

Faculty of Electrical Engineering / ELECTRONICS, TELECOMMUNICATIONS AND COMPUTERS / SATELLITE COMMUNICATIONS

Course:	SATELLITE COMMUNICATIONS			
Course ID	Course status	Semester	ECTS credits	Lessons (Lessons+Exercises+Laboratory)
6383	Mandatory	2	6	3+1+0
Programs	ELECTRONICS, TELECOMMUNICATIONS AND COMPUTERS			
Prerequisites	No prerequisites required.			
Aims	Students are introduced with the basic elements of satellite communication systems. Characteristics of a satellite link, modulation methods, multiple access techniques, error control mechanisms, VSAT, LEO, and non-geostationary systems are studied. Students are introduced with satellite radio and TV diffusion, and with the features of mobile satellite radio systems.			
Learning outcomes	After passing exam student will be able to: 1. Compare the different types of satellite orbits. 2. Specify the basic parameters of the satellite orbits. 3. Describe the specifics of the satellite radio link. 4. Differ basic types of satellite transponders. 5. Understand the need for the integration of terrestrial and satellite radio networks.			
Lecturer / Teaching assistant	Prof. dr Zoran Veljović			
Methodology	Lectures, exercises, and consultations.			
Plan and program of work				
Preparing week	Preparation and registration of the semester			
I week lectures	Introduction. Satellites.			
I week exercises				
II week lectures	The orbits. The launch of the satellite.			
II week exercises				
III week lectures	Satellite radio link. The effects of propagation and impact on satellite link.			
III week exercises				
IV week lectures	Modulation techniques.			
IV week exercises				
V week lectures	Channel coding . Multiple access techniques.			
V week exercises				
VI week lectures	I colloquium.			
VI week exercises				
VII week lectures	Satellite transponders.			
VII week exercises				
VIII week lectures	VSAT systems.			
VIII week exercises				
IX week lectures	LEO and non-geostationary satellite systems.			
IX week exercises				
X week lectures	Satellite radio and TV broadcasting.			
X week exercises				
XI week lectures	Mobile satellite systems.			
XI week exercises				
XII week lectures	II colloquium.			
XII week exercises				
XIII week lectures	Personal satellite communications networks.			
XIII week exercises				

XIV week lectures		Integration of terrestrial and satellite networks.				
XIV week exercises						
XV week lectures		The use of satellites for navigation.				
XV week exercises						
Student workload		Per week: Working hours: 5 credits x 40/30 = 6h 40' Working hours: 3 hours for teaching, 1 hour for exercises, 2h 40' hours for individual work, including consultations				
Per week			Per semester			
6 credits x 40/30=8 hours and 0 minuts 3 sat(a) theoretical classes 0 sat(a) practical classes 1 excercises 4 hour(s) i 0 minuts of independent work, including consultations			Classes and final exam: 8 hour(s) i 0 minuts x 16 =128 hour(s) i 0 minuts Necessary preparation before the beginning of the semester (administration, registration, certification): 8 hour(s) i 0 minuts x 2 =16 hour(s) i 0 minuts Total workload for the subject: 6 x 30=180 hour(s) Additional work for exam preparation in the preparing exam period, including taking the remedial exam from 0 to 30 hours (remaining time from the first two items to the total load for the item) 36 hour(s) i 0 minuts Workload structure: 128 hour(s) i 0 minuts (cources), 16 hour(s) i 0 minuts (preparation), 36 hour(s) i 0 minuts (additional work)			
Student obligations			Lessons attendance is mandatory for students, as well as doing control tests, and both colloquiums.			
Consultations						
Literature			[1] T.Pratt, C.W.Bostian, J.E.Allnutt, Satellite Communications, 2nd Edition, Wiley, January 2003. [2] R.E.Sheriff and Y.F.Ho, Mobile Satellite Communication Networks, Wiley, 2001. [3] Z. Sun, Satellite Networking, Wiley, 2005.			
Examination methods			Activitie during lectures 10 points, Each colloquiums 20 points (40 points in total), Final exam 50 points, Student gets the passing grade by collecting 50 points at least.			
Special remarks						
Comment						
Grade:	F	E	D	C	B	A
Number of points	less than 50 points	greater than or equal to 50 points and less than 60 points	greater than or equal to 60 points and less than 70 points	greater than or equal to 70 points and less than 80 points	greater than or equal to 80 points and less than 90 points	greater than or equal to 90 points