<table>
<tr><th colspan="2">COURSE DESCRIPTION FORM</th></tr>
<tr><td>Course Code and Name</td><td>CENG354 EXPERT SYSTEMS (TECH.ELECT.)</td></tr>
<tr><td>Course Semester</td><td>6</td></tr>
<tr><td>Catalogue Data of the Course (Course Content)</td><td>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.</td></tr>
<tr><td>Course Textbooks</td><td>Expert Systems: Principles and Programming 4th Edition by Joseph C. Giarratano, Gary D. Riley, 2004.</td></tr>
<tr><td>Supplementary Textbooks</td><td>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.</td></tr>
<tr><td>Credit (ECTS)</td><td>6</td></tr>
<tr><td>Prerequisites for the Course (Attendance Requirements)</td><td>-</td></tr>
<tr><td>Course Type</td><td>Elective</td></tr>
<tr><td>Language of Instruction</td><td>English</td></tr>
<tr><td>Course Objectives</td><td>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.</td></tr>
<tr><td>Course Learning Outcomes</td><td>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</td></tr>
<tr><td>Instruction Method
(Face-to-face, Distance education etc.)</td><td>The mode of delivery of this course is face to face</td></tr>
<tr><td>Weekly Schedule of the Course</td><td>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</td></tr>
<tr><td>Teaching Activities
(The time spent for the activities listed here will determine the amount of credit required)</td><td>Weekly theoretical course hours: 3
Reading activities
Internet search and library work
Midterm and revision for midterm
Final exam and revision for final exam</td></tr>
<tr><td>Assessment Criteria</td><td>
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<tr><th></th><th>Number(s)</th><th>Weight (%)</th></tr>
<tr><td>Midterm exam</td><td>1</td><td>30</td></tr>
<tr><td>Assignment</td><td>5</td><td>30</td></tr>
<tr><td>Application</td><td>0</td><td></td></tr>
<tr><td>Project</td><td>0</td><td></td></tr>
<tr><td>Practice</td><td>0</td><td></td></tr>
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	Quiz	0	
	Final exam	1	40
	Total	7	100

Workload of the Course

Activity	Number of Weeks	Duration (Weekly Hour)	End of Semester Total Workload
Weekly theoretical course hours	14	3	42
Weekly practical course hours			0
Reading activities	10	5	50
Internet search and library work	10	3	30
Designing and implementing materials			0
Making a report			0
Preparing and making presentations			0
Midterm and revision for midterm	1	12	12
Final exam and revision for final exam	1	16	16
Total workload			150
Total workload/ 25			6
Course Credit (ECTS)			6

Contribution Level between Course Outcomes and Program Outcomes

No	Program Outcomes	1	2	3	4	5
1	Knowledge of mathematics, science, basic engineering, computing, and computer engineering; ability to use this knowledge in solving complex engineering problems.					X
2	Ability to define, formulate and analyze complex engineering problems using basic science, mathematics and engineering knowledge and considering the UN Sustainable Development Goals relevant to the problems addressed.					X
3	Ability to design creative solutions to complex engineering problems; ability to design complex systems, processes, devices, software, algorithms or products to meet current and future requirements, considering realistic constraints and conditions.				X	
4	Ability to select, use and develop appropriate techniques, resources and modern engineering and informatics tools, including estimation and modeling, for the analysis and solution of complex engineering problems while being aware of their limitations.					X
5	Ability to use research methods to examine complex engineering problems or research topics in computer engineering, including reviewing the literature, designing experiments, conducting experiments, collecting data, analyzing and interpreting results.				X	
6	Knowledge of the effects of engineering practices and the standards used in these practices on society, health and safety, economy, sustainability and environment within the scope of the UN Sustainable Development Goals; awareness of the consequences of engineering solutions in the fields of information security and law.					
7	Acting in accordance with engineering		X			

	professional principles and knowledge on ethical responsibility; awareness of acting impartially, without discrimination on any issue, and being inclusive of diversity.						
8	Ability to work effectively individually and as a team member or leader in intradisciplinary and multidisciplinary teams (face-to-face, remote, or hybrid).		X				
9	Ability to conduct effective verbal and written communication on technical issues in Turkish or English, prepare reports, make effective presentations and prepare software documentation, considering the various differences of the target audience (such as education, language, profession).						
10	Knowledge of business practices such as project, risk and change management and economic feasibility analysis; awareness of entrepreneurship and innovation.		X				
11	Lifelong learning skill that includes the ability to learn independently and continuously, to adapt to new and developing scientific practices and technologies, and to think inquisitively about technological changes.			X			

Lecturer(s) and Contact Information	Assoc. Prof. Dr. Oktay Yıldız oyildiz@gazi.edu.tr