

<b>Identification</b>	<b>Subject</b>	<b>CMS 140</b> Fundamentals of Computer Programming 6 ECTS
	<b>Department</b>	Computer Science
	<b>Group</b>	<b>D</b>
	<b>Program</b>	Undergraduate
	<b>Term</b>	Spring, 2024
	<b>Instructor</b>	Hafiz Muhammad Azeem Akram
	<b>E-mail:</b>	a.akram@khazar.org
	<b>Campus/Day</b>	Neftchilar Campus Wednesday
<b>Prerequisites</b>	English proficiency	
<b>Language</b>	English	
<b>Compulsory/Elective</b>	Required	
<b>Required textbooks and course materials</b>	<ol style="list-style-type: none"> <li>1. Walter J. Savitch. Problem Solving with C++, 3rd Edition. ISBN-13: 9781292222820</li> <li>2. Paul Deitel , Harvey Deitel . C++ How to Program 10th Edition. ISBN: 9780134448237</li> </ol>	
<b>Course Description and outline</b>	<p>This comprehensive course is designed to provide students with a solid foundation in programming. Throughout this course, students will learn the fundamentals of programming. Starting with an overview of the importance of programming languages, the course progresses to cover topics such as data types and variables, control structures, functions, arrays, structures, and pointers.</p> <p>We will cover the following key topics:</p> <ul style="list-style-type: none"> <li>• Introduction to Programming.</li> <li>• Data Types and Variables</li> <li>• Control Structures</li> <li>• Functions</li> <li>• Arrays and Structures</li> <li>• Pointers and References</li> </ul>	
<b>Course objectives</b>	<ol style="list-style-type: none"> <li>1. To appreciate the need for a programming language</li> <li>2. To introduce the concept and usability of the structured programming methodology.</li> <li>3. To develop proficiency in making useful software using the C/C++ language</li> </ol>	
<b>Learning outcomes</b>	<ul style="list-style-type: none"> <li>• Demonstrate Fundamental Programming Knowledge</li> <li>• Apply Key Programming Constructs</li> <li>• Analyze and Solve Programming Problems</li> <li>• Design Structured Programs</li> </ul>	

<b>Teaching methods</b>	<b>Lecture</b>		x
	<b>Group discussion</b>		x
	<b>Experiential exercise</b>		x
	<b>Labs</b>		x
	<b>Case analysis</b>		x
	<b>Course paper</b>		x
	<b>Others</b>		
<b>Evaluation</b>	<b>Methods</b>	<b>Date/deadlines</b>	<b>Percentage (%)</b>
	<b>Midterm Exam</b>		30
	<b>Final Exam</b>		30
	<b>Quizzes</b>		15
	<b>Assignments</b>		15
	<b>Class Participation</b>		10
	<b>Total</b>		100
<b>Policy</b>	<p><b>Preparation for class</b> The lecture material will focus on the major points introduced in the text. Reading the assigned chapters and having some familiarity with them before class will greatly assist your understanding of the lecture. After the lecture, you should study your notes and work relevant problems.</p> <ul style="list-style-type: none"> <li> <b>Withdrawal (pass/fail)</b> This course strictly follows grading policy of the School of Engineering and Applied Science. Thus, a student is normally expected to achieve a mark of at least 60% to pass. In case of failure, he/she will be required to repeat the course the following term or year. </li> <li> <b>Cheating/plagiarism</b> Cheating or other plagiarism during the Quizzes, Mid-term and Final Examinations will lead to paper cancellation. In this case, the student will automatically get zero (0), without any considerations. </li> <li> <b>Professional behavior guidelines</b> The students shall behave in the way to create favorable academic and professional environment during the class hours. Unauthorized discussions and unethical behavior are strictly prohibited. </li> <li> <b>Ethics</b> Students should not arrive late to class. All cell phones must be turned off and stowed away before entering class. Use of any electronic devices is not allowed in the classroom and violators will be punished accordingly. </li> <li> <b>Quizzes</b> At the end of every topic, a brief quiz of five minutes duration will be conducted. The final grades for the quiz will be determined by taking the average at the end of the semester. </li> <li> <b>Assignments</b> After completing every 25% of the syllabus, students will receive an assignment that must be completed within one working week. </li> <li> <b>Class Participation</b> Failure to attend 180 minutes of class will result in a loss of one attendance point. </li> </ul>		

