

SYLLABUS₁

1. Information about the program

1.1 Higher education institution	UNIVERSITATEA POLITEHNICA TIMISOARA
1.2 Faculty ₂ / Departments ₃	ELECTRONICĂ ȘI TELECOMUNICAȚII / COMUNICAȚII
1.3 Chair	—
1.4 Field of study (name/code ₄)	INGINERIE ELECTRONICĂ SI TELECOMUNICATII/100
1.5 Study cycle	LICENȚĂ
1.6 Study program (name/code)/Qualification	ELECTRONICĂ APLICATĂ/20/Tehnologii și sisteme de telecomunicații

2. Information about the discipline

2.1 Name of discipline	WIRELESS COMMUNICATIONS						
2.2 Coordinator (holder) of course activities	Assoc.Prof.PhD.Eng. MARZA EUGEN						
2.3 Coordinator (holder) of applied activities ₅	Teach.Assist.PhD.Eng. SIMU CALIN						
2.4 Year of study ₆	4	2.5 Semester	2	2.6 Type of evaluation	E	2.7 Type of discipline	DS

3. Total estimated time (hours / semester of didactic activities)

3.1 No. of hrs. / week	6 , of which:	3.2 course	3	3.3 seminar/laboratory/ project/training	3
3.4 Total no. of hrs. in the education curricula	42 , of which:	3.5 course	21	3.6 applied activities	21
3.7 Distribution of time for individual activities related to the discipline					hrs.
Study using a manual, course materials, bibliography and lecture notes					14
Additional documentation in the library, on specialized electronic platforms and on the field					3
Preparation for seminars / laboratories, homeworks, assignments, portfolios, and essays					7
Tutoring					3
Examinations					5
Other activities					
Total hrs. of individual activities					32
3.8 Total hrs. / semester ₇	74				
3.9 No. of credits	3				

4. Prerequisites (where applicable)

¹ The form corresponds to the Syllabus promoted by OMECTS 5703/18.12.2011 (Annex3).

² The name of the faculty which manages the educational curriculum to which the discipline belongs.

³ The name of the department entrusted with the discipline, and to which the course coordinator / holder belongs.

⁴ Fill in the code provided in GD no. 493/17.07.2013.

⁵ The applied activities refer to: seminar (S) / laboratory (L) / project (P) / practice/training (Pr).

⁶ The year of study to which the discipline is provided in the curriculum.

⁷ It is obtained by summing up the number of hrs. from 3.4 and 3.7.

4.1 Curriculum	<ul style="list-style-type: none"> Radio communications
4.2 Competencies	<ul style="list-style-type: none"> Knowledge of radio wave propagation, antenna and radio receiver principles

5. Conditions (where applicable)

5.1 of the course	<ul style="list-style-type: none"> Course hall with video projector
5.2 to conduct practical activities	<ul style="list-style-type: none"> Laboratory with radio equipment and monitoring apparatus

6. Specific competencies acquired

Professional competencies [§]	<ul style="list-style-type: none"> Selection, installation, configuration and operation of fixed and mobile telecommunications equipment, and equipping a site with the usual telecommunications networks.
Transversal competencies	<ul style="list-style-type: none"> Adapting to new technologies, professional and personal development through continuing education using printed documentation sources, specialized software and electronic resources in English language

7. Objectives of the discipline (based on the grid of specific competencies acquired)

7.1 General objective of the discipline	<ul style="list-style-type: none"> Defining principles underlying the main mobile telecommunications technologies, usage of radio channels for access networks
7.2 Specific objectives	<ul style="list-style-type: none"> Application and interpretation of fundamental protocols and technologies for mobile communication systems

8. Content

8.1 Course	No. of hours	Teaching methods
Basic concepts in Wireless communications, multiple access protocols	3	Lectures
Cellular systems, operating mode, sectorization and frequency management	3	Teaching material in the form of ppt presentations
2G networks, GSM architecture, radio channels, signaling and access	3	Problem solving
Data services based on packet switching, GPRS/EDGE architecture	3	Interactive discussions
CDMA basics, PN and Orthogonal codes, DS-CDMA and Rake receivers, soft handover	2	question and answer sessions
3G networks, UMTS architecture, radio channels, protocols, HSPA	3	

[§] The professional competencies and the transversal competencies will be treated according to the Methodology of OMECTS 5703/18.12.2011. The competencies listed in the National Register of Qualifications in Higher Education [Registrul Național al Calificărilor din Învățământul Superior RNCIS] (http://www.rncis.ro/portal/page?_pageid=117_70218&_dad=portal&_schema=PORTAL) will be used for the field of study from 1.4 and the program of study from 1.6 of this form, involving the discipline.

4G networks, LTE architecture, OFDMA radio channels, LTE protocols and performances	3	
5G requirements	1	
Bibliography ⁹ Comunicații mobile, Principii și standarde, E. Mârza, C. Simu, Editura de Vest, Timișoara, 2003, ISBN 973-36-0374-0 Lecture Slides in english published on intranet webpage		
8.2 Applied activities¹⁰	No. of hours	Teaching methods
Base Transceiver Station – general presentation	3	Laboratory works
Base Station Controller – configuration and function description	3	Alcatel-Lucent room
Operation and Maintenance Center description and usage methods	3	Equipment description
Transmission subsystem – interfaces and transmission methods	3	Equipment usage
Transmission subsystem – voice trans-coding	3	Equipment configuration
Evolved Base Station – OFDMA transmission	3	Equipment monitoring
Evolved Base Station – configuration and supervision	3	
Bibliography ¹¹ Laboratory works papers in english, published on intranet webpage		

9. Corroboration of the content of the discipline with the expectations of the main representatives of the epistemic community, professional associations and employers in the field afferent to the program

<ul style="list-style-type: none"> Course content was discussed and agreed with representatives of Alcatel-Lucent
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10. Evaluation

⁹ At least one title must belong to the department staff teaching the discipline, and at least 3 titles must refer to national and international works relevant for the discipline, and which can be found in the Politehnica University Library.

¹⁰ The types of applied activities are those specified in footnote 5. If the discipline contains several types of applied activities, then these will be written consecutively in the lines of the table below. The type of activity will be written in a distinct line, as „Seminar:”, „Laboratory:”, „Project:” and/or „Practice/Training:”.

¹¹ At least one title must belong to the staff teaching the discipline.

Type of activity	10.1 Evaluation criteria	10.2 Evaluation methods	10.3 Share of the final grade
10.4 Course	Level of course content knowledge and understanding	Written examination	2/3
10.5 Applied activities	S:		
	L: Level of competence in equipment usage	Competence level evaluation testing	1/3
	P:		
	Pr:		
10.6 Minimum performance standard (minimum amount of knowledge necessary to pass the discipline and the way in which this knowledge is verified)			
<ul style="list-style-type: none"> Basic knowledge about mobile networks, radio interfaces, protocols and procedures. Correct answers for minimum half of the questions, one theoretical subject completely treated, correct solving half of the problems. 			

Date of completion

14.12.2016

Course coordinator

(signature)

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Coordinator of applied activities

(signature)

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Head of Department

(signature)

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Date of approval in the Faculty Council¹²

Dean

(signature)

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¹² Avizarea este precedată de discutarea punctului de vedere al board-ului de care aparține programul de studiu cu privire la fișa disciplinei.