Freie Universität Bozen
Libera Università di Bolzano
Università Liedia de Bulsan

Syllabus
Course description

Course title	Fundamentals of Physics
Course code	40183
Scientific sector	FIS/03
Degree	Bachelor in Agricultural, Food and Mountain environmental Sciences
Semester	2nd
Year	I
Academic year	2024/25
Credits	6
Modular	No

Total lecturing hours	36
Total exercise hours	24
Attendance	Recommended
Prerequisites	Mathematics, Chemistry
Course page	https://www.unibz.it/

Specific educational objectives	The course aims to give to the attendants a scientific basis in static + kinematic mechanics, thermodynamics and electrodynamics, as well as practical methods and the ability to solve problems related to the same topics.
Lecturer	Michele Larcher michele.larcher@unibz.it Ivano Colombaro ivano.colombaro@unibz.it
Scientific sector of the lecturer	FIS/03 ICAR/01 MAT/07
Teaching language	English
Office hours	
List of topics covered	
Teaching format	Frontal lectures, exercises, labs, projects, etc.

Learning outcomes	Knowledge and understanding Knowledge and understanding of physical laws of: 1. Mechanics 2. Thermodynamics 3. Electrodynamics Applying knowledge and understanding 4. Ability to analyze and solve problems on mechanics, thermodynamics and electrodynamics.

Making judgements

5. Students are expected to develop the ability to judge the plausibility of results.

Communication skills

6. Further development of a quantitative, technical, and scientific terminology to express ideas and opinions about physical phenomena.

Ability to learn

7. Development of an analytic attitude enabling the student to divide a problem into sub-tasks which can be solved using previously-acquired knowledge.

Assessment

Formative assessment

Form	Details	ILOs assessed
In-class exercises	Continuously as part of course-accompanying exercises	1-7

Summative assessment

Form	Details	ILOs assessed
Written	Closed book exam	1-7

Assessment language

English

Evaluation criteria and criteria for awarding marks

The written exam consists in two parts: a first part (problem 1) with a series of qualitative questions based on the understanding of the covered topics, as well as a second part (problems 2-6) consisting of several numerical problems to be solved, which cover aspects of the various topics covered.

Judged will be:

- the correctness of the approach and the mathematical steps of the solution, the calculation of numerical results and the correct use of physical quantities and units;
- the correctness of the provided answers and of the presented, as well as the terminology used.

Every problem has the same maximum score of 5. The final score is the sum of the scores associated to each exercise. To pass the exam the final score must be greater or equal to 18. If the final score is greater than 30, a "with honors" is awarded.

	The student can have access to the exam with a pen, pencil, dictionary, and a non-programmable calculator. Constants are provided to the students along with the text of the exam. All students are also allowed to bring a single A4 sheet with handwritten notes to the exam. After specific request from the student, a voluntarily-based oral exam can be performed. It consists of two questions, covering both qualitative questions and numerical exercises. The mark can range from 0 to +3 and it is summed up to the score of the homework session and written exam.

Required readings	Blackboard / lecture slides
Supplementary readings	• *Physics for Scientists and Engineers with Modern Physics*, Douglas C. Giancoli, Pearson, 4th edition, 2008. • *Physics for Scientists and Engineers*, Paul A. Tippler, Macmillan, 6th edition, 2007.