Sir P. T. Sarvajanik College of Science (Autunomius), Surat

Proposes

Foundation Course in Physics

Duration of the Course: 5th January to 31st January, 2026

Objective of the course:

It has been found from the experience over the years that the students entering the first year of the college have hardly been trained to solve problems independently, particularly in Physics. Even their theoretical background also needs to be polished and at times they have many misconceptions which need to be rectified.

Also, there are some students who aim to build their career in the subject of Physics and for that matter in the field of research. They need to be trained in a particular way which is otherwise not possible during their regular schedule.

It is well known fact that one can really understand the basic concepts only when one applies one's knowledge to solve numerical/theoretical problems. For solving problems of Physics, one needs to have sound knowledge of Mathematics also. This certificate course is designed to develop mathematical ability/skills of students simultaneously along with their problem solving ability in Physics so that at the end of course, they are better equipped to apply their knowledge in understanding the subject and be self-reliant and confident in solving problems of Physics.

Further, it is also observed that the students from South Gujarat region are not keen to appear for National Level Entrance Examinations conducted by some premier institutes of our country like IIT's, TIFR, IISER's , NICER's etc for their higher studies. One of the aims of this certificate course is to provide information to the students regarding such exams and motivate them to prepare for such entrance examinations and succeed in passing these examinations.

Here, it may be stressed that this certificate course is not a replacement of existing syllabi nor is it intended to be. The purpose is to digress a bit from constrained syllabus of the university and to develop a broader perspective of the subject so that they can have a smoother transition from introductory to advance level Physics.

So the basic purpose of this course is to equip the students

a) to understand the intricacies of mathematics
b) to understand the interdependence of Physics and Mathematics
c) to be able to translate Physics into Mathematics and vice versa
d) to understand and appreciate Physics better

e) to appear in the competitive exams for admission to M. Sc. and other programmes of the renowned institutes of the country
f) to remove the fear of Mathematics and Physics from the students, if at all

Pre-requisite of the Course:

Any student who has passed HSC examination with Physics as one of the subjects from any recognized Board. The student should have some basic knowledge of Physics.

Outcome of the Course:

The students will be more familiar with the basic ideas of geometry, functions, calculus and their applications in Physics. The students will be better equipped with the concepts of vectors, vector algebra, vector calculus and their applications in various fields of Physics. The students will also learn the fundamentals of heat and thermodynamics, learn about the state variables of thermodynamics, define entropy and study associated topics. With greater emphasize on problem solving, the students will be able to develop deeper insights which may help him/her in clearing competitive and entrance examinations.

Content of the Course:

The topics that will be covered during the course are as follows:

(i) Rest and motion: Kinematics, (ii) forces, (iii) Newton's laws of motion, (iv) work, energy and power, (v) rotational mechanics, (vi) gravitation, (vii) mechanical properties of matter, (viii) oscillations and waves, (ix) optics, (x) electrostatics, (xi) electric current, (xii) magneto-statics, (xiii) electromagnetic induction, (xiv) ac current and (xv) electronics.

Teaching methodology:

It will be as follows:

- Basic concepts of each topic will be taught and discussed.
- More emphasis will be given to tutorials, problem solving, including MCQs.
- All the expected topics will be covered at an elementary level and stress will be given on concepts.

Eligibility Criteria for the Course

Any undergraduate student studying in any semester in the college and who is aspirant for a career in Physics is eligible for registering this certificate course.

Course Venue: Department of Physics, Sir P. T. Sarvajanik College of Science, Surat

Course Fee: Rs. 1500/-

Total Number of Expected Participants: 30

Exam Pattern of the Course:

At the end of the course, an examination will be conducted. The question paper will include questions of the type of MCQ. The successful students will get certificate and it will add 2 credits to their account.

Instruction for Participants:

1. Participants have to fill in the registration form on Samarth Portal from their accounts.
2. It is mandatory for all the participants to bring their college identity (ID) cards.
3. Regular attendance and active participation is must for the participants.
4. All the participants will have to report at the college in time during the course.

Let us all get together and enjoy the fascinating world of physics!!

For further details, contact:

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