

<b>COURSE DESCRIPTION FORM</b>	
<b>Course Code and Name</b>	CENG484 UNIX PROGRAMMING (TECH.ELECT.)
<b>Course Semester</b>	8
<b>Catalogue Data of the Course</b> ( <i>Course Content</i> )	This course aims to equip students with the fundamental knowledge and skills for software development on the Unix operating system, thereby enhancing their abilities in the fields of operating system and network administration.
<b>Course Textbooks</b>	Advanced Programming in the UNIX Environment, 3rd Edition, Addison-Wesley Professional Computing by W. Stevens and Stephen Rago, 2013
<b>Supplementary Textbooks</b>	Linux: A Beginner's Guide to Linux Operating System by George Gibson, 2023  Linux Kernel Programming: A practical guide to kernel internals, writing kernel modules, and synchronization, 2nd Edition by Kaiwan Billimoria, 2024
<b>Credit (ECTS)</b>	6
<b>Prerequisites for the Course</b> ( <i>Attendance Requirements</i> )	There is no prerequisite or co-requisite for this course.
<b>Course Type</b>	Elective
<b>Language of Instruction</b>	English
<b>Course Objectives</b>	This course aims to teach students the fundamental principles and skills of software development on the Unix operating system. The course covers essential topics such as interacting with Unix-based systems, writing shell scripts, file operations, process management, network programming, and security.
<b>Course Learning Outcomes</b>	<ol style="list-style-type: none"> <li>1. Understand the fundamentals of the Unix operating system.</li> <li>2. Acquire the ability to write Unix shell scripts.</li> <li>3. Develop proficiency in file operations, process management, and parallel processing.</li> <li>4. Gain the capability to write Unix-based network programs.</li> <li>5. Learn Unix security and authorization principles.</li> <li>6. Acquire knowledge in database access and automation.</li> <li>7. Gain skills in performance monitoring and optimization.</li> <li>8. Practice Unix programming in real-world projects.</li> </ol>
<b>Instruction Method</b> ( <i>Face-to-face, Distance education etc.</i> )	<i>Face-to-face</i>
<b>Weekly Schedule of the Course</b>	Week 1: Fundamentals of the Unix Operating System Week 2: History and Philosophy of the Unix Operating System Week 3: File Creation, Reading, Writing, and Deletion Week 4: Process Creation, Termination, and Management Week 5: Writing Shell Scripts Using Bash or Other Shell Languages Week 6: Utilizing Unix System Calls Week 7: Midterm Examination Week 8: Multi-Processing and Multi-Threading Programming in Unix Week 9: Developing Unix-Based Network Applications Week 10: Utilizing Debugging Tools Week 11: Security Measures in Unix Systems Week 12: Database Access and Operations in Unix Week 13: Monitoring and Improving the Performance of Unix Applications Week 14: Writing Automation Scripts and Shell Scripting for Unix Week 15: Unix Kernel Programming
<b>Teaching Activities</b> ( <i>The time spent for the activities listed here will determine the amount of credit required</i> )	Weekly theoretical course hours Reading activities Internet search and library work Designing and implementing materials Preparing and making presentations Midterm and revision for midterm Final exam and revision for final exam

Assessment Criteria		Number(s)	Weight (%)			
	Midterm exam	1	30			
	Assignment					
	Application					
	Project	1	30			
	Practice					
	Quiz					
	Final exam	1	40			
Total	3					

  

Workload of the Course	Activity	Number of Weeks	Duration (Weekly Hour)	End of Semester Total Workload	
	Weekly theoretical course hours	14	3	45	
	Weekly practical course hours				
	Reading activities	14	2	28	
	Internet search and library work	14	3	42	
	Designing and implementing materials	3	8	24	
	Making a report				
	Preparing and making presentations	1	7	7	
	Midterm and revision for midterm	1	2	2	
	Final exam and revision for final exam	1	2	2	
	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.					
	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 professional principles and knowledge on ethical responsibility; awareness of acting impartially, without discrimination on any issue, and being inclusive of diversity.			X		
	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.					
	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	
<b>Lecturer(s) and Contact Information</b>	Lecturer's First/Last Name: Assist. Prof. Dr. Uraz Yavanoğlu E-mail address: uraz@gazi.edu.tr						