Syllabus

Kursbeschreibung

Titel der Lehrveranstaltung	Physik II
Code der Lehrveranstaltung	42129
Zusätzlicher Titel der Lehrveranstaltung	
Wissenschaftlich-disziplinärer Bereich	FIS/01
Sprache	Englisch
Studiengang	Bachelor in Industrie- und Maschineningenieurwesen
Andere Studiengänge (gem. Lehrveranstaltung)	
Dozenten/Dozentinnen	Prof. Franco Cacialli, Franco.Cacialli@unibz.it https://www.unibz.it/en/faculties/engineering/academic-staff/person/47601
Wissensch. Mitarbeiter/Mitarbeiterin	
Semester	Erstes Semester
Studienjahr/e	2
KP	6
Vorlesungsstunden	36
Laboratoriumsstunden	24
Stunden für individuelles Studium	90
Vorgesehene Sprechzeiten	18
Inhaltsangabe	The course covers fundamental scientific principles of classical physics. At the end of the course the students should understand the basic laws of electrostatics, electrodynamics, magnetism, and optics and apply them to relevant physical problems- Electrostatics, Charge, Coulomb force, Electric field, Electric potential. - Electric currents, AC/DC currents, Ohm's laws, Kirchhoff's laws - Capacitors, Semiconductor devices, AC/DC circuits

	- Magnetostatics, Lorentz force, Electromagnetism, Induction - Electromagnetic waves, Optics.
Themen der Lehrveranstaltung	- Electrostatics, Electric Force, Electric Field, Electric Potential - Electric currents, Ohm's laws, Kirchhoff's laws - Magnetostatics, Electromagnetic induction - Maxwell's laws and electromagnetic waves - Alternating currents - AC circuits - Optics
Stichwörter	Electric charge Gauss theorem Electrostatics Electrodynamics electromagnetism magnetism optics
Empfohlene Voraussetzungen	Physics I, Mathematical Analysis I, Geometry-Linear Algebra
Propädeutische Lehrveranstaltungen	Physics I Mathematical Analysis I Geometry.
Unterrichtsform	The lectures are divided into theoretical classroom lectures and numerical or symbolic exercises/laboratory sessions.
Anwesenheitspflicht	Recommended.
Spezifische Bildungsziele und erwartete Lernergebnisse	Intended Learning Outcomes (ILO): Knowledge and understanding: 1. Through the understanding and application of physical laws, students should be able to demonstrate a basic understanding of: • Electrostatics • Electrodynamics • Magnetism • Optics Applying knowledge and understanding: 2. Students are expected to develop the ability to explain physical phenomena, systems and components based on the concepts learned in the course. Making judgments:

	3. Students are expected to develop the ability to give explanations of physical phenomena, systems or devices basing their explanation on the concepts learned in the course, and make predictions on the evolution of physical systems in which charges, currents and/or electromagnetic waves are present. Communication skills: 4. Students can communicate information, ideas, problems and solutions to both specialist and non-specialist audiences. 5. Students can communicate their conclusions, and the knowledge and rationale under pinning these, to specialist and non-specialist audiences clearly and unambiguously. 6. Students can communicate with their peers, the larger scholarly community and with society in general about their areas of expertise. Learning skills: 7. Development of an analytic attitude leading the student to decompose a problem in sub-tasks which can be solved with the knowledge already acquired, and the ability to acquire knowledge beyond this course.
Spezifisches Bildungsziel und erwartete Lernergebnisse (zusätzliche Informationen)	
Art der Prüfung	- Formative assessment: In-class exercises: Continuously as part of the course problem classes; ILOs assessed: 1-7. - Summative assessment: Written: closed-book exam; ILOs assessed: 1-5. Oral (at the discretion of the examination committee): Questions on theory, problems solution: ILOs assessed: 1-5.
Bewertungskriterien	The exam includes a written and an oral component. The written exam (2.5 hours) consists of two parts: a first part (problem 1) with a series of (mostly) qualitative or semi-quantitative questions based on the understanding of the topics covered in the lectures, as well as a second part (problems 2-5) consisting of several numerical or symbolic problems to be solved related to the various topics covered in the lectures. Grading will be based upon:

	- 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. To pass the exam the final grade must be greater or equal to 18. If the final score is greater than 30, a "cum laude" grade is awarded. The student can have access to the exam with pen, pencil and a portable calculator. A short list of constants may be provided to the students along with the text of the exam if necessary. Students should also be able provide proof of identity (e.g. Campus card, ID card, passport) before the start of the exam. Depending on the outcome of the written exam students may be invited, at the discretion of the examiner(s), to an oral exam that may include questions on the topics covered in the lectures (including those of the written part of the exam) and may lead to an increase or a reduction of the grade of the written component.
Pflichtliteratur	Lecture notes (Blackboard & slides), selected readings from Physics for Scientists and Engineers with Modern Physics, Douglas C. Giancoli, Pearson, 4th edition, 2008. Also available in electronic format (pdf) from UNIBZ library.
Weiterführende Literatur	Physics for Scientists and Engineers with Modern Physics, Douglas C. Giancoli, Pearson, 4th edition, 2008. Other languages: Physik, Douglas C. Giancoli, Pearson Studium, Pearson Deutschland GmbH, 3rd edition, 2010 (based on 3rd edition "Physics for scientists and engineers with modern physics", 2000). Fisica. Con fisica moderna, Douglas C. Giancoli, terza edizione, 2017 (based on 7th edition "Physics. Principles with applications", 2014).
Weitere Informationen	
Ziele für nachhaltige Entwicklung (SDGs)	Maßnahmen zum Klimaschutz, Bezahlbare und saubere Energie