COURSE INFORMATION					
Course Title	*Code*	*Semester*	*L+P+L Hour*	*Credits*	*ECTS*
Artificial Intelligence	CIS508		3+0+0	3	10

Prerequisites	-

Language of Instruction	English
Course Level	Master's Degree
Course Type	Elective
Course Coordinator	Assist. Prof. Tufan Ekin
Instructors	Assist. Prof. Tufan Ekin
Assistants	
Goals	The goal of this course is to provide students with a survey of different aspects of Artificial Intelligence (AI).
Content	Introduction, programming language: LISP: array, tree, heap, queue and table structures, information display: production rules including hierarchies, propositional account, inference rules, frames, semantic networks, restrictions and systematical approaches, search, hypothesis and testing, depth first search, width first search, intuitional search, optimal search, game trees and reflexive search, mini max search, alpha-beta reduction, learning description trees, artificial neural networks, perceptions, genetic algorithms, expert systems, natural language process, speech recognition, computer vision.

Learning Outcomes	**Program Learning Outcomes**	**Teaching Methods**	**Assessment Methods**
Developing a variety of approaches with general applicability.	3,6,9	1,3,4	A,B,C
Acquire a working knowledge of the LISP language, its procedural and data structures	2,3,6,9	1,2,3,4	A,B,C
Understand and implement AI search models and generic search strategies	3,6,9	1,3,4	A,B,C
Use probability as a mechanism for handling uncertainty in AI.	2,6,9	1,3,4	A,B,C
Understand the design of AI systems involving learning to enhance performance.	3,6,9	1,3,4	A,B,C,D
Logic and its application as a form of representing knowledge in AI systems	3,9,6	1,2,3,4	A,B,C,D
Introducing specific applications such as computer vision, natural language processing, expert systems,	3,9	1,2,3,4	A,B,C,D

Teaching Methods:	1: Lecture, 2: Question-Answer, 3: Discussion, 4: Lab Work
Assessment Methods:	A: Testing, B: Laboratory C: Homework D: Project

COURSE CONTENT		
Week	**Topics**	**Study Materials**

1	Introduction, history	ACM 221
2	The LISP programming language	ACM 361
3	LAB: Program and data structures in LISP.	ACM 369
4	Intelligent agents.	ACM 366
5	Problem solving, uninformed search	ACM 361,369
6	Search and heuristic functions, Local search, Online search,	ACM 111
7	MIDTERM EXAMINATION	
8	Constraint satisfaction	ACM 111
9	Game playing,	ACM 369
10	Logical agents; propositional logic, Inference in propositional logic,	ACM 363
11	First order logic, Inference in first order logic,	ACM 361
12	LAB: logic programming,	ACM 361
13	Planning problems,	ACM 370
14	Expert Systems	ACM 369
15	REVIEW AND MIDTERM EXAMINATION	

RECOMMENDED SOURCES	
Textbook	Stuart Russell and Peter Norvig, Artificial Intelligence: A Modern Approach Prentice Hall ISBN-13; 978-0-13-604259-4 (2010)
Additional Resources	Peter Norvig, Paradigms of Artificial Intelligence Programming: Case Studies in Common Lisp An Imprint of Elsevier. Morgan Kaufmann Publishers San Francisco, CA

MATERIAL SHARING	
Documents	Presentations and Laboratory Sheets
Assignments	Homework Sheets
Exams	Old exam questions are furnished

ASSESSMENT		
IN-TERM STUDIES	**NUMBER**	**PERCENTAGE**
Mid-terms	2	66
Quizzes	4	16
Assignment and Lab Work	10	18
Total		100
CONTRIBUTION OF FINAL EXAMINATION TO OVERALL GRADE		40
CONTRIBUTION OF IN-TERM STUDIES TO OVERALL GRADE		60
Total		100

COURSE CATEGORY	Expertise/Field Courses

COURSE'S CONTRIBUTION TO PROGRAM							
No	Program Learning Outcomes	Contribution				
		1	2	3	4	5
1	Information Systems graduates have the knowledge and the skills to design and develop the complete systems for multi-media visual user interface.					
2	Information Systems graduates have advanced the knowledge and skills to design, develop and install the application systems for multi-media.			x		
3	Information Systems graduates have the knowledge and the skills to design, develop and apply algorithms and data structures to solve the basic problems of information processing, within the framework of discrete mathematics					X
4	Information Systems graduates have the knowledge and the skills to design and develop computer applications, based on user specified requirements, using modern structured development tools and install them on various hardware platforms and deploy their usage.				X	
5	Information Systems graduates have the knowledge and the skills to design and develop computer applications, based on user specified requirements, using modern object-oriented development tools and install them on various hardware platforms and deploy their usage.	X				
6	Information Systems graduates know the logic of computer operating systems, the basic set of system commands, how to control access to system resources by users of different departments and how to monitor the running of jobs in the system.					X
7	Information Systems graduates have the knowledge and the skills to design and develop data models serving different requirements, database applications that would access and process data using various types of software, including queries, reports and business applications.		X			
8	Information Systems graduates have the knowledge and the skills to design and develop business applications that would provide data access, modification and processing for data kept in enterprise database systems.					
9	Information Systems graduates have the knowledge about computer networks, and have the skills to design, develop and monitor computer networks, how to configure them and how to maintain their performance.					X
10	Information Systems graduates have the knowledge and the skills to design and develop visual user interfaces for the web, web-based applications for n-tier client/server configurations, how to deploy them in enterprises.				x	

ECTS ALLOCATED BASED ON STUDENT WORKLOAD BY THE COURSE DESCRIPTION			
Activities	Quantity	Duration (Hour)	Total Workload (Hour)

Course Duration (Including the exam week: 16x Total course hours)	14	3	42
Hours for off-the-classroom study (Pre-study, practice)	14	5	70
Mid-terms	2	3	6
Quizzes	6	8	48
Homework	2	40	80
Final examination	1	3	3
Total Work Load			249
Total Work Load / 25 (h)			9.96
ECTS Credit of the Course			10