



## MODULE DESCRIPTION FORM

### نموذج وصف المادة الدراسية

| Module Information                 |                          |                      |                                                                                                                                                                                                                                                     |                                                                                          |
|------------------------------------|--------------------------|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
| معلومات المادة الدراسية            |                          |                      |                                                                                                                                                                                                                                                     |                                                                                          |
| Module Title                       | Structured Programming I |                      | Module Delivery                                                                                                                                                                                                                                     |                                                                                          |
| Module Type                        | Core                     |                      | <input checked="" type="checkbox"/> Theory<br><input checked="" type="checkbox"/> Lecture<br><input checked="" type="checkbox"/> Lab<br><input type="checkbox"/> Tutorial<br><input type="checkbox"/> Practical<br><input type="checkbox"/> Seminar |                                                                                          |
| Module Code                        | CYS101                   |                      |                                                                                                                                                                                                                                                     |                                                                                          |
| ECTS Credits                       | 6                        |                      |                                                                                                                                                                                                                                                     |                                                                                          |
| SWL (hr/sem)                       | 150                      |                      |                                                                                                                                                                                                                                                     |                                                                                          |
| Module Level                       | 1                        | Semester of Delivery |                                                                                                                                                                                                                                                     | 1                                                                                        |
| Administering Department           | Dept. of Cybersecurity   |                      | College                                                                                                                                                                                                                                             | College of Information Technology                                                        |
| Module Leader                      | Dr. Senan Ali Abd        |                      | e-mail                                                                                                                                                                                                                                              | <a href="mailto:senan.a.abd@uofallujah.edu.iq">senan.a.abd@uofallujah.edu.iq</a>         |
| Module Leader's Acad. Title        | Lect.                    |                      | Module Leader's Qualification                                                                                                                                                                                                                       | Ph.D.                                                                                    |
| Module Tutor                       | Dr. Senan Ali Abd        |                      | e-mail                                                                                                                                                                                                                                              | <a href="mailto:senan.a.abd@uofallujah.edu.iq">senan.a.abd@uofallujah.edu.iq</a>         |
| Peer Reviewer Name                 | Dr. Ahmad AlSabhany      |                      | e-mail                                                                                                                                                                                                                                              | <a href="mailto:Ahmad.alsabhany@uofallujah.edu.iq">Ahmad.alsabhany@uofallujah.edu.iq</a> |
| Scientific Committee Approval Date | 25-5-2026                |                      | Version Number                                                                                                                                                                                                                                      | 1.0                                                                                      |

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

## Module Aims, Learning Outcomes and Indicative Contents

### أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

|                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|--------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Module Objectives</b><br/>أهداف المادة الدراسية</p>                | <ol style="list-style-type: none"> <li>1. Understand the concepts and terms used to describe languages that support the imperative, functional, and logic programming paradigms.</li> <li>2. Solve problems using the functional paradigm</li> <li>3. Introduce the basic concepts of computer programming using C++.</li> <li>4. Develop students' ability to design simple algorithms for problem solving.</li> <li>5. Teach the basic syntax and structure of C++ programs.</li> <li>6. Enable students to use variables, data types, operators, and libraries in C++.</li> <li>7. Develop programming skills using conditions and loops to control program flow.</li> <li>8. Prepare students to write simple C++ programs to solve practical problems.</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <p><b>Module Learning Outcomes</b><br/>مخرجات التعلم للمادة الدراسية</p> | <ol style="list-style-type: none"> <li>1. Explain the fundamentals of computer programming languages and the role of C++ in software development.</li> <li>2. Develop simple algorithms to solve computational problems before implementing them in code.</li> <li>3. Write syntactically correct C++ programs using proper structure, syntax rules, and comments.</li> <li>4. Declare and use variables and different data types to store and manipulate data in C++ programs.</li> <li>5. Use standard C++ libraries and apply input/output operations to interact with the user.</li> <li>6. Apply different types of operators in C++ including arithmetic, logical, relational, and bitwise operators to perform calculations and logical decisions.</li> <li>7. Manipulate strings and perform mathematical operations using C++ built-in functions and libraries.</li> <li>8. Use Boolean data types and expressions to evaluate logical conditions in programs.</li> <li>9. Implement decision-making structures such as if, else, and switch statements to control program flow.</li> <li>10. Construct iterative programs using loops, including while and for loops.</li> <li>11. Control loop execution using break and continue statements when solving programming problems.</li> <li>12. Design and implement simple C++ programs that integrate input/output, operators, conditions, and loops to solve practical problems.</li> </ol> |
| <p><b>Indicative Contents</b></p>                                        | <p>Introduction to computer programming</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

|                     |                                                                                                                                           |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| المحتويات الإرشادية | Introduction to C++ Programming<br>C++ Standard Library<br>Control flow in C++<br>Memory Management in C++<br>C++ Application Development |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------|

| <b>Learning and Teaching Strategies</b><br>استراتيجيات التعلم والتعليم |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Strategies                                                             | <ul style="list-style-type: none"> <li>• <b>Lectures:</b> Explain programming concepts and C++ syntax.</li> <li>• <b>Practical Lab Sessions:</b> Students write and test C++ programs.</li> <li>• <b>Problem-Solving Exercises:</b> Practice algorithms and coding tasks.</li> <li>• <b>Class Discussions:</b> Encourage understanding of programming concepts.</li> <li>• <b>Assignments and Homework:</b> Reinforce learning through practice.</li> <li>• <b>Quizzes and Exams:</b> Evaluate students' understanding and progress.</li> </ul> |

