



# MODULE DESCRIPTION FORM

## نموذج وصف المادة الدراسية

| Module Information                 |                             |                               |                                                                                                                                                                                                                                                                                      |
|------------------------------------|-----------------------------|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| معلومات المادة الدراسية            |                             |                               |                                                                                                                                                                                                                                                                                      |
| Module Title                       | Python Programming Language |                               | Module Delivery                                                                                                                                                                                                                                                                      |
| Module Type                        | C                           |                               | <input checked="" type="checkbox"/> Theory<br><input checked="" type="checkbox"/> Lecture<br><input checked="" type="checkbox"/> Lab<br><input checked="" type="checkbox"/> Tutorial<br><input checked="" type="checkbox"/> Practical<br><input checked="" type="checkbox"/> Seminar |
| Module Code                        | AI2105                      |                               |                                                                                                                                                                                                                                                                                      |
| ECTS Credits                       | 5                           |                               |                                                                                                                                                                                                                                                                                      |
| SWL (hr/sem)                       | 125                         |                               |                                                                                                                                                                                                                                                                                      |
| Module Level                       | 2                           | Semester of Delivery          | 1                                                                                                                                                                                                                                                                                    |
| Administering Department           | AI                          | College                       | Computer Science and Information Technology                                                                                                                                                                                                                                          |
| Module Leader                      | Mahmood Jasim               | e-mail                        | <a href="mailto:mahmood.jasim@uowa.edu.iq">mahmood.jasim@uowa.edu.iq</a>                                                                                                                                                                                                             |
| Module Leader's Acad. Title        | lecturer                    | Module Leader's Qualification | Ph.D                                                                                                                                                                                                                                                                                 |
| Module Tutor                       | Mahmood Jasim               | e-mail                        | <a href="mailto:mahmood.jasim@uowa.edu.iq">mahmood.jasim@uowa.edu.iq</a>                                                                                                                                                                                                             |
| Peer Reviewer Name                 | Ali Kaream                  | e-mail                        | <a href="mailto:ali.kaream@uowa.edu.iq">ali.kaream@uowa.edu.iq</a>                                                                                                                                                                                                                   |
| Scientific Committee Approval Date | 01/09/2026                  | Version Number                | 1.0                                                                                                                                                                                                                                                                                  |

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

  
٢٠٢٧-٢٠٢٦

Department Head Approval



  
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Dean of the College Approval

| <b>Module Aims, Learning Outcomes and Indicative Contents</b><br><b>أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Module Objectives</b><br><b>أهداف المادة الدراسية</b>                                                                         | <ol style="list-style-type: none"> <li>1. Introduce the principles of a higher-level programming language in python.</li> <li>2. Analyze a problem statement to develop a mental model of objects necessary to create a software architecture</li> <li>3. Utilize object-oriented programming to frame software architectures, with care towards separation of concerns and abstraction</li> <li>4. Gain skills in designing, and programming software for reuse of code.</li> </ol>                                                                                                                                                                                 |
| <b>Module Learning Outcomes</b><br><b>مخرجات التعلم للمادة الدراسية</b>                                                          | <ol style="list-style-type: none"> <li>1. Explain the motivation for and development of python programming language.</li> <li>2. Produce a set of use cases given a problem statement.</li> <li>3. Produce class diagrams, object interaction diagrams and object state transition diagrams for a given problem.</li> <li>4. Describe the essential features of an object-oriented programming language.</li> <li>5. Produce and/or debug code fragments that illustrate principles of object-oriented software development.</li> <li>6. Describe the principles for testing object-oriented software and derive sets of test data given a specification.</li> </ol> |
| <b>Indicative Contents</b><br><b>المحتويات الإرشادية</b>                                                                         | <ul style="list-style-type: none"> <li>✓ Structured programming</li> <li>✓ Procedural programming</li> <li>✓ Abstract data types (ADTs)</li> <li>✓ Type of variable and range of applicable operations</li> <li>✓ Use of classes in object-oriented programming</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                           |

| <b>Learning and Teaching Strategies</b><br><b>استراتيجيات التعلم والتعليم</b> |                                                                                                                                                                                                                                                                                                                                                                                                               |
|-------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Strategies</b>                                                             | <p>There are different teaching and learning activities including lectures and laboratories. The concepts, process, and applications of data science will be discussed in lectures. Students will also learn computer programming knowledge and the skills of manipulating, processing, retrieving, storing, and plotting data. Students will develop small programs and learn different in laboratories.</p> |

| Student Workload (SWL)                                                         |     |                                                                           |   |
|--------------------------------------------------------------------------------|-----|---------------------------------------------------------------------------|---|
| الحمل الدراسي للطلاب محسوب ل ١٥ اسبوعا                                         |     |                                                                           |   |
| <b>Structured SWL (h/sem)</b><br>الحمل الدراسي المنتظم للطلاب خلال الفصل       | 78  | <b>Structured SWL (h/w)</b><br>الحمل الدراسي المنتظم للطلاب أسبوعيا       | 5 |
| <b>Unstructured SWL (h/sem)</b><br>الحمل الدراسي غير المنتظم للطلاب خلال الفصل | 47  | <b>Unstructured SWL (h/w)</b><br>الحمل الدراسي غير المنتظم للطلاب أسبوعيا | 3 |
| <b>Total SWL (h/sem)</b><br>الحمل الدراسي الكلي للطلاب خلال الفصل              | 125 |                                                                           |   |

