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

COUERSE TITLE: **Mathematical & Statistical 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	:	Fifth
Paper	:	I
No. of Credits	:	02
Title of the Course	:	Mathematical & Statistical Lab
Course Code	:	S307PHP
Name of the Vertical in adherence to NEP 2020	:	Elective I
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	:	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 -V **Paper No.– 1**

Course Title: Mathematical & Statistical Lab **No. of Credits - 02**

Type of Vertical: Elective I **Course Code: S307PHP**

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

Course Outcome	Course Learning Outcome
CO-01	Understand the Concept of probability and Complex analysis
CO-02	Solve the Second Order Differential equation with Non Homogenous constant Coefficient and Partial Differential Equation
CO-03	Solve the problem on Maxwell- Boltzmann, Bose-Einstein and Fermi-Dirac statistics
CO-04	Analyse the statistical data of experiment

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

Syllabus for Third Year of Bachelor of Science in Physics

(With effect from the academic year 2025-2026)

Semester -V **Paper No.– 1**

Course Title: Mathematical & Statistical Lab **No. of Credits - 02**

Type of Vertical: Elective I **Course Code: S307PHP**

Elective I Practical
1. 2. Probability (Problems on Random & Continuous Variable) 3. Probability (Problems on Binomial and Poisson Distribution) 4. Complex analysis problems- I 5. Complex analysis problems- II 6. Second order non homogeneous Differential equation-I 7. Second order non homogeneous Differential equation-II 8. Partial differential equation with boundary condition-I 9. Partial differential equation with boundary condition-II 10. Problems on Maxwell- Boltzmann statistics 11. Problems on Bose-Einstein statistics 12. Problems on Fermi-Dirac statistics 13. Problem on Root mean square ,Most probable, Average Velocities 14. To determine value of Boltzmann constant using V-I characteristic of PN diode using curv fitting 15. Random number generation- Area of circle, area of square, volume of sphere 16. To record and analyze the cooling temperature of an hot object as a function of time using a thermocouple and suitable data acquisition system

References:

1. Advanced course in Practical Physics: D. Chattopadhya, PC. Rakshit & B. Saha (8th Edition) Book & Allied Pvt. Ltd.
2. BSc Physics: Harnam Practical Singh. S. Chand & Co. Ltd. – 2001.
3. A Text book of Practical Physics: Samir Kumar Ghosh New Central Book Agency (4th edition).
4. B Sc. Practical Physics: C. L. Arora (1st Edition) – 2001 S. Chand & Co. Ltd.
5. Practical Physics: C. L. Squires – (3rd Edition) Cambridge University Press.
6. University Practical Physics: D C Tayal. Himalaya Publication.

7. Advanced Practical Physics: Worsnop & Flint.

8. Practical Physics: Indu Prakash , Ram Krishna, A.K.Jha Kitab Mahal Publication

Access to the Course

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

Methods of Assessment

The assessment pattern would be 100 %, for Semester End Examination (SEE) and 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.