

# INTRODUCTION TO ROBOTICS

1	Course Title:	INTRODUCTION TO ROBOTICS	
2	Course Code:	EEM4318	
3	Type of Course:	Optional	
4	Level of Course:	First Cycle	
5	Year of Study:	4	
6	Semester:	8	
7	ECTS Credits Allocated:	4.00	
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:	Prof. Dr. Enes YİĞİT	
15	Course Lecturers:		
16	Contact information of the Course Coordinator:	enesyigit@uludag.edu.tr, +90 (224) 2942018, Bursa Uludağ Üniversitesi, Mühendislik Fak., Elektrik-Elektronik Müh. Bölümü Görükle / BURSA	
17	Website:		
18	Objective of the Course:	The aim of this course is to provide students with basic topics in mechanisms and robot engineering. Basic topics are forward / inverse kinematics, robot types.	
19	Contribution of the Course to Professional Development:	To be able to follow innovations and apply them in the field by using the competence of collecting information, researching and analyzing.	
20	Learning Outcomes:		
		1	To be able to determine the robot type, to calculate the degrees of freedom for the robot, to be able to determine the straight and inverse kinematics problem.
		2	To be able to establish homogeneous transformation matrices for a series of robots and to use basic rotation matrices, to write the arm matrix for the robot
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21	Course Content:		
		<b>Course Content:</b>	
Week	Theoretical	Practice	
1	Introduction to Mechanisms		
2	Introduction to Mechanisms		
3	Classification of Mechanisms		

4	Degree of Freedom	
5	Graphical Kinematic Analysis	
6	Graphical Kinematic Analysis	
7	Analytical Kinematic Analysis	
8	Midterm	
9	Inverse Kinematics	
10	Introduction to Robot Systems	
11	Transformation Matrices	
12	Homogeneous Transformation Matrices	
13	Robot Arm Matrix	
14	Inverse Kinematics	

22	Textbooks, References and/or Other Materials:	<p>Introduction to Robotics: Mechanics and Control: International Edition, 3/E John J. Craig, Adept Technology, Inc.</p> <p>Kinematics, Dynamics, and Design of Machinery / Edition 2 by Kenneth J. Waldron, G. L. Kinzel</p>
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23	Assesment	
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TERM LEARNING ACTIVITIES	NUMBER	WEIGHT
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Activities	Number	Duration (hour)	Total Work Load (hour)
Theoretical	1	60.00	42.00
Practicals/Labs	0	0.00	0.00
Self Study and Preparation Learning Activities to	40.00	0.00	0.00
Homeworks	2	15.00	30.00
Contribution of Final Exam to Success Grade	60.00	0.00	0.00
Field Studies	0	0.00	0.00
Midterm exam and Evaluation Techniques Used in the Midterm Exam and Final Exam	1	25.00	25.00
Others	0	0.00	0.00

24 ECTS / WORK LOAD TABLE			
Final Exams	1	25.00	25.00
Total Work Load			122.00
Total work load/ 30 hr			4.07
ECTS Credit of the Course			4.00

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