

COURSE DESCRIPTIONS

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|----------------------|------------------------------------|-------------------|--|---------------------|--------|
| Faculty | Science and Information Technology | | | | |
| Department | Computer Science | | | NQF level | 7 |
| Course Title | <i>Programming Language II</i> | Code | 501221 | Prerequisite | 185103 |
| Credit Hours | 3 | Theory | 2 | Practical | 1 |
| Course Leader | <i>Dr. Maen Alzubi</i> | email | m.alzubi@jadara.edu.jo | | |
| Lecturers | <i>Multi- Lecturers</i> | emails | <i>Multi- Emails</i> | | |
| Lecture time | <i>Multi-Sections</i> | Classroom | <i>Face to face</i> | | |
| Semester | <i>First 2024/2025</i> | Production | 2010 | Updated | 2024 |

Short Description

This course introduces the advanced C++ topics include user defined functions, Arrays and Strings, Records (structure), Classes and data abstraction, Inheritance and composition, Pointers.

Course Objectives

The main goal of this course is to provide students with the concepts of Advanced Function concept, Arrays (1D, 2D), string manipulation, and object-oriented design using C++ programming language, and its practical application in different areas.

Learning Outcomes

A. Knowledge - Theoretical Understanding

a1: Demonstrate the meaning of concepts of function types, arrays (1D and 2D), strings, pointers, and object-oriented programming. (K1)

B. Knowledge - Practical Application

a2: Develop a C++ program that utilizes the most important concepts like function types, arrays (1D and 2D), strings, pointers, and object-oriented programming. (K4)

C. Skills - Generic Problem Solving and Analytical Skills

b1. Evaluate Functions, arrays, pointers, and object-oriented C++ code using problem-solving techniques and constraints. (S2)

D. Skills - Communication, ICT, and Numeracy

E. Competence: Autonomy, Responsibility, and Context

Teaching and Learning Methods

- Lecture notes, Labs, and references

Assessment Methods

- Lecture, lab, Group work, and discussion.
- Midterm exam, Final exam, Class Assignment
- Observation of student contribution in teamwork

Course Contents

| Week | Hours | CLOs | Topics | Teaching & Learning Methods | Assessment Methods |
|---------------------|--------------------------|----------------|--|---------------------------------|--|
| W1 | 1.5 1.5 | a1 | Syllabus, Course Schedule. Overview on: <ul style="list-style-type: none"> • <i>Condition and Loops</i> | Face-to-face Lectures & Labs | |
| W2 W3 | 1.5 1.5 1.5 1.5 | a1 a2 b1 | C++ Functions: <ul style="list-style-type: none"> • <i>Function Types (Predefined and User defined).</i> • <i>Formal parameter list, Actual parameters</i> • <i>Void functions and value returning functions,</i> • <i>Function Prototype</i> • <i>Value and Reference parameters, scope of an identifier,</i> • <i>Global variables,</i> • <i>Default parameters,</i> • <i>Overloading and Recursion</i> | Face-to-face Lectures & Labs | Quizzes Assignments Discussion and interaction |
| W4 W5 W6 | 1.5 1.5 1.5 1.5 | a1 a2 b1 | Arrays and Strings <ul style="list-style-type: none"> • <i>Declaring and processing 1D-Arrays</i> • <i>Declaring and processing 2D-Arrays</i> • <i>Strings manipulation</i> | Face-to-face Lectures & Labs | Quizzes Assignments Discussion and interaction |
| W6 W7 W8 | 1.5 1.5 1.5 1.5 | a1 a2 b1 | Dynamic structures: <ul style="list-style-type: none"> • <i>Pointer Variable Definitions and Initialization</i> • <i>Operations on Pointer Variables</i> • <i>Pointers vs Arrays</i> • <i>Functions and Pointers</i> • <i>Dynamic Variables</i> • <i>Dynamic Arrays (1D and 2D)</i> | Face-to-face Lectures & Labs | Quizzes Assignments Discussion and interaction |
| MIDTERM EXAM | | | | | |

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|-------------------|-----|----------------|--|---------------------------------|--|
| W9 | 1.5 | a1 a2 b1 | <u>Classes and Data Abstraction</u> <ul style="list-style-type: none"> • <i>Introduction to Object- Oriented Programming</i> • <i>Constructor and Destructors</i> • <i>Member Functions and Data Members</i> • <i>Access specifiers</i> • <i>Defining a Class with a Member Function,</i> • <i>Defining a Member Function with a Parameter</i> | Face to face Lectures & Labs | Quizzes Assignments Discussion and interaction |
| W10 | 1.5 | | | | |
| W11 | 1.5 | | | | |
| | 1.5 | | | | |
| | 1.5 | | | | |
| W12 | 1.5 | a1 a2 b1 | <u>Inheritance:</u> <ul style="list-style-type: none"> • <i>Base Classes and Derived Classes.</i> • <i>Protected Members</i> • <i>Relationship between Base Classes and Derived Classes,</i> | Face-to-face Lectures & Labs | Quizzes Assignments Discussion and interaction |
| W13 | 1.5 | | | | |
| | 1.5 | | | | |
| FINAL EXAM | | | | | |

| Course Assessment Plan | | | | | | | |
|-------------------------------|----------------------------|-------------|------------|------------|------------|----|--|
| Assessment Method | | Grade | CLOs | | | | |
| | | | a1 | a2 | b1 | | |
| Midterm) | | 30% | 10% | 10% | 10% | | |
| Coursework | | 20% | | | | | |
| Final Exam | | 50% | 14% | 18% | 18% | | |
| Coursework assessment methods | Assignments | | | 5% | | | |
| | Case study | | | | | | |
| | Discussion and interaction | | 5% | | | | |
| | Group work activities | | | | | | |
| | Lab tests and assignments | | | | | | |
| | Presentations | | | | | | |
| | Quizzes | | | | 5% | 5% | |
| Total | | 100% | 29% | 38% | 33% | | |

| Infrastructure | |
|-----------------------------|---|
| Textbook | C++ Programming: From Problem Analysis to Program Design, D.S. Malik, 2018 |
| References | C++ How to Program, Paul J. Deitel and Harvey Deitel, Pearson, 10th Ed., 2016 |
| Required reading | |
| Electronic materials | |
| Other | |

| Plagiarism | |
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| <p>Plagiarism is claiming that someone else's work is your own. The department has a strict policy regarding plagiarism and, if plagiarism is indeed discovered, this policy will be applied. Note that punishments apply also to anyone assisting another to commit plagiarism (for example by knowingly allowing someone to copy your code).</p> <p>Plagiarism is different from group work in which a number of individuals share ideas on how to carry out the coursework. You are strongly encouraged to work in small groups, and you will certainly not be penalized for doing so. This means that you may work together on the program. What is important is that you have a full understanding of all aspects of the completed program. In order to allow proper assessment that this is indeed the case, you must adhere strictly to the course work requirements as outlined above and detailed in the coursework problem description. These requirements are in place to encourage individual understanding, facilitate individual assessment, and deter plagiarism.</p> | |