<table>
<tr><th colspan="2">COURSE DESCRIPTION FORM</th></tr>
<tr><td><b>Course Code and Name</b></td><td>CENG491 SYSTEM PROGRAMMING (TECH.ELECT.)</td></tr>
<tr><td><b>Course Semester</b></td><td>7</td></tr>
<tr><td><b>Catalogue Data of the Course (<i>Course Content</i>)</b></td><td>Loader, Connector, Micro programming, single and double-pass symbolic converters, Design and implementation of a variety of system software, The relationship between machine architecture and system software, Windows, Unix operating systems, the introduction</td></tr>
<tr><td><b>Course Textbooks</b></td><td>The Linux Programming Interface: A Linux and UNIX System Programming Handbook, Michael Kerrisk, 2010.</td></tr>
<tr><td><b>Supplementary Textbooks</b></td><td>Advanced Programming in the Unix Environment, 3rd Edition, by Richard Stevens and Steven A Rago, Addison-Wesley, 2013
Understanding UNIX/LINUX Programming: A Guide to Theory and Practice, by Bruce Molay, Prentice Hall, 2002.</td></tr>
<tr><td><b>Credit (<i>ECTS</i>)</b></td><td>6</td></tr>
<tr><td><b>Prerequisites for the Course (<i>Attendance Requirements</i>)</b></td><td>There is no prerequisite or co-requisite for this course.</td></tr>
<tr><td><b>Course Type</b></td><td>Elective</td></tr>
<tr><td><b>Language of Instruction</b></td><td>English</td></tr>
<tr><td><b>Course Objectives</b></td><td>Providing current knowledge and skills about Iconic programming elements, source and target program, Re-entered program, Re-executed program and addressing techniques.</td></tr>
<tr><td><b>Course Learning Outcomes</b></td><td>1. Defines symbolic programming elements
2. Explains the concepts of source and target program, reenterable program, reexecutable program.
3. Applies addressing techniques.</td></tr>
<tr><td><b>Instruction Method</b> <i>(Face-to-face, Distance education etc.)</i></td><td>The mode of delivery of this course is face to face.</td></tr>
<tr><td><b>Weekly Schedule of the Course</b></td><td>1. Week: Symbolic programming elements
2. Week: Source and object program
3. Week: Re-enter the program
4. Week: Re-run the program
5. Week: Addressing techniques, the concept of Procedure
6. Week: Parameter communication techniques
7. Week: Operating string-symbolic relationship between the program, the programming techniques
8. Week: Loader, Connector, Micro programming, single and double-pass symbolic converters
9. Week: Design and implementation of a variety of system software
10. Week: The relationship between machine architecture and system software
11. Week: Windows, Unix operating systems, the introduction
12. Week: Assembly languages
13. Week: Machine-dependent assembly, machine independent assembly
Week: Program blocks. Assembler design, MASM and SPARC structures.</td></tr>
<tr><td><b>Teaching Activities</b> <i>(The time spent for the activities listed here will determine the amount of credit required)</i></td><td>Weekly theoretical course hours: 3
Reading Activities
Midterm and revision for midterm
Final exam and revision for final exam</td></tr>
<tr><td><b>Assessment Criteria</b></td><td>
<table>
<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></td><td></td></tr>
<tr><td>Project</td><td></td><td></td></tr>
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Practice		
Quiz		
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	0	0
Reading activities	12	4	48
Internet search and library work			
Designing and implementing materials			
Making a report			
Preparing and making presentations			
Midterm and revision for midterm	1	15	15
Final exam and revision for final exam	1	15	15
Total workload			150
Total workload/ 25			6
Course Credit (ECTS)			6

Contribution Level between Course Outcomes and Program Outcomes

No	Program Çıktıları	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.					
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 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).					
	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).				x	
	10	Knowledge of business practices such as project, risk and change management and economic feasibility analysis; awareness of entrepreneurship and innovation.					
	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.					
Lecturer(s) and Contact Information	Prof. Dr. Hacer KARACAN hkaracan@gazi.edu.tr						