

<b>COURSE DESCRIPTION FORM</b>	
<b>Course Code and Name</b>	BM201 ADVANCED PROGRAMMING
<b>Course Semester</b>	3
<b>Catalogue Data of the Course</b> <i>(Course Content)</i>	Writing libraries, functions, classes, prototypes, C++ inline functions, C++ function and operator overloading, C++ pointers, C++ exception handling, C++ memory management, C++ trees, graphs, hash tables, C# templates, C# containers, GUI programming with C#, database programming with C#, network programming with C# and parallel programming with C#.
<b>Course Textbooks</b>	1. Prinz U.K., Prinz P., "A Complete Guide to Programming in C++", Jones and Bartlett Publishers, 2002. 2. Deitel P., Deitel H., "Visual C# How to Program 6/e", Pearson, 2021.
<b>Supplementary Textbooks</b>	1. Stroustrup B., "C++ Programming Language 4/e", Addison-Wesley, 2013. 2. Deitel P., Deitel H., "C: How to Program 7/e", Prentice Hall, 2012. 3. Forouzan B., Gilberg R.F., "Computer Science: A Structured Approach Using C 3/e", Course Technology, 2006.
<b>Credit (ECTS)</b>	5
<b>Prerequisites for the Course</b> <i>(Attendance Requirements)</i>	Attendance is mandatory
<b>Course Type</b>	Compulsory
<b>Language of Instruction</b>	Turkish
<b>Course Objectives</b>	To teach writing libraries, functions, classes, prototypes, C++ inline functions, C++ function and operator overloading, C++ pointers, C++ exception handling, C++ memory management, C++ trees, graphs, hash tables, C# templates, C# containers, GUI programming with C#, database programming with C#, network programming with C# and parallel programming with C#.
<b>Course Learning Outcomes</b>	1. Writes the library. 2. Defines functions, classes and prototypes. 3. Writes C++ inline functions. 4. Explains C++ function and operator overloading. 5. Defines C++ pointers. 6. Explains C++ exception handling. 7. Explains C++ memory management. 8. Explains C++ trees, graphs and hash tables. 9. Explains C# templates and containers. 10. Develops GUI program and database program with C#. 11. Develops network program and parallel program with C#.
<b>Instruction Method</b> <i>(Face-to-face, Distance education etc.)</i>	Face-to-face
<b>Weekly Schedule of the Course</b>	Week 1: Writing library Week 2: Functions, classes, prototypes Week 3: C++ inline functions Week 4: C++ function and operator overloading Week 5: C++ pointers Week 6: C++ exception handling Week 7: C++ memory management Week 8: C++ trees, graphs, hash tables Week 9: C# templates Week 10: C# containers Week 11: GUI programming with C# Week 12: Database programming with C# Week 13: Network programming with C# Week 14: Parallel programming with C#
<b>Teaching Activities</b> <i>(The time spent for the activities listed here will determine the amount of</i>	Weekly theoretical course hours: 2 Weekly practical course hours: 2 Reading activities Internet search and library work

<i>credit required)</i>	Making a report Preparing and making presentations Midterm and revision for midterm Final exam and revision for final exam								
<b>Assessment Criteria</b>		<b>Number(s)</b>	<b>Weight (%)</b>						
	Midterm exam	1	35						
	Assignment	4	10						
	Application	-	-						
	Project	1	15						
	Practice	-	-						
	Quiz	-	-						
	Final exam	1	40						
Total		100							
<b>Workload of the Course</b>	<b>Activity</b>	<b>Number of Weeks</b>	<b>Duration (Weekly Hour)</b>	<b>End of Semester Total Workload</b>					
	Weekly theoretical course hours	14	2	28					
	Weekly practical course hours	14	2	28					
	Reading activities	14	1	14					
	Internet search and library work	14	1	14					
	Designing and implementing materials	-	-	-					
	Making a report	4	2	8					
	Preparing and making presentations	1	2	2					
	Midterm and revision for midterm	1	12	12					
	Final exam and revision for final exam	1	24	24					
	Total workload			130					
	Total workload/ 25			5,2					
Course Credit (ECTS)			5						
<b>Contribution Level between Course Outcomes and Program Outcomes</b>	<b>No</b>	<b>Program Outcomes</b>			<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
	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 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.						
<b>Lecturer(s) and Contact Information</b>	Lecturer's First/Last Name: Prof. Dr. M. Ali AKCAYOL E-mail address: akcayol@gazi.edu.tr							