AYDIN ADNAN MENDERES UNIVERSITY
COURSE INFORMATION FORM

Course Title	Expert Systems								
Course Code	MTK641		Couse Level	Third Cycle (Doctorate Degree)					
ECTS Credit	7.5	Workload	189 *(Hours)*	Theory	3	Practice	0	Laboratory	0
Objectives of the Course	The purpose of this course is to introduce and to understand the significance of expert systems in artificial intelligence , and the course aims to gain the ability of researching using modern approaches in this field in both theoretically and practically.								
Course Content	Overview of Artificial Intelligence and Expert Systems, Knowledge Representation, Rule-Based Systems, Associative Nets and Frame Systems, Logic Programming, Representing Uncertainty, Knowledge Acquisition, Heuristic Classification, Constructive Problem Solving, Machine Learning, Belief Networks, Case-based reasoning, Tools for Building Expert Systems.								
Work Placement	N/A								
Planned Learning Activities and Teaching Methods	Explanation (Presentation), Discussion, Individual Study, Problem Solving								
Name of Lecturer(s)									

Assessment Methods and Criteria		
Method	Quantity	Percentage (%)
Midterm Examination	1	30
Final Examination	1	50
Assignment	1	20

Recommended or Required Reading	
1	Introduction to Expert System, P. Jackson, Addison-Wesley Publishing Company, ISBN 0201876868, 1998

Week	Weekly Detailed Course Contents	
1	Theoretical	Overview of Artificial Intelligence. What are Expert Systems?
	Preparation Work	Introduction to Expert System, pp.1-37 should be read
2	Theoretical	Knowledge Representation
	Preparation Work	Reading Introduction to Expert System, pp.38-56 should be read
3	Theoretical	Rule-Based Systems
	Preparation Work	Reading Introduction to Expert System, pp.76-99 should be read
4	Theoretical	Associative Nets and Frame Systems
	Preparation Work	Reading Introduction to Expert System, pp.100-115 should be read
5	Theoretical	Logic Programming
	Preparation Work	Reading Introduction to Expert System, pp.143-161 should be read
6	Theoretical	Representing Uncertainty
	Preparation Work	Reading Introduction to Expert System, pp.166-179 should be read
7	Theoretical	Knowledge Acquisition
	Preparation Work	Reading Introduction to Expert System, pp.182-198 should be read
8	Theoretical	Heuristic Classification
	Preparation Work	Reading Introduction to Expert System, pp.207-239 should be read
9	Preparation Work	All subjects covered
	Intermediate Exam	Midterm exam
10	Theoretical	Constructive Problem Solving
	Preparation Work	Reading Introduction to Expert System, pp.259-289 should be read
11	Theoretical	Tools for Building Expert Systems
	Preparation Work	Reading Introduction to Expert System, pp.320-340 should be read
12	Theoretical	Machine Learning
	Preparation Work	Reading Introduction to Expert System, pp.380-398 should be read
13	Theoretical	Belief Networks
	Preparation Work	Reading Introduction to Expert System, pp.402-410 should be read
14	Theoretical	Case-based reasoning

14	Preparation Work	Reading Introduction to Expert System, pp.413-425 should be read
15	Preparation Work	All subjects covered
	Final Exam	Final exam

Workload Calculation

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	3	3	84
Assignment	1	20	1	21
Midterm Examination	1	35	2	37
Final Examination	1	45	2	47
			Total Workload (Hours)	189
			[Total Workload (Hours) / 25*] = **ECTS**	7.5

**25 hour workload is accepted as 1 ECTS*

Learning Outcomes

1	Ability to understand the expert systems
2	Ability to use the expert system design tools
3	Ability to design expert systems
4	To be able to gain the skill of interpreting some interrelations among these concepts
5	To be able to use mathematical concepts in solving certain types of problems

Programme Outcomes *(Mathematics Doctorate)*

1	To be able to develop the current and advanced knowledge of mathematics domain to expertise level by an original idea or research, based on the level of its knowledge at the graduate level, and to be able to reach original definitions that will bring innovation to Mathematics.
2	To be able to comprehend the interdisciplinary interaction associated with Mathematics.
3	To be able to use and evaluate the new knowledge in the field of Mathematics with a systematic approach.
4	To be able to develop an idea, a method, a design or an application that will bring innovation to Mathematics, to use well known ideas, methods, designs or applications on a different research area, or to search, comprehend, design, adapt and apply an original subject matter.
5	To be able to criticize, analyze, synthesize and evaluate new and complex ideas.
6	To be able have high-level skills in research methods related to studies on Mathematics.
7	To be able to expand the frontiers knowledge in the field of Mathematics via generating or interpreting an original study, or publishing at least a scientific paper in national/international refereed journals.
8	To be capable of leadership in the positions that require the analyses of problems related to the field of Mathematics.
9	To be able to defend his/her original ideas among the experts in the discussion of math related issues, and to be able to communicate effectively to show his/her competence in the field of Mathematics.
10	To be able to contribute to the solution of the social, scientific, cultural and ethical problems related to the Mathematics, and to be able to support the development of social, scientific, cultural and ethical values.
11	To be able to have both oral and written communication using a foreign language.

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

	L1	L2	L3	L4	L5
P1	4	4	5	4	4
P2	4	3	5	5	5
P3	4	3	5	4	5
P4	4	3	5	5	5
P5	4		5	5	4
P6	4	4	5	5	4
P7			3	3	3
P9	3		3	3	3
P10			3	3	3
P11	3	3	3	3	3