



UNIVERSITY "UKSHIN HOTI" PRIZREN
FACULTY OF COMPUTER SCIENCE

PROGRAM: Information Technology and Telecommunication - Bosnian

Curriculum - – SYLLABUS							
<i>Level of studies</i>		BACHELOR	<i>Program</i>	ICT BOS	<i>Academic year</i>	2018/2019	
SUBJECT		MOBILE TELECOMMUNICATION CONCEPTS					
<i>Year</i>	III	<i>Status Of the subject</i>	Obligatory	<i>Code</i>		<i>ECTS credits</i>	6
<i>Semester</i>	VI						
<i>Teaching weeks</i>		15		<i>Hours teaching</i>		<i>Lectures</i>	<i>Exercises</i>
						2	2
<i>Teaching Methodology</i>		Lectures, exercises, consultations, tests, case studies					
<i>Consultation</i>		One hour before and one hour after the lecture					
<i>The teacher</i>		Prof. Asoc. Emruš Azizović		<i>E-mail:</i>	azizovic.emrus@gmail.com		
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Study goal and table of content	Benefits of student
<p>The main objective of the course is to provide comprehensive and up-to-date knowledge in the field of mobile communications. The emphasis is on the structure and function of the complete system. A detailed study of subsystems of which the total system consists.</p> <p>Students acquire theoretical and practical knowledge from Mobile Communications - technological and radio basics, systems, networks and services, necessary for fast and effective inclusion in the working and technological processes of subjects in the Sector (tele) communication.</p> <p>Introduction to students with basic concepts related to mobile communications.</p>	<ul style="list-style-type: none"> - Technical knowledge about different aspects of the system that will help in understanding the functioning of the system. - This will further assist in providing the required expertise required by the industry. - Understand and use modern communication tools. - Advanced use of communication tools and software. - Practical application of modern communication tools.

Methodology for the implementation of educational Temas:		
Lectures consist of classical teaching methods using projector and interaction with students, a student can take a presentation after each lecture from a Web site: www.aemdl.com/ICT/Mobilne komunikacije		
Conditions for realization of educational Temas:		
Projector, Computer Laboratory.		
Ways of assessing of the student (in %) :	Evaluation in%	Final grade

Presence on lectures	0-5%	percent 91-100% 81-90% 71-80% 61-70% 51-60% 0-50%	grade 10 (ten) 9 (nine) 8 (eight) 7 (seven) 6 (six) 5 (five)
Activity	0-5%		
Term paper	0-10 %		
Test I	0-10 %		
Test II	0-10%		
Final exam	0-50%		
Participation in exercises	0-5%		
Group work on tasks and case studies	0-5%		
Total	100.00 %		

Obligations of student:	
Lectures	Exercises
<ul style="list-style-type: none"> - Regularity in lectures - Active participation in discussions during lectures - Seminary work - Participation in the test - Final exam 	<ul style="list-style-type: none"> - Active participation in exercises - Group work in case studies and tasks - Participation in case studies discussions - Active participation in exercises - Group work in case studies and tasks - Participation in case studies discussions

Activities	Hour/ weeks	Days/Weeks	
Lectures	2	15	30
Laboratory exercises	1	15	15
Contacts with teachers / consultations	1	15	15
Practical work	2	05	10
Projects, presentations, etc.	5	2	10
Own study time	2	15	30
Preparation for final exam	2	15	30
Time spent in the assessment (tests, final exam, etc.)	1	05	05
Colloquium and seminar	2	10	20

Notice: 1 ECTS credits= 30 hour commitment, e.g. if the subject has 6 ECTS credits student must have 180 hours during the semester commitment.

