SYLLABUS

1. Information about the program

1.1 Higher education institution	Universitatea Politehnica Timișoara
1.2 Faculty[1] / Department[2]	Electronică, Telecomunicații și Tehnologii Informaționale/Communications
1.3 Field of study (name/code[3])	Electronică, Telecomunicații și Tehnologii Informaționale / 20.20.10
1.4 Study cycle	Master
1.5 Study program (name/code/qualification)	Communication Networks Engineering / 20.20.10

2. Information about discipline

2.1a Name of discipline/The educational classe[4]	Resource Management in Wireless Networks/DF						
2.1b Name of discipline in Romanian	Managementul rețelelor de telecomunicații						
2.2 Coordinator (holder) of course activities	Lecturer Dr. Eng. Andy Vesa						
2.3 Coordinator (holder) of applied activities[5]	Lecturer. Dr. Eng. Andy Vesa						
2.4 Year of study[6]	2	**2.5** Semester	3	**2.6** Type of evaluation	E	**2.7** Regime of discipline[7]	DOP

3. Total estimated time (direct activities (fully assisted), partially assisted activities and unassisted activities[8])

3.1 Number of hours fully assisted/week	4 ,of which:	course	2	seminar/laboratory/project			0/1/1
3.1* Total number of hours fully assisted/sem.	56 ,of which:	course	28	seminar/laboratory/project			0/14/14
3.2 Number of on-line hours fully assisted/sem	,of which:	course		seminar/laboratory/project			
3.3 Number of hours partially assisted/week	,of which:	project, research		training		hours designing M.A. dissertation	
3.3* Number of hours partially assisted/ semester	,of which:	project of research		training		hours designing M.A. dissertation	
3.4 Number of hours of unassisted activities/ week	4.93 ,of which:	Additional documentation in the library, on specialized electronic platforms, and on the field					1.93
		Study using a manual, course materials, bibliography and lecture notes					1
		Preparation of seminars/ laboratories, homework, assignments, portfolios, and essays					2
3.4* Total number of hours of unasssited asctivities/ semester	69 ,of which:	Additional documentation in the library, on specialized electronic platforms, and on the field					27
		Study using a manual, course materials, bibliography and lecture notes					14
		Preparation of seminars/ laboratories, homework, assignments, portfolios, and essays					28
3.5 Total hrs./week[9]	8.93						
3.5* Total hrs./semester	125						
3.6 No. of credits	5						

4. Prerequisites (where applicable)

4.1 Curriculum	•
4.2 Learning outcomes	

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5. Conditions (where applicable)

5.1 of the course	• Classroom equipped with video projector, internet access, and multimedia resources
5.2 to conduct practical activities	• Laboratories equipped with high-performance computers

6. Learning outcomes acquired through this discipline

Knowledge	• C1.Studentul/Absolventul cunoaște metode, tehnici și paradigme de cercetare • C8.Studentul/Absolventul cunoaște terminologia și convențiile comunicării tehnice • C10.Studentul/Absolventul înțelege conceptele de trafic, lățime de bandă și QoS • C12.Studentul/Absolventul înțelege principiile scalabilității și alocării resurselor
Skills	• A3.Studentul/Absolventul utilizează instrumente colaborative și contribuie la proiecte • A10.Studentul/Absolventul evaluează nevoile rețelei și optimizează resursele • A11.Studentul/Absolventul selectează și aplică metode de comunicare potrivite contextului •
Responsibility and autonomy	• RA4 Studentul/Absolventul asigură corectitudinea și relevanța concluziilor extrase • RA7 Studentul/Absolventul asigură calitatea și respectarea normelor academice • RA10 Studentul/Absolventul propune soluții pentru eficientizarea traficului și gestionează resursele • RA11 Studentul/Absolventul se responsabilizează pentru transmiterea corectă și eficientă a informației

7. Objectives of the discipline (based on the grid of learning outcomes acquired)

- The discipline aims to prepare the students pursuing the master's program with modern communication techniques in common communication networks as well as applications.
- This discipline also trains the student in the ability to understand the management of radio resources of existing wireless communication networks.

8. Content

8.1 Course	Number of hours	Of which online	Teaching methods
Statistical evaluation of radio resources in GSM Network.	2		The course is conducted using a video projector, internet access, and multimedia resources. Interaction with participants is encouraged through discussions, and course assignments are provided.
Channel allocation	4		
GPRS and EDGE architecture	4		
Power control	2		
Handover.	2		
Radio resources management in UMTS network	4		
Link adaptation in LTE network	2		
Interference in LTE network	4		
LTE handover	2		
Radio resource management in 5G network	2		

	Bibliography[10] Radio Resource Management and Modelling for Wireless Mobile Networks: Enhancement of Call Admission Control Algorithms (CACAs) and Capacity Bounds in UMTS/GSM Networks, Lambert Academi Publisher, 2011 Radio Resource Management in Cellular Systems, N.D.Tripathi, J.H.Reed, H.F.Van Landingham, 2001 From GSM to LTE-Advanced Pro and 5G, Martin Sauter, Wiley 2017

8.2 Applied activities[11]	Number of hours	Of which online	Teaching methods
Traffic in wireless networks	6		
Handover and power control.	4		
Laboratory for developing practical solutions integrating wireless communication systems	18		
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	Bibliography[12] Practical Radio Resource Management in Wireless Systems, G.T Garetsos, S. Kiriazacos, Artech House 2004 Radio Resource Management in Wireless Networks E. Hossain , M. Rasti , Long Bao Le, Cambridge University Press, 2017

9. Evaluation

Type of activity	**9.1** Evaluation criteria[13]	**9.2** Evaluation methods	**9.3** Share of the final grade
9.4 Course	Coverage of the entire course content.	Written exam with 15 quizz	50%
9.5 Applied activities	**S:**		
	L: Ability to manage the radio resources for the considered networks based on the theoretical knowledge acquired.	Practical application	25%
	P: Ability to select wireless communication network and use it in a real case problem	oral presentation	25%
	Pr:		
	Tc-R[14]:		
9.6 Minimum performance standard (minimum amount of knowledge necessary to pass the discipline and the way in which this knowledge is verified[15]			
• Minimum 50% out of the total points			

Date of completion **Course coordinator (signature)** **Coordinator of applied activities (signature)**

25.09.2025

Head of Department (signature)	Date of approval in the Faculty Council [16]	Dean (signature)
	07.10.2025	