| Module Evaluation     |                 |             |                  |            |                           |
|-----------------------|-----------------|-------------|------------------|------------|---------------------------|
| تقييم المادة الدراسية |                 |             |                  |            |                           |
|                       |                 | Time/Number | Weight (Marks)   | Week Due   | Relevant Learning Outcome |
| Formative assessment  | Quizzes         | 5           | 10% (10)         | 2,3,5,8,12 | LO #1, #2 and #5          |
|                       | Assignments     | 5           | 10% (10)         | 3,4,6,9,11 | LO #3, #4 and #6          |
|                       | Projects / Lab. | 1           | 10% (10)         | Continuous | All                       |
|                       | Report          | 1           | 10% (10)         | 13         | LO#1- #6                  |
| Summative assessment  | Midterm Exam    | 2hr         | 10% (10)         | 7          | LO #1 - #6                |
|                       | Final Exam      | 3hr         | 50% (50)         | 16         | All                       |
| Total assessment      |                 |             | 100% (100 Marks) |            |                           |

| Delivery Plan (Weekly Syllabus) |                                                                                   |
|---------------------------------|-----------------------------------------------------------------------------------|
| المنهاج الاسبوعي النظري         |                                                                                   |
|                                 | Material Covered                                                                  |
| Week 1                          | Installation of Python and an Integrated Development Environment (IDE)            |
| Week 2                          | Python Fundamental: Introduction, Variables, Comments, Python Data Types          |
| Week 3                          | Python Fundamental: Operators, Python Conditions and If statements, Python Loops, |
| Week 4                          | Python Fundamental: Functions: defining functions, parameters, and return values  |
| Week 5                          | Lists, tuples, sets, and dictionaries                                             |
| Week 6                          | Introduction to Class Fundamentals                                                |
| Week 7                          | Python - Object Oriented Programming ( objects, inheritance, polymorphism)        |
| Week 8                          | Mid-term Exam                                                                     |
| Week 9                          | Reading and writing files in Python                                               |

|                |                                                                                            |
|----------------|--------------------------------------------------------------------------------------------|
| <b>Week 10</b> | Exception handling and error management                                                    |
| <b>Week 11</b> | Introduction to standard input/output and libraries                                        |
| <b>Week 12</b> | Exploring key Python libraries (e.g., NumPy, pandas, matplotlib)                           |
| <b>Week 13</b> | Installing and using external libraries                                                    |
| <b>Week 14</b> | Introduction to databases (SQLite, MySQL, or PostgreSQL)<br>Connecting Python to databases |
| <b>Week 15</b> | python Project                                                                             |

| <b>Delivery Plan (Weekly Lab. Syllabus)</b><br>المنهاج الاسبوعي للمختبر |                                                                                                                       |
|-------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
|                                                                         | Material Covered                                                                                                      |
| <b>Week 1</b>                                                           | <b>Lab 1:</b> Installation and Setup of Python, VS Code / PyCharm IDE, and Jupyter Notebook                           |
| <b>Week 2</b>                                                           | <b>Lab 2:</b> Practicing Python Fundamentals: Variables, Data Types, and Type Casting                                 |
| <b>Week 3</b>                                                           | <b>Lab 3:</b> Implementing Control Flow: Conditional Statements (if-else) and Loop Structures (for, while)            |
| <b>Week 4</b>                                                           | <b>Lab 4:</b> Writing Functions, Arguments passing (args, kwargs), Scope, and Return Values                           |
| <b>Week 5</b>                                                           | <b>Lab 5:</b> Data Structures Manipulation: Operations on Lists, Tuples, Sets, and Dictionaries                       |
| <b>Week 6</b>                                                           | <b>Lab 6:</b> File Handling Lab: Reading, Writing, and Appending Text and CSV Files                                   |
| <b>Week 7</b>                                                           | <b>Lab 7:</b> Exception Handling: Implementing try-except-finally blocks and Custom Exceptions                        |
| <b>Week 8</b>                                                           | <b>Lab 8: Mid-term Practical Exam</b>                                                                                 |
| <b>Week 9</b>                                                           | <b>Lab 9:</b> OOP Basics: Defining Classes, Instantiating Objects, Methods, and Constructor ( <code>__init__</code> ) |
| <b>Week 10</b>                                                          | <b>Lab 10:</b> Advanced OOP: Implementing Inheritance, Encapsulation, Method Overriding, and Polymorphism             |
| <b>Week 11</b>                                                          | <b>Lab 11:</b> Scientific Computing Lab: Array Operations and Vectorization with NumPy                                |
| <b>Week 12</b>                                                          | <b>Lab 12:</b> Data Analysis & Visualization Lab: Data Manipulation with Pandas and Plotting with Matplotlib          |
| <b>Week 13</b>                                                          | <b>Lab 13:</b> Package Management: Working with pip, Virtual Environments, and External Libraries                     |
| <b>Week 14</b>                                                          | <b>Lab 14:</b> Database Connectivity Lab: Executing CRUD Operations using Python and SQLite/MySQL                     |
| <b>Week 15</b>                                                          | <b>Lab 15:</b> Hands-on Capstone Python Project Presentation, Code Review, and Evaluation                             |

| <b>Learning and Teaching Resources</b><br>مصادر التعلم والتدريس |
|-----------------------------------------------------------------|
|-----------------------------------------------------------------|

|                   | Text                                                            | Available in the Library? |
|-------------------|-----------------------------------------------------------------|---------------------------|
| Required Texts    | "Python Cookbook" by David Beazley and Brian K. Jones:          | No                        |
| Recommended Texts | (Learning Python by Mark Lutz, O'Reilly Media)                  | No                        |
| Websites          | <a href="https://www.coursera.org">https://www.coursera.org</a> |                           |

| Grading Scheme                                                                                                                                                                                                                                                                                                                                                                       |                  |                     |          |                                       |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|---------------------|----------|---------------------------------------|
| 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. |                  |                     |          |                                       |