

### EEE 453 Communications Electronics

Course Code	Course Name	Semester		
EEE 453	Communications Electronics	Fall <input checked="" type="checkbox"/> Spring <input type="checkbox"/> Summer <input type="checkbox"/>		
Hours			Credit	ECTS
Theory	Practice	Lab	3	5
3	--	--		

Course Details	
<b>Department</b>	Electrical and Electronics Engineering
<b>Course Language</b>	English
<b>Course Level</b>	Undergraduate <input checked="" type="checkbox"/> Graduate <input type="checkbox"/>
<b>Mode of Delivery</b>	Face to Face <input checked="" type="checkbox"/> Online <input type="checkbox"/> Hybrid <input type="checkbox"/>
<b>Course Type</b>	Compulsory <input type="checkbox"/> Elective <input checked="" type="checkbox"/>
<b>Lecturer(s)</b>	Prof. Dr. İsmail Hakkı ALTAŞ
<b>Course Objectives</b>	Students learn the fundamental concepts of communication electronics and transceiver architectures. They also know the design concepts of low-noise amplifiers, mixers, oscillators, frequency synthesizers, and power amplifiers.
<b>Course Content</b>	Fundamental Communication Concepts Components Used in Communication Systems Amplitude Modulation Angle Modulation Communication Circuits Impedance Matching RF Filters RF Amplifiers Transmitter (Tx) Systems Receiver (Rx) Systems Rx System Components
<b>Course Method/ Techniques</b>	Lecture <input checked="" type="checkbox"/> Question & Answer <input checked="" type="checkbox"/> Presentation <input checked="" type="checkbox"/> Discussion <input checked="" type="checkbox"/>
<b>Prerequisites/ Corequisites</b>	--
<b>Work Placement(s)</b>	--

### Textbook/References/Materials

- Bowick, C., RF Circuit Design /2nd Ed., John Wiley & Sons, 2007.
- Beasley, J.S., Hymer, J.D. ve Miller, G.M., Electronic Communications, Systems /1st Ed., Pearson, 2013.

### Course Category

Mathematics and Basic Sciences	<input type="checkbox"/>		Education	<input type="checkbox"/>
Engineering	<input checked="" type="checkbox"/>		Science	<input type="checkbox"/>
Engineering Design	<input checked="" type="checkbox"/>		Health	<input type="checkbox"/>
Social Sciences	<input type="checkbox"/>		Profession	<input type="checkbox"/>

### Weekly Schedule

No	Topics	Materials/Notes
1	Fundamental Communication Concepts	
2	Components Used in Communication Systems	
3	Amplitude Modulation	
4	Angle Modulation	
5	Communication Circuits	
6	Impedance Matching	
7	RF Filters	
8	Midterm Exam	
9	RF Amplifiers	
10	Transmitter (Tx) Systems	
11	Transmitter (Tx) Components	
12	Transmitter (Tx) Structures	
13	Receiver (Rx) Systems	
14	Rx System Components	
15	Rx Structures	
16	Final Exam	

<b>Assessment Methods and Criteria</b>		
<b>In-term studies</b>	<b>Quantity</b>	<b>Percentage</b>
Attendance	--	--
Lab	--	--
Practice	--	--
Fieldwork	--	--
Course-specific internship	--	--
Quiz/Studio/Criticize	2	15%
Homework	--	--
Presentation / Seminar	--	--
Project	1	15%
Report	--	--
Seminar	--	--
Midterm Exam	1	20%
Final Exam	1	50%
<b>Total</b>		<b>100%</b>
<b>Contribution of Midterm Studies to Success Grade</b>		50%
<b>Contribution of End of Semester Studies to Success Grade</b>		50%
<b>Total</b>		<b>100%</b>

<b>ECTS Allocated Based on Student Workload</b>			
<b>Activities</b>	<b>Quantity</b>	<b>Duration (Hrs)</b>	<b>Total Workload</b>
Course Hours	14	3	42
Lab	0	0	0
Practice	0	0	0
Fieldwork	0	0	0
Course-specific Work Placement	0	0	0
Out-of-class study time	14	2	28
Quiz/Studio/Criticize	2	5	10
Homework	0	0	0
Presentation / Seminar	0	0	0
Project	1	15	15
Report	0	0	0
Midterm Exam and Preparation for Midterm	1	15	15
Final Exam and Preparation for Final Exam	1	25	25
<b>Total Workload</b>			<b>125</b>
<b>Total Workload / 25</b>			<b>125/5</b>
<b>ECTS Credit</b>			<b>5</b>

### Course Learning Outcomes

No	Outcome
L1	Students understand the basic concept of communication electronics.
L2	Students have a detailed understanding of communication systems requirements.
L3	Students can design Low-Noise Amplifiers and Mixers.
L4	Students can design RF Power Amplifiers.
L5	Students can design Receiver and Transmitter systems.

### Contribution of Course Learning Outcomes to Program Competencies/Outcomes

*Contribution Level: 1: Very Slight, 2: Slight, 3: Moderate, 4: Significant, 5: Very Significant*

	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11					Total
L1	4	4	4													-
L2	3	3	3													-
L3		3	3	3	3											-
L4		3	3	3	3											-
L5		3	3	3	3											-
<b>Total</b>																-

i. Sufficient knowledge in the fields of mathematics, natural sciences, and related engineering disciplines; the ability to apply theoretical and practical knowledge in solving complex engineering problems.


ii. The ability to identify, formulate, and solve complex engineering problems; the ability to select and apply appropriate analysis and modeling methods for this purpose.

iii. The ability to design a complex system, process, device, or product to meet specific requirements under realistic constraints and conditions; the ability to apply modern design methods for this purpose.

iv. The ability to select and use modern techniques and tools required for the analysis and solution of complex problems encountered in engineering applications; the ability to effectively use information technologies.

v. The ability to design experiments, conduct experiments, collect data, analyze results, and interpret findings for the investigation of complex engineering problems or discipline-specific research topics.

vi. The ability to work effectively in intra-disciplinary and multidisciplinary teams; the ability to work independently.

 <p>OSTİM TEKNİK ÜNİVERSİTESİ A N K A R A</p>	FACULTY OF ENGINEERING COURSE SYLLABUS FORM	Doküman No	MF.FR.003
		Revizyon Tarihi	13.11.2024
		Revizyon No	01
		Sayfa No	5 / 5

vii. The ability to communicate effectively both orally and in writing; proficiency in at least one foreign language; the ability to write effective reports, understand written reports, prepare design and production reports, make effective presentations, and give and receive clear and understandable instructions.

viii. Awareness of the necessity of lifelong learning; the ability to access information, track developments in science and technology, and continuously renew oneself.

ix. Acting in accordance with ethical principles, knowledge of professional and ethical responsibilities, and the standards used in engineering applications.

x. Knowledge of business practices such as project management, risk management, and change management; awareness of entrepreneurship and innovation; knowledge of sustainable development.

xi. Knowledge of the impact of engineering practices on health, environment, and safety at global and societal levels, and awareness of contemporary engineering issues; awareness of the legal consequences of engineering solutions.