Ministry of Higher Education and Scientific Research - Iraq
University of Diyala
College of Artificial Intelligence Engineering Technology
Department of Artificial Intelligence Engineering

# الملحق 4: وصف المادة الدراسية

# MODULE DESCRIPTION FORM

# نموذج وصف المادة الدراسية

| Module Information<br>معلومات المادة الدراسية | | | | | |
|---|---|---|---|---|---|
| **Module Title** | **Fundamentals of Programming** | | | **Module Delivery** | |
| **Module Type** | **Core** | | | ☒ **Theory**<br>☒ **Lecture**<br>☒ **Lab**<br>☒**Tutorial**<br>☐ **Practical**<br>☐ **Seminar** | |
| **Module Code** | **AIE 101** | | | | |
| **ECTS Credits** | **6** | | | | |
| **SWL (hr/sem)** | **150** | | | | |
| **Module Level** | 1 | | **Semester of Delivery** | 1 | |
| **Administering Department** | AI. Eng. | | **College** | College of Artificial Intelligence Engineering Technology | |
| **Module Leader** | Rasha Amer Kadhim | | **e-mail** | rashakadhim@uodiyala.edu.iq | |
| **Module Leader's Acad. Title** | Lect. | | **Module Leader's Qualification** | MSc | |
| **Module Tutor** | Name (if available) | | **e-mail** | E-mail | |
| **Peer Reviewer Name** | | | **e-mail** | | |
| **Scientific Committee Approval Date** | 10/11/2025 | | **Version Number** | 1.0 | |

| Relation with other Modules<br>العلاقة مع المواد الدراسية الأخرى | | | |
|---|---|---|---|
| **Prerequisite module** | None | **Semester** | |
| **Co-requisites module** | None | **Semester** | |

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| Module Aims, Learning Outcomes and Indicative Contents<br>أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية | |
|---|---|
| **Module Objectives**<br>أهداف المادة الدراسية | Upon completion of this course, the student will be able to:<br>1. Understand computer system and classify programming languages .<br>2. Write simple C++ program.<br>3. Learn data types ,variables, arithmetic operators ,assignment and input statements.<br>4. Learn relational operators and logical expressions.<br>5. Using selection in program like if/if…else ,block statements , switch structures.<br>6. Develop executable programs by using repetition control structures : While Looping, Do…while Looping ,For Looping , Break and continue Statements. |
| **Module Learning Outcomes**<br>مخرجات التعلم للمادة الدراسية | 1. Recognize computer system and programming languages.<br>2. Build simple program by using different data types.<br>3. Define the relational operators and logical expressions.<br>4. Adding new abilities to program by using selection control structures.<br>5. Applying repetition control structures in programs.<br>6. Perform, Break and continue Statements. |
| **Indicative Contents**<br>المحتويات الإرشادية | Introduction to computer system (3 hrs),<br>Classification of programming languages (3 hrs),<br>Introduction to problem solving (3 hrs),<br>Computers and Programming Languages (3 hrs),<br>Processing a C++ Program (3 hrs),<br>Basics of a C++ Program, Data Types, Variables, Arithmetic Operators (3 hrs),<br>Assignment and Input Statements (3 hrs),<br>Input / Output, I/O Streams (3 hrs),<br>Predefined Functions, Output Formatting (3 hrs),<br>Control Structures I (Selection): Relational Operators, Logical Expressions (3 hrs),<br>If/If…else, Block Statements (3 hrs),<br>Switch Structures (3 hrs),<br>Control Structures I (Repetition): While Looping, Do…while Looping (3 hrs),<br>For Looping (3 hrs),<br>Break and continue Statements (3 hrs), |

| Learning and Teaching Strategies<br>استراتيجيات التعلم والتعليم | |
|---|---|
| **Strategies** | Type something like: The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, homework's and examples. Practical examples helps students to understand the course material. |

| Student Workload (SWL)<br>الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل | **78** | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | **5.2** |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل | **72** | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | **4.8** |
| **Total SWL (h/sem)**<br>الحمل الدراسي الكلي للطالب خلال الفصل | **150** | | |

| Module Evaluation<br>تقييم المادة الدراسية | | | | | |
|---|---|---|---|---|---|
| | | **Time/Number** | **Weight (Marks)** | **Week Due** | **Relevant Learning Outcome** |
| **Formative assessment** | **Quizzes** | **2** | **10% (5)** | **7 and 14** | **LO #2 and #5** |
| | **Assignments** | **2** | **10% (5)** | **11 and 13** | **LO #4 and #5** |
| | **Projects / Lab.** | **1** | **10% (10)** | **Continuous** | **All** |
| | **Participation & Attendance** | **1** | **10% (10)** | **Continuous** | **All** |
| **Summative assessment** | **Midterm Exam** | **2 hr** | **10% (10)** | **9** | **LO #1 - #3** |
| | **Final Exam** | **3 hr** | **50% (50)** | **16** | **All** |
| **Total assessment** | | | **100% (100 Marks)** | | |

