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|--|--|--------------------------------|
| <b>Form:</b><br><b>Course Syllabus</b> | <b>Form Number</b>                                     | EXC-01-02-02A                  |
|  | <b>Issue Number and Date</b>                           | 2/3/24/2022/2963<br>05/12/2022 |
|  | <b>Number and Date of Revision or Modification</b>     | 2023/10/15                     |
|  | <b>Deans Council Approval Decision Number</b>          | 265/2024/24/3/2                |
|  | <b>The Date of the Deans Council Approval Decision</b> | 2024/1/23                      |
|  | <b>Number of Pages</b>                                 | 06                             |

|            |  |  |
|------------|--|--|
| <b>1.</b>  | <b>Course Title</b>  | Programming Language Basics for Business   |
| <b>2.</b>  | <b>Course Number</b>                                       | 1605232  |
| <b>3.</b>  | <b>Credit Hours (Theory, Practical)</b>                    | 3  |
|            | <b>Contact Hours (Theory, Practical)</b>                   | 0  |
| <b>4.</b>  | <b>Prerequisites/ Corequisites</b>                         | 1605130  |
| <b>5.</b>  | <b>Program Title</b>                                       | Management Information Systems   |
| <b>6.</b>  | <b>Program Code</b>  | 1605   |
| <b>7.</b>  | <b>School/ Center</b>                                      | Business School  |
| <b>8.</b>  | <b>Department</b>  | Management Information Systems   |
| <b>9.</b>  | <b>Course Level</b>  | 2nd Year   |
| <b>10.</b> | <b>Year of Study and Semester (s)</b>                      | 2025/2026 First Semester   |
| <b>11.</b> | <b>Program Degree</b>                                      | Management Information Systems   |
| <b>12.</b> | <b>Other Department(s) Involved in Teaching the Course</b> | Management Information Systems   |
| <b>13.</b> | <b>Learning Language</b>                                   | English  |
| <b>14.</b> | <b>Learning Types</b>                                      | <input checked="" type="checkbox"/> Face to face learning <input type="checkbox"/> Blended <input type="checkbox"/> Fully online |
| <b>15.</b> | <b>Online Platforms(s)</b>                                 | <input checked="" type="checkbox"/> Moodle <input checked="" type="checkbox"/> Microsoft Teams                                   |
| <b>16</b>  | <b>Issuing Date</b>  | 30/9/2024  |
| <b>17.</b> | <b>Revision Date</b>                                       | 28/9/2025  |

**18. Course Coordinator:**

|                                     |                                     |
|-------------------------------------|-------------------------------------|
| Name: <b>Prof. Mahmoud Maqableh</b> | Contact hours: <b>13:30 – 14:15</b> |
| Office number: <b>24247</b>         | Phone number: <b>06535500</b>       |
| Email: <b>maqableh@ju.edu.jo</b>    |                                     |

**19. Other Instructors:**

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## 20. Course Description:

This Python course is designed to transition students from foundational scripting to advanced, data-centric programming. The curriculum focuses on mastering essential topics such as efficient data manipulation using Dictionaries and Sets, high-performance mathematical computing with Array-Oriented Programming (NumPy), and building resilient code through proper Files and Exceptions handling. A major focus is placed on Object-Oriented Programming (OOP) principles to build scalable and maintainable applications. The course culminates in a powerful practical application: an introduction to Natural Language Processing (NLP) using libraries like TextBlob for sentiment analysis.

## 21. Program Intended Learning Outcomes: (To be used in designing the matrix linking the intended learning outcomes of the course with the intended learning outcomes of the program)

| PLO's   | *National Qualifications Framework Descriptors* |                                     |                                     |
|---|---|-------------------------------------|-------------------------------------|
|   | Competency (C)                                  | Skills (B)                          | Knowledge (A)                       |
| 1. PILO 5: Analyze, design, and implement business data, information, systems, and knowledge.   | <input type="checkbox"/>                        | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 2. PILO 6: Develop and evaluate information technology systems, solutions, and strategies.  | <input type="checkbox"/>                        | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| 3. PILO 7: Use information systems and databases to retrieve relevant data in order to generate knowledge and support decision-making in organizations. | <input checked="" type="checkbox"/>             | <input type="checkbox"/>            | <input type="checkbox"/>            |

\* Choose only one descriptor for each learning outcome of the program, whether knowledge, skill, or competency.