| <b>Student Workload (SWL)</b><br>الحمل الدراسي للطلاب محسوب لـ ١٥ اسبوعا |     |                                                                    |   |
|--------------------------------------------------------------------------|-----|--------------------------------------------------------------------|---|
| Structured SWL (h/sem)<br>الحمل الدراسي المنتظم للطلاب خلال الفصل        | 78  | Structured SWL (h/w)<br>الحمل الدراسي المنتظم للطلاب أسبوعيا       | 5 |
| Unstructured SWL (h/sem)<br>الحمل الدراسي غير المنتظم للطلاب خلال الفصل  | 72  | Unstructured SWL (h/w)<br>الحمل الدراسي غير المنتظم للطلاب أسبوعيا | 5 |
| Total SWL (h/sem)<br>الحمل الدراسي الكلي للطلاب خلال الفصل               | 150 |                                                                    |   |

| <b>Module Evaluation</b><br>تقييم المادة الدراسية |                 |             |                |            |                           |
|---------------------------------------------------|-----------------|-------------|----------------|------------|---------------------------|
|                                                   |                 | Time/Number | Weight (Marks) | Week Due   | Relevant Learning Outcome |
| Formative assessment                              | Quizzes         | 2           | 10% (10)       | 5 and 12   | LO #3, #4 and #10, #11    |
|                                                   | Homework        | 2           | 5% (5)         | 4 and 9    | LO #3, #4 and #7, #8      |
|                                                   | Projects / Lab. | 1           | 15% (15)       | Continuous | All                       |
|                                                   | Exam / Lab.     | 1           | 10% (10)       | 13         | LO #5, #8, #9 and #10     |

|                      |              |     |                  |    |            |
|----------------------|--------------|-----|------------------|----|------------|
| Summative assessment | Midterm Exam | 2hr | 10% (10)         | 7  | LO #1 - #7 |
|                      | Final Exam   | 3hr | 50% (50)         | 16 | All        |
| Total assessment     |              |     | 100% (100 Marks) |    |            |

| <b>Delivery Plan (Weekly Syllabus)</b><br><b>المنهاج الاسبوعي النظري</b> |                                                                                                      |
|--------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|
|                                                                          | Material Covered                                                                                     |
| Week 1                                                                   | Introduction to computer programming languages and C++                                               |
| Week 2                                                                   | Algorithms                                                                                           |
| Week 3                                                                   | C++ Syntax and comments                                                                              |
| Week 4                                                                   | Variables & Data types                                                                               |
| Week 5                                                                   | C++ Libraries                                                                                        |
| Week 6                                                                   | C++ User Output and Input                                                                            |
| Week 7                                                                   | C++ Operators (Arithmetic operators, Bitwise operators, logical operators, and Relational operators) |
| Week 8                                                                   | Mid-term Exam                                                                                        |
| Week 9                                                                   | C++ Strings & C++ Math                                                                               |
| Week 10                                                                  | C++ Booleans                                                                                         |
| Week 11                                                                  | C++ conditions                                                                                       |
| Week 12                                                                  | Switch statement                                                                                     |
| Week 13                                                                  | While loop                                                                                           |
| Week 14                                                                  | For loop                                                                                             |
| Week 15                                                                  | Break and Continue statements                                                                        |
| Week 16                                                                  | Final Exam                                                                                           |

| <b>Delivery Plan (Weekly Lab. Syllabus)</b><br><b>المنهاج الاسبوعي المختبر</b> |                              |
|--------------------------------------------------------------------------------|------------------------------|
|                                                                                | Material Covered             |
| Week 1                                                                         | Introduction and install C++ |
| Week 2                                                                         | Algorithms                   |
| Week 3                                                                         | Syntax And variables         |
| Week 4                                                                         | C++ Libraries                |
| Week 5                                                                         | C++ User Input & Output      |

|         |                                       |
|---------|---------------------------------------|
| Week 6  | Data Types                            |
| Week 7  | C++ Operators                         |
| Week 8  | Lab Mid-term Exam                     |
| Week 9  | C++ Strings & C++ Math & C++ Booleans |
| Week 10 | If condition                          |
| Week 11 | Switch condition                      |
| Week 12 | While loop C++                        |
| Week 13 | For loop                              |
| Week 14 | Break and continue                    |
| Week 15 | Final Exam                            |

| Learning and Teaching Resources<br>مصادر التعلم والتدريس |                                                                                                                                                             |                           |
|----------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|
|                                                          | Text                                                                                                                                                        | Available in the Library? |
| Required Texts                                           | 1. The C++ Programming Language (4th Edition)<br>by Bjarne Stroustrup<br>2. C++ How to Program 10 <sup>th</sup> Edition<br>by Paul Deitel and Harvey Deitel | Yes                       |
| Recommended Texts                                        |                                                                                                                                                             |                           |
| Websites                                                 | <a href="https://www.learncpp.com/">https://www.learncpp.com/</a>                                                                                           |                           |

| Grading Scheme<br>مخطط الدرجات                                                                                                                                                                                                                                                                                                                                                       |                  |                     |          |                                       |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|---------------------|----------|---------------------------------------|
| Group                                                                                                                                                                                                                                                                                                                                                                                | Grade            | التقدير             | Marks %  | Definition                            |
| Success Group<br>(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<br>(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  |
|                                                                                                                                                                                                                                                                                                                                                                                      |                  |                     |          |                                       |
| <b>Note:</b> 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. |                  |                     |          |                                       |