

ANALYSIS AND DESIGN OF RF CIRCUITS AND SYSTEMS

1	Course Title:	ANALYSIS AND DESIGN OF RF CIRCUITS AND SYSTEMS	
2	Course Code:	EEM5203	
3	Type of Course:	Optional	
4	Level of Course:	Second Cycle	
5	Year of Study:	1	
6	Semester:	1	
7	ECTS Credits Allocated:	6.00	
8	Theoretical (hour/week):	3.00	
9	Practice (hour/week):	0.00	
10	Laboratory (hour/week):	0	
11	Prerequisites:	None	
12	Language:	Turkish	
13	Mode of Delivery:	Face to face	
14	Course Coordinator:	Doç. Dr. SİBEL YENİKAYA	
15	Course Lecturers:	-	
16	Contact information of the Course Coordinator:	sguler@uludag.edu.tr Tel: (224) 294 2031 Adres: Elektronik Mühendisliği Bölümü 3. Kat, No:309	
17	Website:		
18	Objective of the Course:	Giving the design and application of circuits and systems used in RF and wireless technologies. Introduction of RF and wireless technologies. Analysis methods of RF and wireless technologies. Examination of transceiver structures and demonstration of design ways. Examination of different RF elements, circuits and systems.	
19	Contribution of the Course to Professional Development:	Provides the ability to reach and interpret information about the field of study.	
20	Learning Outcomes:		
		1	Advanced use of mathematics, science and engineering knowledge in the design of circuits and systems used in RF and wireless technologies.
		2	Ability to analyze RF and wireless technologies.
		3	Ability to design receiver and transmitter structures.
		4	Ability to access information about different RF elements, circuits and systems and applications.
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21	Course Content:		
		Course Content:	
Week	Theoretical	Practice	
1	High frequency circuits, transmission line parameters, Smith Chart		

2	Microstrips, Static TEM parameters, Formulas for analysis and synthesis of microstrips, frequency dependence of eff.			
3	Scattering parameters, measurement of s parameters, s parameters and signal flow diagram.			
4	Two element L circuit, three element fitting, Smith chart design, transmission line fitting circuit.			
5	Transistor equivalent circuit, input impedance, output impedance, gain, feedback, small signal two port parameters.			
6	Understanding the definition of high frequency transistors, polarization of high frequency transistors.			
7	Description of high frequency amplifiers, Power gain, Unidirectional amplifier design, Non-unidirectional amplifier design.			
8	Stability criterion, load and source stability circles, constant power gain circles, low-noise amplifier design.			
9	Stability criterion, load and source stability circles, constant power gain circles, low-noise amplifier design.			
10	Power amplifiers, polarization of power transistors, power amplifier design.			
11	General view of oscillator design, s matrix			
Activites		Number	Duration (hour)	Total Work Load (hour)
13	Sources of noise.	14	3.00	42.00
Theoretical				
Practicals/Labs		0	0.00	0.00
Self study and preparation		12	6.00	72.00
22	Textbooks, References and/or Other	1	6.00	6.00
Homeworks		0	0.00	0.00
Projects		3	0.00	0.00
Field Studies		0	0.00	0.00
23	Assesment	1	36.00	36.00
Midterm exams				
Others		0	0.00	0.00
Final Exam		1	36.00	36.00
Total Work Load				222.00
Total work load/ 30 hr		0	0.00	6.20
Home work project				
ECTS Credit of the Course				6.00
Total		2	100.00	
Contribution of Term (Year) Learning Activities to Success Grade		40.00		
Contribution of Final Exam to Success Grade		60.00		
Total		100.00		
Measurement and Evaluation Techniques Used in the Course		Measurement and evaluation are carried out according to the principles of Bursa Uludağ University Postgraduate Education Regulation.		
24	ECTS / WORK LOAD TABLE			

25	CONTRIBUTION OF LEARNING OUTCOMES TO PROGRAMME QUALIFICATIONS															
	PQ1	PQ2	PQ3	PQ4	PQ5	PQ6	PQ7	PQ8	PQ9	PQ10	PQ11	PQ12	PQ13	PQ14	PQ15	PQ16
ÖK1	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK2	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LO: Learning Objectives PQ: Program Qualifications																
Contribution Level:	1 very low			2 low			3 Medium			4 High			5 Very High			