## 22. Course Intended Learning Outcomes: (Upon completion of the course, the student will be able to achieve the following intended learning outcomes):

### Course Intended Learning Outcomes (CILOs):

#### Knowledge:

1. A1: Understand and describe the advanced principles of Object-Oriented Programming (OOP), including inheritance and polymorphism, as well as the unique performance characteristics of Dictionaries and Sets in Python.



2. A2: Identify and explain the purpose of key libraries for data processing (NumPy) and text analysis (TextBlob), recognizing their roles in a modern data science workflow.

**Skills:**

3. B1: Implement effective exception handling and reliable file I/O operations to build resilient Python code that can safely process and manage external data sources.

4. B2: Apply specialized libraries (like NumPy and those for NLP) to efficiently gather, clean, and analyze real-world text data, as demonstrated in the Twitter data mining project.

**Competency:**

5. C1: The ability to design and deliver a functional, scalable application by integrating Object-Oriented design with specialized data science libraries (NumPy and TextBlob), culminating in a practical outcome like Natural Language Processing (NLP) sentiment analysis.

| Course ILOs # | The learning levels to be achieved |            |       |         |          |        | Competencies |
|---------------|------------------------------------|------------|-------|---------|----------|--------|--------------|
|               | Remember                           | Understand | Apply | Analyse | Evaluate | Create |              |
| 1             | X                                  | X          |       |         |          |        | Knowledge    |
| 2             | X                                  | X          |       |         |          |        | Knowledge    |
| 3             |                                    |            | X     | X       |          |        | Skill        |
| 4             |                                    |            | X     | X       |          |        | Skill        |
| 5             |                                    |            |       |         | X        | X      | Competency   |

**23. The matrix linking the intended learning outcomes of the course -CLO's with the intended learning outcomes of the program -PLOs:**

| PLO's<br>*<br>CLO's | 1 | 2 | 3 | 4 | 5 | Descriptors** |   |   |
|---------------------|---|---|---|---|---|---------------|---|---|
|                     |   |   |   |   |   | A             | B | C |
| 5                   | X | X |   |   | X | X             |   |   |
| 6                   |   |   | X | X |   |               | X |   |
| 7                   |   |   |   | X | X |               |   | X |

\*Linking each course learning outcome (CLO) to only one program outcome (PLO) as specified in the course matrix.

\*\*Descriptors are determined according to the program learning outcome (PLO) that was chosen and according to what was specified in the program learning outcomes matrix in clause (21).



## 24. Topic Outline and Schedule:

| Week | Lecture | Topic                                 | ILO/s Linked to the Topic | Learning Types<br>(Face to Face/ Blended/ Fully<br>Online) | Platform Used  | Synchronous / Asynchronous<br>Lecturing | Evaluation Methods | Learning Resources                           |
|------|---------|---------------------------------------|---------------------------|--|----------------|---|--------------------|--|
| 1    | 1.1     | Dictionaries and Sets                 | A1                        | Face to Face   | Moodle, Spyder | Synchronous                             | Exam               | Lecture Slides, Lecture Notes, Book Chapters |
|      | 1.2     | Dictionaries and Sets                 | A1                        | Face to Face   | LMS, Spyder    | Synchronous                             | Quiz               | Lecture Slides, Lecture Notes, Book Chapters |
|      | 1.3     | Dictionaries and Sets                 | A1                        | Face to Face   | Moodle, Teams  | Asynchronous                            | Homework           | Online Tutorials                             |
| 2    | 2.1     | Dictionaries and Sets                 | A1                        | Face to Face   | Moodle, Spyder | Synchronous                             | Exam               | Lecture Slides, Lecture Notes, Book Chapters |
|      | 2.2     | Dictionaries and Sets                 | A1                        | Face to Face   | LMS, Spyder    | Synchronous                             | Quiz               | Lecture Slides, Lecture Notes, Book Chapters |
|      | 2.3     | Dictionaries and Sets                 | A1                        | Face to Face   | Moodle, Teams  | Asynchronous                            | Homework           | Online Tutorials                             |
| 3    | 3.1     | Dictionaries and Sets                 | A1, C1                    | Face to Face   | Moodle, Spyder | Synchronous                             | Exam               | Lecture Slides, Lecture Notes, Book Chapters |
|      | 3.2     | Dictionaries and Sets                 | A1, C1                    | Face to Face   | LMS, Spyder    | Synchronous                             | Quiz               | Lecture Slides, Lecture Notes, Book Chapters |
|      | 3.3     | Dictionaries and Sets                 | A1, C1                    | Face to Face   | Moodle, Teams  | Asynchronous                            | Homework           | Online Tutorials                             |
| 4    | 4.1     | Array-Oriented Programming with NumPy | A1, C1                    | Face to Face   | Moodle, Spyder | Synchronous                             | Exam               | Lecture Slides, Lecture Notes, Book Chapters |
|      | 4.2     | Array-Oriented Programming with NumPy | A1, C1                    | Face to Face   | LMS, Spyder    | Synchronous                             | Quiz               | Lecture Slides, Lecture Notes, Book Chapters |
|      | 4.3     | Array-Oriented Programming with NumPy | A1, C1                    | Face to Face   | Moodle, Teams  | Asynchronous                            | Homework           | Online Tutorials                             |
| 5    | 5.1     | Array-Oriented Programming with NumPy | A2, B1                    | Face to Face   | Moodle, Spyder | Synchronous                             | Exam               | Lecture Slides, Lecture Notes, Book Chapters |



