

Study programmes: BACHELOR STUDIES – Astronomy and Astrophysics			
Course name: Electromagnetism			
Lecturers: Milorad Kuraica and other lecturers			
Status: Compulsory			
ECTS: 10			
Attendance prerequisites: Molecular physics and thermodynamics, Mathematics 1			
Course aims: Adopting the basic concepts of electromagnetism, necessary for describing all electromagnetic phenomena. Understanding the basic laws of electromagnetism - the Coulomb's law of electrostatics, Amper's law of magnetostatics, the laws of stationary and nonstationary currents, and the law of electromagnetic induction within electrodynamics. Understanding the formation of basic equations of electrostatic and magnetostatic fields, as well as the Maxwell equations of electrodynamics.			
Course outcome: Students are trained to independently solve the basic problems of electromagnetism and acquire the necessary basics for understanding the more complex physical phenomena and the laws of electromagnetism in vacuum and substances.			
Course content: 1. Electrostatic field in a vacuum (1.1 Coulomb's law, field functions, 1.2 field equations, 1.3 field energy, electrostatic dipole). 2. Electrostatic field in dielectrics (2.1 polarization, bonded charges, 2.2 field equations, energy). 3. Electrostatic field of conductors, capacitors. 4. Stationary electrical current. 5. Magnetostatic field in vacuum (5.1 Amper's force, field strength, Lorentz's force, 5.2 field equations, vector potential, magnetostatic dipole). 6. Magnetostatic fields of diamagnetics and paramagnetics (magnetization of magnetics, magnetization currents, field equations). 7. Magnetostatic field of ferromagnetics (macroscopic properties, permanent magnet), 8. Quasistationary electromagnetic field (8.1 phenomena of electromagnetic induction, inductance, self-induction and mutual induction, 8.2 electromagnetic field energy, 8.3 oscillatory circuits). 9. Non-stationary electromagnetic field, Maxwell's equations. Computational exercises are following the lectures.			
Literature: 1. N. N. Nedeljković, Uvod u Elektomagnetizam: I Elektostatika, Studentski trg, Beograd (1995) 2. N.N.Nedeljković i Lj.D.Nedeljković, Uvod U Elektromagnetizam: II i III: Magnetostatika i Elektrodinamika, skripta (PDF, word) 3. J. E. Tamm, Fundamentals of the Theory of Electricity, Mir Publishers, Moscow 4. Purcell E.M., Morin D.J.-Electricity and Magnetism-Cambridge University Press (2013) 5. I.E.Irodov, Zadaci iz opšte fizike, Zavod za udžbenike, Podgorica 2000			
Number of hours: 10	Lectures: 4	Tutorials: 3	Laboratory: 3
Research: -			
Teaching and learning methods: Lectures, computational exercises, consultations, demonstrations			
Assessment (maximal 100 points)			
Course assignments	points	Final exam	points
Lectures	-	Written exam	30
Exercises / Tutorials	10	Oral exam	40
Colloquia	-	Written-oral exam	-
Essay / Project	20		