# MODULE DESCRIPTION FORM

# نموذج وصف المادة الدراسية

| Module Information<br>معلومات المادة الدراسية | | | | | |
|---|---|---|---|---|---|
| **Module Title** | **Structured Programming** | | | **Module Delivery** | |
| **Module Type** | **C** | | | ☒ **Theory**<br>☒ **Lecture**<br>☒ **Lab**<br>☐ **Tutorial**<br>☐ **Practical**<br>☐ **Seminar** | |
| **Module Code** | **AI104** | | | | |
| **ECTS Credits** | **7** | | | | |
| **SWL (hr/sem)** | **175** | | | | |
| **Module Level** | 1 | | **Semester of Delivery** | 2 | |
| **Administering Department** | AI | | **College** | CIT | |
| **Module Leader** | Basem Mahmed | | **e-mail** | Basem.Mohmed@uofallujah.edu.iq | |
| **Module Leader's Acad. Title** | Ph.D. | | **Module Leader's Qualification** | Ph.D. | |
| **Module Tutor** | | | **e-mail** | | |
| **Peer Reviewer Name** | Mohammed A.S Al-Hitawi | | **e-mail** | al_hitawe@uofallujah.edu.iq | |
| **Scientific Committee Approval Date** | 1/06/2026 | | **Version Number** | 2.0 | |

| Relation with other Modules<br>العلاقة مع المواد الدراسية الأخرى | | | |
|---|---|---|---|
| **Prerequisite module** | | **Semester** | |
| **Co-requisites module** | | **Semester** | |

| Module Aims, Learning Outcomes and Indicative Contents<br>أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية | |
|---|---|
| **Module Objectives**<br>أهداف المادة الدراسية | • Introduce students to advanced C++ programming concepts.<br>• Develop problem-solving skills using arrays, functions, pointers, and files.<br>• Prepare students to write structured and efficient programs for cybersecurity |

| | |
|---|---|
| | applications.<br>• Learn the principles of Structure programming |
| **Module Learning Outcomes**<br>مخرجات التعلم للمادة الدراسية | • Upon the completion of this module, students will be able to<br>• Explain the concept of arrays and their use in data storage.<br>• Develop C++ programs using functions to improve modular programming.<br>• Apply pointers for memory management and data manipulation.<br>• Implement file handling techniques to store and retrieve data.<br>• Analyze and debug C++ programs used in simple cybersecurity applications. |
| **Indicative Contents**<br>المحتويات الإرشادية | Introductions to C++ Programming; introduction to arrays of one- and two-dimensions, Introductions to functions and modifiers, Pointer basics<br>With Pointers and arrays. Also, Additionally, students will learn about creating and accessing files. |

| **Learning and Teaching Strategies**<br>استراتيجيات التعلم والتعليم | |
|---|---|
| **Strategies** | • Lectures with practical examples<br>• Live coding demonstrations<br>• Lab programming sessions<br>• Problem-solving exercises<br>• Daily and weekly quizzes.<br>• Class room activities.<br>• Guiding the student to some websites. |

| **Student Workload (SWL)**<br>الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل | 93 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 6 |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل | 82 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 5 |
| **Total SWL (h/sem)**<br>الحمل الدراسي الكلي للطالب خلال الفصل | **175** | | |

| **Module Evaluation**<br>تقييم المادة الدراسية | | | | | |
|---|---|---|---|---|---|
| | | **Time/Number** | **Weight (Marks)** | **Week Due** | **Relevant Learning Outcome** |
| **Formative assessment** | **Quizzes** | 1 | 5% (5) | 5 and 10 | All |
| | **Assignments** | 2 | 10% (10) | 2 and 12 | All |

| | | | | | |
|---|---|---|---|---|---|
| | **Projects / Lab.** | 1 | 20% (20) | Continuous | All |
| | **Report** | 1 | 5% (5) | 13 | All |
| **Summative assessment** | **Midterm Exam** | 2hr | 10% (10) | 7 | All |
| | **Final Exam** | 3hr | 50% (50) | 16 | All |
| **Total assessment** | | | 100% (100 Marks) | | |

## Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

| | جامعة الفلوجة |
|---|---|
| **Week 1** | **Arrays**: Access the Elements of an Array, Arrays and Loops |
| **Week 2** | Multi-Dimensional Arrays |
| **Week 3** | **Structures** (struct) |
| **Week 4** | **Functions**, Function Parameters, Default Parameters, Multiple Parameters the Return Keyword |
| **Week 5** | Function: passing by value, Functions - Pass by Reference |
| **Week 6** | Pass Array to a Function, Pass Structures to a Function, Variable Scope |
| **Week 7** | **Mid-term Exam** |
| **Week 8** | **Recursion**, Lambda Functions |
| **Week 9** | Enumeration (enum) |
| **Week 10** | References, Memory Address |
| **Week 11** | **Pointers**, Dereference, Modify Pointers |
| **Week 12** | Pointers in function, new and delete |
| **Week 13** | **Files**, define a File, create a file, File Types |
| **Week 14** | Read a file, Write a file |
| **Week 15** | *Preparatory week before the final Exam* |

## Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

| | **Material Covered** |
|---|---|
| **Week 1** | **Arrays** |
| **Week 2** | Multi-Dimensional Arrays |
| **Week 3** | **Structures** (struct) |
| **Week 4** | **Functions** |
| **Week 5** | Function: passing by value, Functions - Pass by Reference |
| **Week 6** | Pass Array to a Function, Pass Structures to a Function, Variable Scope |
| **Week 7** | **Mid-term Exam** |
| **Week 8** | Recursion, Lambda Functions |

| | |
|---|---|
| **Week 9** | References, Memory Address |
| **Week 10** | **Pointers** |
| **Week 11** | **Files** |
| **Week 12** | ***Preparatory week before the final Exam*** |

| **Learning and Teaching Resources**<br>مصادر التعلم والتدريس | | |
|---|---|---|
| | **Text** | **Available in the Library?** |
| **Required Texts** | The C++ Programming Language (4th Edition)<br>by Bjarne Stroustrup | Yes |
| **Recommended Texts** | | |
| **Websites** | https://www.learncpp.com/ | |

| **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.