|    |      |                                       |        |              |                |              |          |  |
|----|------|---------------------------------------|--------|--------------|----------------|--------------|----------|--|
|    | 5.2  | Array-Oriented Programming with NumPy | A2, B1 | Face to Face | LMS, Spyder    | Synchronous  | Quiz     | Lecture Slides, Lecture Notes, Book Chapters |
|    | 5.3  | Array-Oriented Programming with NumPy | A2, B1 | Face to Face | Moodle, Teams  | Asynchronous | Homework | Online Tutorials                             |
| 6  | 6.1  | Files and Exceptions                  | A2, B1 | Face to Face | Moodle, Spyder | Synchronous  | Exam     | Lecture Slides, Lecture Notes, Book Chapters |
|    | 6.2  | Files and Exceptions                  | A2, B1 | Face to Face | LMS, Spyder    | Synchronous  | Quiz     | Lecture Slides, Lecture Notes, Book Chapters |
|    | 6.3  | Files and Exceptions                  | A2, B1 | Face to Face | Moodle, Teams  | Asynchronous | Homework | Online Tutorials                             |
| 7  | 7.1  | Files and Exceptions                  | B1     | Face to Face | Moodle, Spyder | Synchronous  | Exam     | Lecture Slides, Lecture Notes, Book Chapters |
|    | 7.2  | Files and Exceptions                  | B1     | Face to Face | LMS, Spyder    | Synchronous  | Quiz     | Lecture Slides, Lecture Notes, Book Chapters |
|    | 7.3  | Files and Exceptions                  | B1     | Face to Face | Moodle, Teams  | Asynchronous | Homework | Online Tutorials                             |
| 8  | 8.1  | Files and Exceptions                  | B1     | Face to Face | Moodle, Spyder | Synchronous  | Exam     | Lecture Slides, Lecture Notes, Book Chapters |
|    | 8.2  | Files and Exceptions                  | B1     | Face to Face | LMS, Spyder    | Synchronous  | Quiz     | Lecture Slides, Lecture Notes, Book Chapters |
|    | 8.3  | Files and Exceptions                  | B1     | Face to Face | Moodle, Teams  | Asynchronous | Homework | Online Tutorials                             |
| 9  | 9.1  | Object-Oriented Programming           | B1     | Face to Face | Moodle, Spyder | Synchronous  | Exam     | Lecture Slides, Lecture Notes, Book Chapters |
|    | 9.2  | Object-Oriented Programming           | B1     | Face to Face | LMS, Spyder    | Synchronous  | Quiz     | Lecture Slides, Lecture Notes, Book Chapters |
|    | 9.3  | Object-Oriented Programming           | B1     | Face to Face | Moodle, Teams  | Asynchronous | Homework | Online Tutorials                             |
| 10 | 10.1 | Object-Oriented Programming           | A2, B2 | Face to Face | Moodle, Spyder | Synchronous  | Exam     | Lecture Slides, Lecture Notes, Book Chapters |
|    | 10.2 | Object-Oriented Programming           | A2, B2 | Face to Face | LMS, Spyder    | Synchronous  | Quiz     | Lecture Slides, Lecture Notes, Book Chapters |
|    | 10.3 | Object-Oriented Programming           | A2, B2 | Face to Face | Moodle, Teams  | Asynchronous | Homework | Online Tutorials                             |
| 11 | 11.1 | Object-Oriented Programming           | A2, B2 | Face to Face | Moodle, Spyder | Synchronous  | Exam     | Lecture Slides, Lecture Notes, Book Chapters |



