

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	RADIO 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	3	2.5 Semester	1	2.6 Type of evaluation	D	2.7 Type of discipline	DS

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

3.1 No. of hrs. / week	4 , of which:	3.2 course	2	3.3 seminar/laboratory/ project/training	2
3.4 Total no. of hrs. in the education curricula	56 , of which:	3.5 course	28	3.6 applied activities	28
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					14
Tutoring					3
Examinations					6
Other activities					
Total hrs. of individual activities					40
3.8 Total hrs. / semester ₇	96				
3.9 No. of credits	4				

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"> • Signals and Systems, Signal Processing
4.2 Competencies	<ul style="list-style-type: none"> • Knowledge of signals and electronic circuits

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"> • The design, implementation and operation of data, voice, video, and multimedia services, based on understanding and applying the fundamental concepts of communication and information transmission
Transversal competencies	<ul style="list-style-type: none"> • Basic concepts related to information transmission, analog and digital communication principles. Explanation and interpretation of its main requirements and techniques to address data, voice, video, and multimedia transmission

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"> • Principles of communication by using radio channels
7.2 Specific objectives	<ul style="list-style-type: none"> • Radio wave propagation, antenna basics and design, radio receivers – architectures, parameters and performances

8. Content

8.1 Course	No. of hours	Teaching methods
Radio communication systems – intro, Frequency band designations	3	Lectures
Radio wave propagation, condition for radiation, propagation environment, earth surface impact	3	Teaching material in the form of ppt presentations
Propagation and atmosphere impact, Antenna parameters	3	Problem solving
Antenna impedance and matching, Wire antennas	3	Interactive discussions
Array antennas, array factor, other antenna types	3	question and answer sessions
Radio receivers, principles and functions, superheterodyne architecture and image frequency	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.

Analog and digital modulations, phasor diagrams, bit rate and symbol rate	3	
Digital receivers, superheterodyne, Low IF and Zero IF receivers, image reject receivers	3	
Receiver parameters, gain, sensitivity and noise, selectivity, linearity, dynamic range	3	
Frequency synthesis, Direct analog and digital frequency synthesizers, PLL synthesizers	3	
Bibliography ⁹ Radiocomunicatii – fundamente Mârza, Eugen, Alexa, Florin, Simu, Calin, 2007, ISBN 978-973-36-0446-4 Lecture Slides in english, published on intranet webpage		
8.2 Applied activities¹⁰	No. of hours	Teaching methods
Decibel scale, gain and attenuation	3	Laboratory works
Radio frequency measurements	3	Alcatel-Lucent room
Radio wave diffraction and Fresnel zone calculus	3	Equipment description
RF level measurements with Antenna Lab 57-200 system from "Feedback Instruments"	3	Equipment usage
Antenna pattern measurements	3	Equipment configuration
Array Antenna pattern measurements	3	Equipment monitoring
PLL synthesizers	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

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.

- Course content was discussed and agreed with representatives of Alcatel-Lucent

10. Evaluation

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 RF measurement 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 propagation, antennas and radio receivers. 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.