

DESCRIPTION OF A STUDY COURSE – SYLLABUS

Title of a course	Mobile Communication				
Head of course	Damir Malnar, Lecturer				
Study programme	Professional undergraduate study Telematics				
Status of a course	Obligatory				
Year of study	2.	Semester	III	ECTS credits	4
Teaching plan (L + E + S+ Pr)	2+1+0+0				
Goals of a course					
Adopt the basic concepts needed to understand wireless and mobile communication, as well as the basic knowledge to select suitable antennas and an initial budget for a simpler wireless communication system.					
Conditions for enrolling course					
No conditions					
Learning outcomes on a level of a study programme which includes course					
<p>Outcome 1: Explain the basic mathematical, physical and technical principles of operation of electrotechnical, electronic and computer elements and circuits, measuring devices and electrical machines used in telematics systems.</p> <p>Outcome 2: Link mathematical methods, engineering principles and computer simulations from the signal and system theory with applications in telematics systems.</p> <p>Outcome 7: Describe the development and implementation of communications systems, switching systems, and local and broadband networks.</p> <p>Outcome 8: Design and implement communications and computer networks, as well as network services.</p> <p>Outcome 11: Design and develop solutions for components, circuits and software for application in signal processing and telecommunications, with the preparation of supporting project documentation.</p> <p>Outcome 15: Participate in teamwork and independently present professional content in written and spoken form in Croatian and English.</p>					
Expected learning outcomes on a level of a course					
<ol style="list-style-type: none"> 1. Explain the basic concepts of wireless communication 2. Explain and calculate the basic parameters of a simpler wireless communication system 3. Explain basic antenna parameters and a radiation diagram 4. Explain and apply the basics of modulation techniques in mobile communications 5. Explain the basic elements and development of mobile communication systems 					
Content of a course					
Introduction and development. Telecommunication systems: from digital radio to mobile multimedia: technical basis (strategy of approach, spectrum, standardization etc...). GSM, GPRS, HSCSD -UMTS / 3G - Wireless LANs, Wi-Fi. Satellite systems. Broadcast system. Support to mobile communication. Roaming-Mobil IP Network layer. Transport layer-Mobile portals -IMS I –Mtld. Market trends-assessment- assessment of market capacity. Regulations and licensing in the view of international agreement such as spectrum allocation, global circulation etc...; -activity and application; -parts of construction and finished products; -Charging & Billing; -security aspects.					
Teaching modes	<input checked="" type="checkbox"/> lectures <input type="checkbox"/> auditory exercises <input checked="" type="checkbox"/> seminars and workshops <input type="checkbox"/> distance learning <input type="checkbox"/> field classes		<input checked="" type="checkbox"/> individual assignments <input type="checkbox"/> multimedia and network <input type="checkbox"/> laboratory <input type="checkbox"/> supervisor's work <input type="checkbox"/> other _____		
Comments					
Students' obligations					

Grading, evaluation and monitoring of students' work continuously during lectures and exams

Grading is based upon evaluation of course's learning outcomes' adoption. Grading is performed continuously during lectures and/or during exam, in compliance with the provisions of Regulation on the assessment of students.

Continuous check-up:

Outcomes	Written test	Presentation	Threshold	Max
Outcome 1	20 %		10 %	20%
Outcome 2	20 %		10 %	20%
Outcome 3	20 %		10 %	20%
Outcome 4	20 %		10 %	20%
Outcome 5		20 %	10 %	20%
Percentage of ECTS	3	1		
Total	80%	20%	50%	100 %

A student has passed the exam if he has acquired a percentage of credits for each learning outcome higher or equal to defined threshold.

Exam term:

Outcomes	Written exam	Oral exam	Threshold	Max
Outcome 1	15 %	5 %	10 %	20%
Outcome 2	15 %	5 %	10 %	20%
Outcome 3	15 %	5 %	10 %	20%
Outcome 4	15 %	5 %	10 %	20%
Outcome 5	15 %	5 %	10 %	20%
Percentage of ECTS	3	1		
Total	75%	25%	50%	100 %

A student has passed the exam if he has acquired a percentage of credits for each learning outcome higher or equal to defined threshold.

Grading:

A student has passed the exam if he has acquired at least 50% of anticipated credits of a specific learning outcome.

If a student has passed learning outcomes of all courses, the accomplished credits (percentages) of all passed learning outcomes are being added, while the final grade is defined upon following table:

Range of credits (percentages)	Numerical grade	ECTS grade
90,00 – 100,00	Excellent (5)	A
75,00 – 89,99	Very good (4)	B
60,00 – 74,99	Good (3)	C
50,00 – 59,99	Sufficient (2)	D
0,00 – 49,99	Insufficient (1)	F

Obligatory literature

1. Lecture notes

Additional literature

1. Bilić N.: Mobilne radio komunikacije, skripta, ETF Sarajevo, 1999
2. Webb W.: Understanding Cellular Radio, Artech House, 1998
3. Saunders S.R., Aragon-Zavala A.: Antennas and Propagation for Wireless Communication Systems, 2nd edition, John Wiley & Sons, Ltd, 2007
4. Richards J.A.: Radio Wave Propagation – An Introduction to the Non-Specialist, Springer, 2008