|    |      |                             |            |              |                |              |          |  |
|----|------|-----------------------------|------------|--------------|----------------|--------------|----------|--|
|    | 11.2 | Object-Oriented Programming | A2, B2     | Face to Face | LMS, Spyder    | Synchronous  | Quiz     | Lecture Slides, Lecture Notes, Book Chapters |
|    | 11.3 | Object-Oriented Programming | A2, B2     | Face to Face | Moodle, Teams  | Asynchronous | Homework | Online Tutorials                             |
| 12 | 12.1 | Natural Language            | A2, B2     | Face to Face | Moodle, Spyder | Synchronous  | Exam     | Lecture Slides, Lecture Notes, Book Chapters |
|    | 12.2 | Processing (NLP)            | A2, B2     | Face to Face | LMS, Spyder    | Synchronous  | Quiz     | Lecture Slides, Lecture Notes, Book Chapters |
|    | 12.3 | Natural Language            | A2, B2     | Face to Face | Moodle, Teams  | Asynchronous | Homework | Online Tutorials                             |
| 13 | 13.1 | Processing (NLP)            | A2, C1, B1 | Face to Face | Moodle, Spyder | Synchronous  | Exam     | Lecture Slides, Lecture Notes, Book Chapters |
|    | 13.2 | Natural Language            | A2, C1, B1 | Face to Face | LMS, Spyder    | Synchronous  | Quiz     | Lecture Slides, Lecture Notes, Book Chapters |
|    | 13.3 | Processing (NLP)            | A2, C1, B1 | Face to Face | Moodle, Teams  | Asynchronous | Homework | Online Tutorials                             |
| 14 | 14.1 | Natural Language            | A2, C1, B1 | Face to Face | Moodle, Spyder | Synchronous  | Exam     | Lecture Slides, Lecture Notes, Book Chapters |
|    | 14.2 | Processing (NLP)            | A2, C1, B1 | Face to Face | LMS, Spyder    | Synchronous  | Quiz     | Lecture Slides, Lecture Notes, Book Chapters |
|    | 14.3 | Natural Language            | A2, C1, B1 | Face to Face | Moodle, Teams  | Asynchronous | Homework | Online Tutorials                             |
| 15 | 15.1 | Natural Language            | A2, C1, B1 | Face to Face | Moodle, Spyder | Synchronous  | Exam     | Lecture Slides, Lecture Notes, Book Chapters |
|    | 15.2 | Processing (NLP)            | A2, C1, B1 | Face to Face | LMS, Spyder    | Synchronous  | Quiz     | Lecture Slides, Lecture Notes, Book Chapters |
|    | 15.3 | Processing (NLP)            | A2, C1, B1 | Face to Face | Moodle, Teams  | Asynchronous | Homework | Online Tutorials                             |



**25. Evaluation Methods:**

Opportunities to demonstrate achievement of the ILOs are provided through the following assessment methods and requirements:

| Evaluation Activity         | *Mark wt. | CLO's |   |   |   |   |   |
|-----------------------------|-----------|-------|---|---|---|---|---|
|                             |           | 1     | 2 | 3 | 4 | 5 | 6 |
| Midterm Exam                | 30        | X     | X | X |   |   |   |
| Second Exam –If any         | -         | -     | - | - | - | - | - |
| Final Exam                  | 40        | X     | X | X | X | X |   |
| **Class work                | -         | -     | - | - | - | - | - |
| Projects/reports            | 10        |       |   |   | X | X |   |
| Research working papers     | -         | -     | - | - | - | - | - |
| Field visits                | -         | -     | - | - | - | - | - |
| Practical and clinical      | -         | -     | - | - | - | - | - |
| Performance Completion file | -         | -     | - | - | - | - | - |
| Presentation/exhibition     | -         | -     | - | - | - | - | - |
| Any other approved works    | 20        |       |   | X | X |   |   |
| Total 100%                  | 100       |       |   |   |   |   |   |

\* According to the instructions for granting a Bachelor's degree.

\*\*According to the principles of organizing semester work, tests, examinations, and grades for the bachelor's degree.

