustrative problems. Ref -- PVP: 4.2 to 4.9	01	15
2	1. Lagrange's equations (using D'Alembert's principle), properties of Lagrange's equations, illustrative problems, canonical momentum, cyclic or ignorable coordinates. Ref -- PVP: 5.2 to 5.4, 7.2, 7.3 2. Kinematics of moving fluids, Equation of motion for an ideal fluid, Conservation laws for fluid motion, Steady flow. Ref -- KRS: 8.6 to 8.9 3. Rigid dynamics: introduction, degrees of freedom, rotation about an axis: orthogonal matrix, Euler's theorem, Eulerian angles, inertia tensor, angular momentum of rigid body, Euler's equation of motion of rigid body, free motion of rigid body Ref -- PVP: 16.1 to 16.6	01	15
	Total	02	30

References:

- **KRS:** Classical Mechanics by K. R. Symon
- **PVP:** Classical Mechanics by P. V. Panat

Access to the Course

The course is available for 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.