Syllabus

Kursbeschreibung

Titel der Lehrveranstaltung	Physik II
Code der Lehrveranstaltung	42439
Zusätzlicher Titel der Lehrveranstaltung	
Wissenschaftlich-disziplinärer Bereich	PHYS-01/A
Sprache	Englisch
Studiengang	Bachelor in Elektro- und Informationstechnik
Andere Studiengänge (gem. Lehrveranstaltung)	
Dozenten/Dozentinnen	dr. Manuela Ciocca, Manuela.Ciocca@unibz.it https://www.unibz.it/en/faculties/engineering/academic-staff/person/44873 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	7
Vorlesungsstunden	46
Laboratoriumsstunden	46
Stunden für individuelles Studium	83
Vorgesehene Sprechzeiten	21
Inhaltsangabe	· Electrostatics I: electric charge; coulomb law; electric field; electric potential. · Electrostatics II: Electric energy storage: capacitance;

	dielectrics · Electric currents: Ohm's law; resistance; Joule's effect; power; direct/alternating current; electric circuits; Kirchhoff's laws. · Magnetostatics: magnetostatic fields; magnetic induction; Lorentz's forces; Ampère's law; magnetic dipoles; magnetic energy. · Electromagnetic induction and Faraday's law. · Electromagnetic waves: Maxwell's equations; light propagation; polarization of electromagnetic waves. · Optics: reflection, refraction, interference, diffraction. Thin lenses.
Themen der Lehrveranstaltung	· Electrostatics I: electric charge; coulomb law; electric field; electric potential. · Electrostatics II: Electric energy storage: capacitance; dielectrics · Electric currents: Ohm's law; resistance; Joule's effect; power; direct/alternating current; electric circuits; Kirchhoff's laws. · Magnetostatics: magnetostatic fields; magnetic induction; Lorentz's forces; Ampère's law; magnetic dipoles; magnetic energy. · Electromagnetic induction and Faraday's law. · Electromagnetic waves: Maxwell's equations; light propagation; polarization of electromagnetic waves. · Optics: reflection, refraction, interference, diffraction. Thin lenses.
Stichwörter	Electrostatics Electrodynamics Maxwell Equations Waves
Empfohlene Voraussetzungen	Physics I, Mathematical Analysis I, and Geometry
Propädeutische Lehrveranstaltungen	
Unterrichtsform	Frontal lectures, exercises, labs
Anwesenheitspflicht	Strongly Recommended
Spezifische Bildungsziele und erwartete Lernergebnisse	1. Knowledge and understanding Knowledge and basic understanding of physical laws: 1. Fundamentals of atomic structures

	2. Electrostatics 3. Electrodynamics 4. Magnetism 5. Electromagnetic waves and optics 6. Fundamentals of quantum mechanics 2. Applying knowledge and understanding Students are expected to develop the ability to explain physical phenomena, systems and components based on the concepts learned in the course 3. Making judgements 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. 4. Communication skills Maturing of technical-scientific terminology. 5. Ability to learn 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)	The student should understand the basic principles of electrostatics, electrodynamics, magnetism, optics, and elementary quantum mechanics as well as be able to apply them.
Art der Prüfung	Formative assessment Form: In-class exercises Details: Continuously as part of the course problem classes ILOs assessed: 1-5 Summative assessment Form: Written - Closed-book exam/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 is provided to the students along with the text of the exam. 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 programme 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. Students should also be able provide proof of identity (e.g. Campus card, ID card, passport) before the start of the exam
Pflichtliteratur	Blackboard / Lecture notes / 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: 1. 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)	Bezahlbare und saubere Energie, Leben an Land, Leben unter Wasser, Industrie, Innovation und Infrastruktur