Total load:

180

Week	Lectures	Hour	Exercises	
	Tema		Tema	
1	Tema: Uvodno predavanje: Plan i program. Uvod	2	Tema: Evolucija pokretnih komunikacijskih mreža	2
	Literatura: N. Bilić: Mobilne radio komunikacije, skripta, ETF Sarajevo, 1999		Literatura: Razvoj mobilnih komunikacija - od GSM do LTE, Gospić Nataša, Tomić Igor, Popović Duško	
2	Tema: Osnove o mobilnih komunikacija (MK)	2	Tema: Frekvencijski opseg	2
	Literatura: N. Bilić: Mobilne radio komunikacije, skripta, ETF Sarajevo, 1999		Literatura: Razvoj mobilnih komunikacija - od GSM do LTE, Gospić Nataša, Tomić Igor, Popović Duško	
3	Tema: Tehnološka osnova celularnih MK-ja. Ponovna upotreba frekvencija. Geografska struktura celularnog sistema. Čelija u celularnom mobilnom sistemu. Faktori mobilnosti. Povećanje kapaciteta.	2	Tema: FDMA, TDMA i CDMA	2
	Literatura: N. Bilić: Mobilne radio komunikacije, skripta, ETF Sarajevo, 1999		Literatura: Razvoj mobilnih komunikacija - od GSM do LTE, Gospić Nataša, Tomić Igor, Popović Duško	
4	Tema: Radio osnova MK-ja. Propagacija radio valova. Problemi u radio prenosu – slabljenje, feding, vremenska disperzija, vremensko poravnavanje.	2	Tema: RSS – Radio podsistem	2
	Literatura: N. Bilić: Mobilne radio komunikacije, skripta, ETF Sarajevo, 1999		Literatura: Razvoj mobilnih komunikacija - od GSM do LTE, Gospić Nataša, Tomić Igor, Popović Duško	
5	Tema: Procesiranje signala u MK-jama. Kodiranje govora. Kanalno kodiranje. Interliving.	2	Tema: NSS – Komutacioni podsistem	2

