

Course Description Form	
Course Code and Name	CENG354 EXPERT SYSTEMS (TECH.ELECT.)
Course Semester	6
Catalog Content	Basic concept: inference engine, knowledge base, knowledge elicitation, representation and control of knowledge, automated reasoning, representing uncertainty, practical problem solving. Development of the theory and practice of expert systems. Well known samples of expert systems. Software tools and architectures for building expert systems.
Textbook	Expert Systems: Principles and Programming 4th Edition by Joseph C. Giarratano, Gary D. Riley, 2004.
Supplementary Textbooks	S. Russell and P. Norvig - Artificial Intelligence: A Modern Approach , Prentice Hall, 2003, Second Edition Expert Systems with Applications: An International Journal, Elsevier, ISSN: 0957-4174 Introduction to Expert Systems, Peter Jackson, 1990.
Credit	6
Prerequisites of the Course (Attendance Requirements)	-
Type of the Course	Elective
Instruction Language	English
Course Objectives	The course presents principles of an expert system and its parts in details. In this course, students will learn the concept of expert systems and, how to design an expert system.
Course Learning Outcomes	1. Gaining knowledge about basic concepts of expert systems 2. Learning the development of Expert systems practice and theory 3. Being able to use expert system tools 4. Being able to design expert systems
Instruction Methods	The mode of delivery of this course is face to face
Weekly Schedule	1. Week: Basic concepts: inference machine, knowledge base, knowledge acquisition 2. Week: Knowledge representation and control 3. Week: Knowledge representation and control 4. Week: Auto reasoning 5. Week: Auto reasoning 6. Week: Uncertainty representation 7. Week: Uncertainty representation 8. Week: Practical problem solving 9. Week: The development of the theory and practice of expert systems 10. Week: The development of the theory and practice of expert systems 11. Week: Expert system tools 12. Week: Expert system tools 13. Week: Known examples of expert systems 14. Week: Expert systems for design and software tools architectures

Teaching and Learning Methods <i>(These are examples. Please fill which activities you use in the course)</i>	Weekly theoretical course hours: 3 Reading Activities Internet browsing, library work Preparation of Midterm and Midterm Exam Final Exam and Preparation for Final Exam			
Assessment Criteria		Numbers	Total Weighting (%)	
	Midterm Exams	1	30	
	Assignment	5	30	
	Application	0		
	Projects	0		
	Practice	0		
	Quiz	0		
	Percent of In-term Studies (%)		60	
	Percentage of Final Exam to Total Score (%)		40	
	Attendance		-	

Workload	Activity		Total Number of Weeks	Duration (weekly hour)	Total Period Work Load				
	Weekly Theoretical Course Hours		14	3	42				
	Weekly Tutorial Hours				0				
	Reading Tasks		10	5	50				
	Studies		10	3	30				
	Material Design and Implementation				0				
	Report Preparing				0				
	Preparing a Presentation				0				
	Presentations				0				
	Midterm Exam and Preparation for Midterm Exam		1	12	12				
	Final Exam and Preparation for Final Exam		1	16	16				
	Other (should be emphasized)				0				
	Total Workload				150				
	Total Workload / 25				6				
	Course Credit (ECTS)				6				
Contribution Level Between Course Learning Outcomes and Program Outcomes	No	Program Outcomes			1	2	3	4	5
	1	Sufficient knowledge on mathematics, science and computer engineering; ability to apply theoretical and practical knowledge in these areas to model and solve engineering problems						X	
	2	Ability to identify, define, formulate and solve complex engineering problems; ability to choose and apply appropriate analysis and modelling methods for these purposes						X	
	3	Ability to design a complex system, process, device, software, algorithm, or product under realistic constraints and circumstances to meet certain requirements; ability to apply modern design techniques for this purpose					X		
	4	Ability to choose, develop and use modern techniques and tools necessary for engineering applications; ability to effectively use computing technologies						X	
	5	Ability to design and implement systems or experiments to solve engineering problems, collect and interpret data to evaluate and analyze the results of solutions					X		
	6	Ability to work effectively in intradisciplinary and interdisciplinary teams or individually			X				

	7	Ability to efficiently prepare, evaluate and interpret reports	X				
	8	Ability to make presentations and conduct effective verbal and written communication in Turkish and English	X				
	9	Awareness of the necessity of lifelong learning; ability to access information, follow scientific and technological developments; ability to perpetually renew oneself			X		
	10	Awareness of professional and ethical responsibility, ability to act in accordance with ethical principles		X			
	11	Ability to apply knowledge on project management, risk management and change management		X			
	12	Awareness of entrepreneurship and innovation, ability to design and build sustainable systems			X		
	13	Ability to devise local and global solutions to contemporary issues considering the effects of engineering applications on health, environment and security		X			
	14	Awareness of the legal consequences of engineering solutions	X				
	15	Ability to apply knowledge on software development process and documentation rules		X			
	16	Knowledge on standards used in engineering applications	X				
	17	Awareness of occupational health and security, information security and privacy	X				
The Course's Lecturer(s) and Contact Information		Computer Engineering Department Chair bmbb@gazi.edu.tr					