# Kingdom of Saudi Arabia
**Ministry of Higher Education**
**College of Computer & Information Sciences**
**Majmaah University**

College of Computer and Information Sciences

كلية علوم الحاسب والمعلومات

جامعة المجمعة
Majmaah University

# Course Profile

| Course Name:- | **Programming I** |
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| **Course Code:-** | **CS110** |
| **Academic Year:-** | **2014** |
| **Semester:-** | **2ⁿᵈ** |

## Course Overview

This course is introducing the following topics Introduction to computers and basic programming concepts and constructs, Writing simple C++ programs, Main parts of C++ programs, Main function, Variables, Built-in data type, Simple control structures for decision-making and repetition: if…else and while statements, Control statements: for, do…while, switch, break, and continue statements, Logical operator &&/||/!, simple condition and compound condition and Boolean data type, Functions and recursion, Program Modules in C++., Declaring and using Functions, Passing arguments by values and by reference, Recursive functions, Math library functions, Function overloading, Scope of Declarations, Arrays, Declaring and Creating Arrays, Examples Using Arrays, Passing Arrays to functions, Searching Arrays, Multidimensional Arrays (2-D Arrays as an example), Sorting Arrays, Pointers and strings, Introduction to pointers and pointer arithmetic, Directly and indirectly referencing a variable, Pointer operators , Pass-by-reference with pointer arguments, Introduction to Strings and String manipulations, Library string manipulation functions.

## Course Details

| Level:- | 3 |
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| **Credit:-** | **4(3+2+0)** |
| **Pre-Requisites:-** | **NA** |
| **Co- Requisites:-** | **NA** |

## Learning Outcomes of Course

After successful completion of this course, student will be able to-
1. Identify the basic components of a computer system.
2. Design an algorithm to solve a given problem using the top-down design approach.
3. Know the difference between call-by-value and call-by-reference parameters.
4. Understand the notion of procedural abstraction.

5. Understand and use the three basic programming structures: sequence, selection and repetition.
6. Use arrays, strings and pointers to manipulate data.

## Course Assessment

| Name of Assessment Task | Weight of Assessment | Week Due |
|---|---|---|
| 1. Midterm Exam-1 | 15% | Week 6 |
| 2. Midterm Exam-2 | 15% | Week 10 |
| 3. Quizzes/ Assignments/Report/Seminar | 10% | Week 11 |
| 4. Lab | 20% | Week 15 |
| 5. Final Exam | 40% | Week 15 |

## Assessment Task and Learning Outcomes Alignment

| Assessment Task Name | Course Learning Outcomes | | | | | |
|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| 1. Midterm Exam-1 | √ | √ | √ | √ | | |
| 2. Midterm Exam-2 | √ | √ | √ | √ | √ | |
| 3. Quizzes/ Assignments/Report/Seminar | √ | √ | √ | √ | √ | |
| 4. Lab | √ | √ | √ | √ | √ | √ |
| 5. Final Exam | √ | √ | √ | √ | √ | √ |

## Teaching Contact Details

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| Name of Course Coordinator:- | Dr. Ahmad Raza Khan |
| Email of Course Coordinator:- | ar.khan@mu.edu.sa |
| Lab/Tutorial Instructor:- | Mr. Mohammed Abdul Khader |
| Email of Lab/Tutorial Instructor:- | a.mohammed@mu.edu.sa |
| Office Hours:- | 8:00am to 2:30pm |
| Office Number:- | 024-1-19-1 |
| Office Phone Number:- | 01640425-2536 |

## Details of Required Text Book

| Book Name | Authors Name | Publisher | Year | Edition |
|---|---|---|---|---|
| 1. C++: How To Program | H.M.Deitel, P.J.Deitel | Prentice Hell | Feb 22 2013 | 9th Edition |

## Details of Required Reference Books

| Book Name | Authors Name | Publisher | Year | Edition |
|---|---|---|---|---|
| 1. The C++ Programming Language | BjarneStroustrup | Addison-Wesley Professional | 2000 | 3rd Edition |
| 2. C++ Programming: From Problem Analysis to Program Design | D. S. Malik | Course Technology | Feb 24 2012 | 6th Edition |
| 3. C++ Programming for the Absolute Beginner | Mark Lee | Thomson Course, Technology | April 20 2009 | 2nd Edition |

## IT Resources

The following IT Resources will require to access-
1. MU University Student Email
2. Internet
3. Course Website
4. Computer System with Software to run C++ lab

## Course Schedule

| Course Topics | Book's Chapter | Event Name | Week Due |
|---|---|---|---|
| Introduction to computers and basic programming concepts and constructs, | Chapter 1, 2 | | Week-1 |
| Writing simple C++ programs, Main parts of C++ program, Main function | Chapter 1, 2 | Assignment on simple C++ programs | Week-2 |
| Variables, Built-in data type | Chapter 1, 2 | Assignment on data types | Week-3 |