WK	Date/Day (tentative)	Topics	Recommended Readings
1	14/02/2024	<ul style="list-style-type: none"> <li>• Introduction to Programming and Problem Solving</li> <li>• Introduction to C++</li> <li>• Testing and Debugging</li> <li>• IDE</li> </ul>	Lecture Slides Readings:1.2-1.4
2	21/02/2024	<ul style="list-style-type: none"> <li>• Variables and Assignments</li> <li>• Input And Output</li> <li>• Data Types and Expressions</li> <li>• Program Style</li> </ul>	Lecture Slides Readings:2.1-2.14
3	28/02/2024	<ul style="list-style-type: none"> <li>• Simple Flow of Control</li> <li>• Using Boolean Expressions</li> <li>• Multiway Branches: Multiway <i>if-else</i> Statements, The <i>switch</i> Statement</li> <li>• Case Studies</li> </ul>	Lecture Slides Readings:3.1-3.2
4	06/03/2024	<ul style="list-style-type: none"> <li>• Loop Statements</li> <li>• Designing Loops</li> <li>• Case Studies</li> </ul>	Lecture Slides Readings: 3.3-3.4
5	13/03/2024	<ul style="list-style-type: none"> <li>• Top-Down Design</li> <li>• Predefined Functions</li> <li>• Programmer-Defined Functions</li> </ul>	Lecture Slides Readings:4.1-4.3
6	20/03/2024		No Working Day
7	27/03/2024	<ul style="list-style-type: none"> <li>• Procedural Abstraction</li> <li>• Scope And Local Variables</li> <li>• Overloading Function Names</li> <li>•</li> </ul>	Lecture Slides Readings:4.5-4.8
8	03/04/2024	<b>Midterm Exam</b>	
9	10/04/2024		No Working Day
10	17/04/2024	<ul style="list-style-type: none"> <li>• Void Functions</li> <li>• Call-By-Reference Parameters</li> <li>• Using Procedural Abstraction</li> <li>• Testing And Debugging Functions</li> <li>• General Debugging Techniques</li> </ul>	Lecture Slides Readings:5.1-5.3
11	24/04/2024	<ul style="list-style-type: none"> <li>• Introduction to Arrays</li> <li>• Array Basics</li> <li>• Passing Arrays to Functions</li> <li>• Problems</li> </ul>	Lecture Slides Readings:7.1-7.2

12	01/05/2024	<ul style="list-style-type: none"> <li>• Preventing Changes of Array Arguments in Functions</li> <li>• Returning Arrays from Functions</li> <li>• Searching Arrays</li> <li>• Sorting Arrays</li> </ul>	Lecture Slides Readings:7.3-7.4
13	08/05/2024	<ul style="list-style-type: none"> <li>• Introduction to Multidimensional Arrays</li> <li>• Declaring Two-Dimensional Arrays</li> <li>• Processing Two-Dimensional Arrays</li> <li>• Passing Two-Dimensional Arrays to Functions Introduction to Pointers</li> </ul>	Lecture Slides Readings:7.5-7.6
14	15/05/2024	<ul style="list-style-type: none"> <li>• POINTERS</li> <li>• Memory Management</li> <li>• Static Variables and Automatic Variables</li> </ul>	Lecture Slides Readings: 9.1-9.2
15	22/05/2024	<ul style="list-style-type: none"> <li>• DYNAMIC ARRAYS</li> <li>• Array Variables and Pointer Variables</li> <li>• Creating and Using Dynamic Arrays</li> </ul>	Lecture Slides Readings: 9.3-9.4
		<b>Final Exam</b>	

Note: All the readings mentioned above are from the book Problem Solving with C++, 3rd Edition.

This syllabus is a guide for the course and any modifications to it will be announced in advance.