



AYDIN ADNAN MENDERES UNIVERSITY COURSE INFORMATION FORM

Course Title		Advanced Robotic Applications							
Course Code		MME615		Course Level		Third Cycle (Doctorate Degree)			
ECTS Credit	9	Workload	229 (Hours)	Theory	3	Practice	0	Laboratory	0
Objectives of the Course		Teaching about robotic science, Investigating robot mechanic, Describing robot control and advanced control algorithms, Teaching about robot programming languages.							
Course Content		Introduction, Clasification of robots, robot arm kinematics ve dynamics, Trajectory generation in robots, robot control, Sensörs, robot programming languages.							
Work Placement		N/A							
Planned Learning Activities and Teaching Methods				Explanation (Presentation), Discussion, Project Based Study, Individual Study					
Name of Lecturer(s)									

Prerequisites & Co-requisites

Language Requisite	Yes
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Assessment Methods and Criteria

Method	Quantity	Percentage (%)
Midterm Examination	1	15
Final Examination	1	60
Quiz	4	15
Assignment	5	5
Term Assignment	1	5

Recommended or Required Reading

1	Robotics, Mechatronics, and Artificial Intelligence
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Week	Weekly Detailed Course Contents	
1	Theoretical	Introduction, Basic definitions
2	Theoretical	Classifications of robots, investigating joint structure
3	Theoretical	Robot arm kinematics
4	Theoretical	Robot arm dynamics
5	Theoretical	Establishing dynamical equations of robot
6	Theoretical	Trajectory generation in robots
7	Theoretical	Robot control
8	Intermediate Exam	Midterm Exam
9	Theoretical	Advanced algorithms in robot control
10	Theoretical	Robot sensors
11	Theoretical	Motor selection in robots
12	Theoretical	Vision in robots
13	Theoretical	Robot programming languages
14	Theoretical	Task planning in robots
15	Theoretical	Task planning in robots
16	Final Exam	Final Exam

Workload Calculation

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	16	5	4	144
Assignment	5	0	3	15
Term Project	1	15	10	25
Quiz	4	3	1	16



Midterm Examination	1	15	2	17
Final Examination	1	10	2	12
Total Workload (Hours)				229
[Total Workload (Hours) / 25*] = ECTS				9

*25 hour workload is accepted as 1 ECTS

Learning Outcomes

1	1. He/She can explain about fundamentals of robotic science
2	2. He/She can comment robot kinematics
3	3. He/She can comment robot Dynamics
4	4. He/She can generate robot trajectory
5	5. He/She can comment robot control
6	6. He/She can compare algorithm of robot control
7	7. He/She can classify robot sensors

Programme Outcomes (Mechanical Engineering (English) Doctorate)

1	1. In Mathematics, natural sciences and mechanical engineering, department has the sufficient infrastructure; the ability to use the theoretical and practical information for engineering solutions
2	2. The ability to identify, define, and solve the formula for complex engineering problems; the ability to select and apply for the appropriate analytical methods and modelling techniques
3	3. To meet desired needs of a system, system component, or process, analysing and designing skill under realistic constraints; in this respect, the ability to apply the methods of modern design
4	4. The ability to use and choose modern techniques and tools for required engineering applications and; the ability to use information technology effectively
5	5. The ability to design the experiment, collect the data for the experiment and interpret to analysing results
6	6. The ability to use computer software and hardware information, access to information and other information sources
7	7. The ability to work individually and with multidisciplinary teams effectively, taking responsibility self-confidence for complex situations
8	8. The ability to communicate with foreign colleagues by having high level of foreign language knowledge in the field of engineering
9	9. Monitoring the science and technology developments and the ability to renew itself with innovative ideas constantly
10	10. Professional and ethical responsibility awareness
11	11. Having an adequate information and awareness in the subjects of occupational safety, occupational health, social security rights, quality control and management issues of environmental protection
12	12. The ability to appreciate the effects of engineering solutions and applications in universal and social dimensions
13	13. The ability to be enlightened to the experts or non-expert audience groups on the issues related with engineering problems and solutions written and oral
14	14. The ability to have adequate knowledge and skills in the project development and application, manage the activities planning, including the projects to the employees having the responsibility of the project by increasing vocational awareness

Contribution of Learning Outcomes to Programme Outcomes 1:Very Low, 2:Low, 3:Medium, 4:High, 5:Very High

	L1	L2	L3	L4	L5	L6	L7
P1	3	3	5	4	3	3	3
P2	4	4	4	5	4	4	4
P3	5	5	3	3	5	5	5
P4	5	5	3	4	5	5	5
P5	4	4	4	5	4	4	4
P6	3	3	5	5	3	3	3
P7	3	3	4	4	3	3	3
P8	4	4	4	3	4	4	4
P9	5	5	5	3	3	5	5
P10	5	5	5	5	4	5	5
P11	4	4	4	5	5	4	4
P12	3	3	4	4	5	3	3
P13	4	4	5	5	4	4	3
P14	5	5	4	4	3	5	4