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| Simple control structures for decision-making and repetition: if…else and while statements, Control statements: for, do…while, switch, break, and continue statements. | Chapter 4 Chapter 4 | Assignment on loops and conditional statements | Week-4 |
| Logical operator &&/\|\|/!, simple condition and compound condition and Boolean data type Functions and recursion, Program Modules in C++. | Chapter 4,5 | Assignment on functions and recursion | Week-5 |
| Declaring and using Functions, Passing arguments by values and by reference | Chapter 6 | Assignment on functions with arguments | Week-6 |
| Recursive functions, Math library functions | Chapter 6 | | Week-7 |
| Function overloading, Scope of Declarations | Chapter 6 | Assignment on function overloading | Week-8 |
| Arrays, Declaring and Creating Arrays, Examples Using Arrays | Chapter 7 | | Week-9 |
| Passing Arrays to functions, Searching Arrays | Chapter 7 | Assignment on Arrays sorting and searching | Week-10 |
| Multidimensional Arrays (2-D Arrays as an example), Sorting Arrays | Chapter 7 | | Week-11 |
| Pointers and strings, Introduction to pointers and pointer arithmetic | Chapter 8 | Assignment on pointers and referencing | Week-12 |
| Directly and indirectly referencing a variable, Pointer operators | Chapter 8 | | Week-13 |
| Pass-by-reference with pointer arguments, Introduction to Strings and String manipulations | Chapter 8 | | Week-14 |
| Library string manipulation functions. | Chapter 8 | | Week-15 |
| | | | Exam Week |

## Referencing Style

The **American Psychological Association (APA)** referencing style must be use for all submissions of this course.

# Course Assessment Task

| Assessment Name:- | Midterm Exam-1 |
|---|---|
| Description of Task Assessment:- | This assignment is aligned to learning outcomes 1, 2, 3 and 4. In that regard, the assignment contains questions that assess: 1) Students' thorough understanding of computer system; 2) Students' understanding about designing Algorithms and flowcharts. 3) Students' learn call-by-value and call-by-reference parameters 4) Students understand the notion of procedural abstraction. |
| Task Assessment Due Week/Date:- | **Week 6** |
| Return Week/Date to Students:- | **Week 8** |
| Weight of Task Assessment:- | **15%** |
| List of Learning Outcomes Assessed:- | 1. Identify the basic components of a computer system. <br> 2. Design an algorithm to solve a given problem using the top-down design approach. <br> 3. Know the difference between call-by-value and call-by-reference parameters. <br> 4. Understand the notion of procedural abstraction. |

| Assessment Name:- | Midterm Exam-2 |
|---|---|
| Description of Task Assessment:- | This assignment is aligned to learning outcomes 1, 2, 3, 4 and 5. In that regard, the assignment contains questions that assess: 1) Students' thorough understanding of computer system; 2) Students' understanding about designing Algorithms and flowcharts. 3) Students' learn call-by-value and call-by-reference parameters 4) Students understand the notion of procedural abstraction. 5) Students will understand basic programming structures: sequence, selection and repetition. |
| Task Assessment Due Week/Date:- | **Week 10** |
| Return Week/Date to Students:- | **Week 11** |
| Weight of Task Assessment:- | **15%** |
| List of Learning Outcomes Assessed:- | 1. Identify the basic components of a computer system. <br> 2. Design an algorithm to solve a given problem using the top-down design approach. <br> 3. Know the difference between call-by-value and call-by-reference parameters. <br> 4. Understand the notion of procedural abstraction. <br> 5. Understand and use the three basic |

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| | programming structures: sequence, selection and repetition. |

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| **Assessment Name:-** | Online Quizzes/ Assignments/Report/Seminar |
| **Description of Task Assessment:-** | This assignment is aligned to learning outcomes 1, 2, 3, 4, 5 and 6. An online quiz will be conducted for the students on all the topics covered students have to use the computer system to check the correct answer. |
| **Task Assessment Due Week/Date:-** | **Week 11** |
| **Return Week/Date to Students:-** | **Week 11** |
| **Weight of Task Assessment:-** | **10%** |
| **List of Learning Outcomes Assessed:-** | 1. Identify the basic components of a computer system.<br>2. Design an algorithm to solve a given problem using the top-down design approach.<br>3. Know the difference between call-by-value and call-by-reference parameters.<br>4. Understand the notion of procedural abstraction.<br>5. Understand and use the three basic programming structures: sequence, selection and repetition. |

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| **Assessment Name:-** | Lab |
| **Description of Task Assessment:-** | This assignment is aligned to learning outcomes 1, 2, 3, 4, 5. And 6 All students have to submit there Lab assignments and homework in time. |
| **Task Assessment Due Week/Date:-** | **Week 03,04,05,06,07,08,09,10,11,12,13,14** |
| **Return Week/Date to Students:-** | **Week 03,04,05,06,08,09,10,11,12,13,14,15** |
| **Weight of Task Assessment:-** | **20%** |
| **List of Learning Outcomes Assessed:-** | 1. Identify the basic components of a computer system.<br>2. Design an algorithm to solve a given problem using the top-down design approach.<br>3. Know the difference between call-by-value and call-by-reference parameters.<br>4. Understand the notion of procedural abstraction.<br>5. Understand and use the three basic programming structures: sequence, selection and repetition.<br>6. Use arrays, strings and pointers to manipulate data. |

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| **Assessment Name:-** | Final Exam |
| **Weight of Task Assessment:-** | **40%** |
| **Duration:-** | **3Hrs** |

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| **Warning:-** | |
| **List of Learning Outcomes Assessed:-** | 1. Identify the basic components of a computer system. <br> 2. Design an algorithm to solve a given problem using the top-down design approach. <br> 3. Know the difference between call-by-value and call-by-reference parameters. <br> 4. Understand the notion of procedural abstraction. <br> 5. Understand and use the three basic programming structures: sequence, selection and repetition. <br> 6. Use arrays, strings and pointers to manipulate data. |