OSTIM TECHNICAL UNIVERSITY
FACULTY OF ENGINEERING

COURSE SYLLABUS FORM
2023-2024

Radar Theory							
Course Name	**Course Code**	**Period**	**Hour**	**Application Hour**	**Lab Hour**	**Credit**	**ECTS**
Radar Theory	EEE 471	7	3	--	--	3	4

Prerequisite	--
Language of Instruction	English
Course Status	Technical Elective
Course Level	Undergraduate
Method of Teaching	Face to Face
Learning and Teaching Techniques of the Course	

Course Objective
The course aims to provide electrical and electronics engineering students with a technical knowledge of radar systems and to understand how and for what purpose radar systems are used in the field. At the end of the course, students will know what radar technical specifications mean while performing basic radar calculations.

Learning Outcomes	
Students who can complete this course;	
1	Will learn the basics of Radar principles.
2	Will be able to establish and solve radar and jamming equations.
3	Will learn the basic structures of the radar components and radar losses.
4	Will be able to select radar type according to the operational requirements.
5	Will be able to explain radar signal processing techniques.

Course Outline
It is a basic course on Radar Systems for Electrical and Electronics Engineers. The course has been prepared by considering the topics students in the Electrical and Electronics Engineering undergraduate program need to learn about Radar Systems. It also provides a basis for students who want to continue postgraduate education in the Radar and Electronic Warfare field.

Weekly Topics and Related Preparation Studies		
Weeks	**Topics**	**Preparation Studies**
1	Introduction to Radar Systems	
2	Pulsed Radar Equations	
3	Radar Equation with Jamming	
4	Radar Losses	
5	Noise Factor	
6	Continuous Wave Radars	
7	Radar Signals and Signal Processing	
8	Midterm	
9	Spectral Display of Radar Signals	
10	Discrete-Time Systems and Signals	
11	Matched Filter Radar Receiver	
12	Matched Filter Radar Receiver	
13	Pulse Compression	
14	Pulse Compression	
15	Radar Clutter	
16	Final	

Textbook(s)/References/Materials:
1. Bassem R. Mahafza, Radar Systems Analysis and Design Using MATLAB, Third Edition, deciBel Research Inc. Huntsville, Alabama, USA, 2013
2. Merrill I. Skolnik, Introduction to Radar Systems, Second Edition, McGraw-Hill International Edition, 1981.

Assessment		
Studies	**Number**	**Contribution margin (%)**
Active Participation		
Lab		
Application		
Field Study		
Course-Specific Internship (if any)		
Quizzes / Studio / Critical	2	15
Homework		
Presentation		
Projects	1	15
Report		
Seminar		
Midterm Exams / Midterm Jury	1	30
General Exam / Final Jury	1	45
Total		100
Success Grade Contribution of Semester Studies		55
Success Grade Contribution of End of Term		45
Total		100

Course Category	
Basic Vocational Courses	
Specialization/Field Courses	X
Support Courses	
Communication and Management Skills Courses	
Transferable Skills Courses	

Relationship Between Course Learning Outcomes and Program Competencies						
No	**Learning Outcomes**	**Contribution Level**				
		1	**2**	**3**	**4**	**5**
1	Will learn the basics of Radar principles.					x
2	Will be able to establish and solve radar and jamming equations.				x	
3	Will learn the basic structures of the radar components and radar losses.				x	
4	Will be able to select radar type according to the operational requirements.					x
5	Will be able to explain radar signal processing techniques.				x	

ECTS / Workload Table			
Activities	**Number**	**Duration (Hours)**	**Total Workload**
Course hours (Including the exam week: 16 x total course hours)	14	4	56
Laboratory	0	0	0
Application	0	0	0
Course-Specific Internship	0	0	0
Field Study			
Study Time Out of Class	14	3	42
Presentation / Seminar Preparation	0	0	0
Projects	1	14	14
Reports	1	4	4
Homeworks	0	0	0
Quizzes / Studio Review	2	2	4
Preparation Time for Midterm Exams / Midterm Jury	1	14	14
Preparation Period for the Final Exam / General Jury	1	16	16
Total Workload			150