| Delivery Plan (Weekly Syllabus)<br>المنهاج الاسبوعي النظري | |
|---|---|
| | **Material Covered** |
| **Week 1** | Introduction to computer system |
| **Week 2** | Classification of programming languages |
| **Week 3** | Introduction to problem solving |
| **Week 4** | Computers and Programming Languages |
| **Week 5** | Processing a C++ Program |
| **Week 6** | Basics of a C++ Program , Data Types ,Variables, Arithmetic Operators |
| **Week 7** | Assignment and Input Statements |
| **Week 8** | Input / Output , I/O Streams |
| **Week 9** | Predefined Functions , Output Formatting |
| **Week 10** | Control Structures I (Selection)<br>Relational Operators ,Logical Expressions |
| **Week 11** | If/If…else ,Block Statements |
| **Week 12** | Switch Structures |
| **Week 13** | Control Structures I (Repetition)<br>While Looping, Do…while Looping |
| **Week 14** | For Looping |
| **Week 15** | Break and continue Statements |
| **Week 16** | **Preparatory week before the final Exam** |

| Delivery Plan (Weekly Lab. Syllabus)<br>المنهاج الاسبوعي للمختبر | |
|---|---|
| | **Material Covered** |
| **Week 1** | Computer Assembly and parts Characteristics<br>DOS commands |
| **Week 2** | Computer formatting and OS installation<br>Handling operating system(windows) |

| | |
|---|---|
| **Week 3** | Software installation<br>Handling MS word |
| **Week 4** | Handling MS Excel<br>Handling MS power point |
| **Week 5** | Computer maintenance and troubleshooting<br>BIOS Setting |
| **Week 6** | Introduction to C++ computer program?<br>Editing, compiling and executing a simple program<br>Overview of program structure and syntax |
| **Week 7** | Variables and constants<br>Variable types, Declaration of a variable<br>Storage of variables in computer memory, Assignment of variables |
| **Week 8** | Assignment of variables<br>Assignment statements ,Arithmetic expressions ,Initialization of variables<br>Declaration and initialization of symbolic constants |
| **Week 9** | Simple input and output<br>Printing to the screen using output stream,<br>Input of data from the keyboard using input stream |
| **Week 10** | Control Statements<br>Boolean expressions and relational operators.<br>Compound Boolean expressions using logical operators |
| **Week 11** | The IF selection control statement<br>The IF/ELSE selection control statement<br>ELSE IF multiple selection statement |
| **Week 12** | SWITCH multiple selection statement |
| **Week 13** | Control Statements<br>The WHILE repetition control statement<br>Increment and decrement operators |
| **Week 14** | The DO. . .WHILE repetition control statement<br>Break and continue Statements |
| **Week 15** | The FOR-repetition control statement |

## Learning and Teaching Resources
مصادر التعلم والتدريس

| | Text | Available in the Library? |
|---|---|---|
| **Required Texts** | C++ Programming: From Problem Analysis to Program Design, 6th Edition; D.S. Malik | Yes |
| **Recommended Texts** | • Programming and problem solving with C++: comprehensive sixth edition, Nell Dale and Chip Weems. | No |

| | | |
|---|---|---|
| | • Computer Science Textbook class XI, First Edition, 2019.<br>• C++ Primer Plus, Sixth Edition | |
| **Websites** | ▪ http://www.cplusplus.com/doc/tutorial/ | |

| **Grading Scheme**<br>مخطط الدرجات | | | | |
|---|---|---|---|---|
| **Group** | **Grade** | التقدير | **Marks %** | **Definition** |
| **Success Group (50 - 100)** | **A** - Excellent | امتياز | 90 - 100 | Outstanding Performance |
| | **B** - Very Good | جيد جدا | 80 - 89 | Above average with some errors |
| | **C** - Good | جيد | 70 - 79 | Sound work with notable errors |
| | **D** - Satisfactory | متوسط | 60 - 69 | Fair but with major shortcomings |
| | **E** - Sufficient | مقبول | 50 - 59 | Work meets minimum criteria |
| **Fail Group (0 – 49)** | **FX** – Fail | راسب (قيد المعالجة) | (45-49) | More work required but credit awarded |
| | **F** – Fail | راسب | (0-44) | Considerable amount of work required |
| | | | | |

**Note:** Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.