

Dayanand Science College, Latur

Department of Physics

M. Sc Physics Outcomes

M. Sc First Year Physics

- **Paper Name - Mathematical Methods in Physics**
- **Paper Number – PHYCT- 101**
- **Outcomes:**
 1. After completion of this course students are capable of using the learned mathematical techniques to solve problems in physics such as the use and applications of matrices, the differential equations, the special functions, Fourier series and integral transform and complex functions.
 2. Students can apply these learned techniques not only to physics related problems but can extend the use and their applications to Engineering Science and Technology, Biotechnology, Biophysics etc.

- **Paper Name - Numerical Techniques in Physics**
- **Paper Number - PHYCT -102**
- **Outcomes:**
 1. After completion of the course students shall be able to employ the studied numerical techniques to solve problems in physics related to the applications like data handling and fitting, finding solutions and root of equations,
 2. Apart from this students will be capable of solving the differential and integral equations, simultaneous equations and partial differential equations.
 3. They shall also be well versed with writing their programmers using C-language of computer programming.
 4. Students can apply these learned techniques not only to physics related problems but can extend the use and their applications to Engineering science and technology, Biotechnology, Biophysics etc.

- **Paper Name - Classical Mechanics**

- **Paper Number –PHYCT- 103**

- **Outcomes:**

1. After completion of the course the students shall be able to apply Newton's laws of motion to solve complicated problems involving multiple bodies and use the concepts of classical mechanics to the classical rigid bodies.
2. The knowledge acquired through this course will enable the students to lay the foundation of application of the classical dynamics, space dynamics and also for modern physics.

- **Paper Name - Electronic Devices and Applications**

- **Paper Number - PHYCT -104**

- **Outcomes:**

1. After completion of this course, students will be able to explain the working principles and application of various electronic devices used in various electronic gadgets of domestic uses.
2. They will also understand the construction, working and operational characteristics of semiconductor devices and their applications in advanced electronics industries.
3. The students will also understand the utility and functioning of the microprocessors, the heart of the advanced computing machines.

- **Paper Name - Condensed Matter Physics**

- **Paper Number - PHYCT -201**

- **Outcomes:**

1. After completing the course students will have knowledge of different types of solids.
2. Also an understanding of how their microscopic structure affects their mechanical, thermal and electrical properties.

- **Paper Name - Atomic and Molecular Physics**

- **Paper Number - PHYCT -202**

- **Outcomes:**

1. Upon successful completion of these modules, students will be able to understand the atomic spectra of one valance electron atoms.
2. students will be able to understand what is meant by L-S and J-J coupling in case of two valance electron atoms and the origin of spin orbit interaction
3. Students will learn to Use appropriate quantum numbers for labeling of energy levels/terms symbols and the change in behavior of atoms in external applied electric and magnetic field.
4. Students will learn Diatomic molecules, the origin of electronic, vibrational and rotational energy levels, calculate energy levels,
5. students will be able to understand and Analyze rotational, vibrational, electronic and Raman spectra of molecules
6. To undertake simple calculations of bond lengths, rotational constant, dissociation energy, and relative level populations

- **Paper Name - Statistical Mechanics**
- **Paper Number - PHYCT 203**
- **Outcomes:**
 1. The main outcome after learning the course is that students can apply and extend concepts learned in this course to theoretical physics.
 2. Students will be well acquainted with the particle nature on the basis of distribution laws and their uses in order to illustrate properties of most exotic systems like white dwarf stars, super fluid materials, etc.

- **Paper Name - Quantum Mechanics**
- **Paper Number - PHYCT 204**
- **Outcomes:**
 1. Upon successful completion of these modules, students will be able to understand that quantum mechanics is basic of many branches of Physics and will be able to apply quantum theory to other applied areas like nuclear physics, atomic and molecular physics, solid state physics, laser physics etc.
 2. The students will be able to relate the ideas and concepts from physics to chemistry, materials science and engineering.
 3. Students will be able to use quantum theory to model natural and physical phenomena in materials science, chemistry and nanotechnology.
 4. Students will be able to understand and explain the differences between classical and quantum mechanics.
 5. They will be able to understand the idea of wave function and to solve Schrodinger equation for simple potentials.

M. Sc Second Year Physics

- **Paper Name — Electrodynamics**
- **Paper Number - PHY 301**
- **Outcomes:**
 1. Upon successful completion of this course students will be able to apply the knowledge of Maxwell's equations to a variety of problems including various types of charge distributions including time-dependent processes
 2. tackle the problems related to the propagation and scattering of EM waves in a variety of media, understand how to design EM sources of different powers
 3. And will also be able to have a good understanding of the relativistic electrodynamics.

- **Paper Name — Nuclear and Particle Physics**
- **Paper Number- PHY 302**
- **Outcomes:**
 1. After the completion of the subject the students are able to know its Scientific and technological applications.
 2. In addition, with social, economic and environmental implications.

- **Paper Name: Basics of Lasers and Devices**
- **Paper Number: PHY 303**
- **Outcomes:**
 1. Students will be able to understand all the basic concepts of Laser.
 2. Also, students will learn the Different types and applications of Laser technology.

- **Paper Name: – Elective Paper A:- This Film and Nano Physics**
- **Paper Number: PHY 304**
- **Outcomes:**
 1. Students will be able to understand All the basic of Thin films and nanotechnology.
 2. Students will come across the Different methodology of thin film synthesis right from the nucleation and growth.
 3. Apart from this student will understand the importance of thin film technology in today's era.

- **Paper Name: Fiber Optics and Optical Fiber Communication**
- **Paper Number: PHY 401**
- **Outcomes:**
 1. Students will be able to understand the basic of optical fiber.
 2. How light is propagated through the optical fiber. And what are the different light sources available for the same.
 3. Student will also get the knowledge of LEDs and their uses in Optical fiber.
 4. Students will learn about the communication takes place via optical fiber and its applications.

- **Paper Name: Microwaves and Measurements**
- **Paper Number: PHY 402**
- **Outcomes:**
 1. Students will come across the fundamental concepts of Microwaves.
 2. Students will be able to know about active and passive devices of microwaves.
 3. Students will get the knowledge of measurements and applications of microwave.

- **Paper Name: Microprocessors and Microcontrollers**
- **Paper Number: PHY 403**
- **Outcomes:**
 1. Students will be able to come across an architectural study ofof Microprocessor 8085
 2. Students will get the Complete knowledge of Microprocessor 8086 and Micro-controller 8051
 3. Students will also learn the architecture of 16 Bit Micro-controller and Embedded Controllers along with proper explanation of block diagrams involved in it.

- **Paper Name: – Elective Paper B. Electronic Instrumentation**
- **Paper Number:PHY 404**
- **Outcomes: -**
 1. Students will get the complete idea and purpose of instrumentation.
 2. Also, they will learn types & importance of measurements.
 3. Students will come to know about the transducers and its importance in electronic world.
 4. Students will also learn about the PC and its role in instrumentation.