Description of an Individual Course Unit

Study program	Електротехника и рачунарство
Module	модул Микроталасна техника
Type and level of studies	докторске академске студије
Course title	Finite element method in electromagnetics
Professor (for lectures)	Милан Илић
Professor/assistant (for practice)	Милан Илић
Professor/assistant (for LAB)	

Number of ECTS	9	**Type of the course (mandatory/elective)**	elective

Prerequisit	None.
Objective of the course	Familiarization with basic concepts of electromagnetic field analysis using the finite element method. Introduction to research.
Learning outcomes of the course	Gain knowledge and understanding of advanced theoretical backgrounds of numerical electromagnetics. Acquire capability to write modern software for computation of electromagnetic fields using the finite element method. Acquire proficiency in efficient and competent modeling and simulation of complex electromagnetic structures using the finite

Course Contents

Theoretical contents	Differential equations of electromagnetic fields and boundary conditions. Variational method and weighted residual method. Scalar and vector finite elements. Spatial discretization. Analysis of closed (waveguides and resonant cavities) and open (antennas) structures. Absorbing boundary conditions and artificial absorbers. Hybridization of the finite element method with other methods.
Practical part (practices, LAB, study research work)	Student projects. Analysis and presentation of published papers.

Literature

1	J.Jin, The Finite Element Method in Electromagnetics, 2nd Edition, Wiley-IEEE Press, 2002.
2	P.P. Silvester, R.L. Ferrari, Finite Elements for Electrical Engineers, 3rd Edition, Cambridge University
3	J. M. Jin and D. J. Riley, Finite Element Analysis of Antennas and Arrays, Wiley-IEEE Press, 2009.
4	J.L. Volakis, A.Chatterjee, and L.C. Kempel, Finite Element Method for Electromagnetics: Antennas,
5	

Number of ECTS

Lectures	Practices	LAB	Study research work	Other activities
90				

Teaching Methods	Lectures.

Grading methods (max. number of points is 100)

Pre-exam assesments	points	Final examination	points
activity during lectures		written exam	
practical assesments		oral exam	30
mid-term exams			
project	70		