	Multiplexiranje i modulacije u MK-jama. Radio kanali.			
	Literatura: N. Bilić: Mobilne radio komunikacije, skripta, ETF Sarajevo, 1999		Literatura: Razvoj mobilnih komunikacija - od GSM do LTE, Gospić Nataša, Tomić Igor, Popović Duško	
6	Tema: Sistemi mobilnih komunikacija. Struktura, funkcionalnosti,	2	Tema: OMS – Operacioni podsistem za upravljanje.	2
	Literatura: B. Tadić: Mobilne komunikacije, ETF Beograd, 2001. www.aemdl.com		Literatura: Razvoj mobilnih komunikacija - od GSM do LTE, Gospić Nataša, Tomić Igor, Popović Duško	
7	Tema: Karakteristike i dr. terestrijalnih sistema 1G, 2G, 2,5G i 3G. 4G. 5G	2	Tema: Antenske tehnike	2
	Literatura: B. Tadić: Mobilne komunikacije, ETF Beograd, 2001. www.aemdl.com		Literatura: Razvoj mobilnih komunikacija - od GSM do LTE, Gospić Nataša, Tomić Igor, Popović Duško	
8	Tema: Arhitektura, karakteristike i namjena ostalih celularnih sistema tipa	2	Tema: MISO, SISO i MIMO	2
	Literatura: B. Tadić: Mobilne komunikacije, ETF Beograd, 2001. www.aemdl.com		Literatura: Razvoj mobilnih komunikacija - od GSM do LTE, Gospić Nataša, Tomić Igor, Popović Duško	
9	Tema: Satelitski sistemi MK-ja. Orbitalni aspekt. Telekomunikacijski aspekt. Sistemi na GEO orbiti. Sistemi na LEO orbiti. Usluge satelitskih sistema.	2	Tema: Primena MIMO tehnike	2
	Literatura: B. Tadić: Mobilne komunikacije, ETF Beograd, 2001. www.aemdl.com		Literatura: Razvoj mobilnih komunikacija - od GSM do LTE, Gospić Nataša, Tomić Igor, Popović Duško	
10	Tema: Mreže i usluge mobilnih komunikacija. Organizacija mreže. Planiranje, uspostavljanje, funkcioniranje i održavanje mreže.	2	Tema: Standardizacija LTE	2
	Literatura: B. Tadić: Mobilne komunikacije, ETF Beograd, 2001. www.aemdl.com		Literatura: Razvoj mobilnih komunikacija - od GSM do LTE, Gospić Nataša, Tomić Igor, Popović Duško	
11	Tema: Upravljanje mrežom. Usluge mobilnih mreža i Billing sistemi.	2	Tema: OFDM	2
	Literatura: B. Tadić: Mobilne komunikacije, ETF Beograd, 2001. www.aemdl.com		Literatura: Razvoj mobilnih komunikacija - od GSM do LTE, Gospić Nataša, Tomić Igor, Popović Duško	
12	Tema: Mreže i usluge MK-ja u BiH. Primjeri GSM, TETRA i DECT mreža.	2	Tema: Prednosti i mane OFDM	2
	Literatura: B. Tadić: Mobilne komunikacije, ETF Beograd, 2001. www.aemdl.com		Literatura: Razvoj mobilnih komunikacija - od GSM do LTE, Gospić Nataša, Tomić Igor, Popović Duško	
13	Tema: : Povezivanje terestrijalnih i satelitskih MK-ja. Opći aspekti povezivanja. Povezivanje zemaljskih 2G i 2,5G sistema sa satelitskim sistemima. Sprega satelitskih i zemaljskih 3G sistema.	2	Tema: OFDMA	2
	Literatura: B. Tadić: Mobilne komunikacije, ETF Beograd, 2001. www.aemdl.com		Literatura: Razvoj mobilnih komunikacija - od GSM do LTE, Gospić Nataša, Tomić Igor, Popović Duško	
14	Tema: Trendovi u mobilnim komunikacijama. Trendovi u sistemima i mrežama (terestrijalnim i satelitskim te njihovo povezivanje).	2	Tema: E-UTRAN	2
	Literatura: B. Tadić: Mobilne komunikacije, ETF Beograd, 2001. www.aemdl.com		Literatura: Razvoj mobilnih komunikacija - od GSM do LTE, Gospić Nataša, Tomić Igor, Popović Duško	
15	Tema: Trendovi u uslugama (novi tipovi usluga, uslužne platforme, novi biznis modeli i dr.).	2	Tema: Radio Kanali	2
	Literatura: B. Tadić: Mobilne komunikacije, ETF Beograd, 2001		Literatura: Razvoj mobilnih komunikacija - od GSM do LTE, Gospić Nataša, Tomić Igor, Popović Duško	

LITERATURE:

Basic Literature:

1. Bilješke i slajdovi s predavanja (moći će se preuzeti na www.aemdl.com);
2. N. Bilić: Mobilne radio komunikacije, skripta, ETF Sarajevo, 1999
3. B. Tadić: Mobilne komunikacije, ETF Beograd, 2001

Additional Literature :

4. T. Rappaport: « Wireless communications », N. York, 1996
5. W. Lee: "Mobile Cellular Telecommunications Systems", Mc Graw – Hill, N. York, 1989

NOTICE:

For each subject, students will be equipped with the necessary materials in Bosnian. At the end of each lesson, certain groups of students will deal with the assignment or case studies on the subject of the lecture. The results obtained from this task should be presented and discussed by the student group at the time of the exercise.

Notice for the student:

First of all, the student must be aware of and respect the school's institution and rules; Must observe the schedule of lectures, exercises and term papers, be attentive to the lesson; The possession and presentation of the test and examination index is obligatory; During the preparation of midterm papers, the student must adhere to the instructions given by the teacher for conducting the research and technical work; Tests and exams are assessed individually for each student. Therefore, students should focus only on personal knowledge. The eventual violation of these ethical principles (rules) is punished according to the norms provided by law.