**Mid-term exam specifications table\***

| No. of questions/ cognitive level |              |             |           |                |              | No. of questions per CLO | Total exam mark | Total no. of questions | CLO/ Weight | CLO no. |
|-----------------------------------|--------------|-------------|-----------|----------------|--------------|--------------------------|-----------------|------------------------|-------------|---------|
| Create %10                        | Evaluate %10 | analyse %10 | Apply %20 | Understand %20 | Remember %30 |                          |                 |                        |             |         |
| 1                                 |              |             |           |                | 1            | 1                        | 35              | 1                      | 40%         | 1       |
|                                   | 1            | 1           | 1         |                |              | 1                        | 35              | 1                      | 40%         | 2       |
|                                   |              |             |           | 1              |              | 1                        | 30              | 1                      | 20%         | 3       |

**Final exam specifications table**

| No. of questions/ cognitive level |  |  |  | CLO |
|-----------------------------------|--|--|--|-----|
|                                   |  |  |  |     |



| Create %10 | Evaluate %10 | analyse %10 | Apply %20 | Understand %20 | Remember %30 | No. of questions per CLO | Total exam mark | Total no. of questions | Weight | CLO no. |
|------------|--------------|-------------|-----------|----------------|--------------|--------------------------|-----------------|------------------------|--------|---------|
|            |              |             |           |                | 1            | 1                        | 20              | 1                      | 30%    | 1       |
|            |              |             |           | 1              |              | 1                        | 20              | 1                      | 20%    | 2       |
|            |              |             | 1         |                |              | 1                        | 20              | 1                      | 20%    | 3       |
|            |              | 1           |           |                |              | 1                        | 20              | 1                      | 10%    | 4       |
| 1          | 1            |             |           |                |              | 2                        | 20              | 1                      | 20%    | 5       |

## 26. Course Requirements:

This course requires students to have a reliable PC or laptop and a stable internet connection. For the development environment, students must install the Anaconda Distribution, which conveniently bundles the Python 3 interpreter, the Spyder Integrated Development Environment (IDE), and essential libraries like NumPy and Pandas. Since Anaconda does not include everything, students are also required to install the TextBlob library, and used for Natural Language Processing. Finally, active access to the course Moodle platform and a functional email account is mandatory for all communication and assignment submissions.

## 27. Course Policies:

### A- Attendance policies:

- Excellent attendance is expected.
- The University of Jordan policy requires the faculty member to assign ZERO grade (F) if a student misses 15% of the classes that are not excused.
- Teams Attendance.

### B- Absences from exams and submitting assignments on time:

- Makeup exams according to the University of Jordan regulations.
- Assignments should be Handed on times

### C- Health and safety procedures:

- The University of Jordan procedures

### D- Honesty policy regarding cheating, plagiarism, misbehavior:

- Cheating or copying on exam or quiz is an illegal and unethical activity.
- Standard University of Jordan policy will be applied.

### E- Grading policy:

- Based on the grand average

### F- Available university services that support achievement in the course:

## 28. References:



A- Required book(s), assigned reading and audio-visuals:

- *Intro to Python® for Computer Science and Data Science* by Paul Deitel & Harvey Deitel, 1st Edition, Pearson, 2022, ISBN-13: 978-0135404676.
- *Python for Data Analysis: Data Wrangling with Pandas, NumPy, and IPython* by Wes McKinney, O'Reilly Media, 2018.

B- Recommended books, materials, and media:

- Mathes, E. (2019). Python Crash Course: A Hands-On, Project-Based Introduction to Programming (2nd ed.). No Starch Press.
- Punch, W. F., & Enbody, R. J. (2017). The practice of computing using Python (3rd ed.). Pearson.
- Online courses for python on coursera and udemy
- E-LIBRARY <http://ezlibrary.ju.edu.jo/login> or from within the university using (<http://e-library>)

**29. Additional information:**

- Average work-load student should expect to spend 6 hours per week.
- Participation in and contribution to class discussions will affect your final grade positively.
- Raise your hand if you have any question during online meeting.
- Making any kind of disruption and during online classes will affect you negatively.

Name of the Instructor or the Course Coordinator:

**Dr. Mahmoud Maqableh**

Signature:

Date:

**Dr. Mahmoud Maqableh** **30-10-2025**

Date:

Name of the Head of Quality Assurance Committee/ Department

Signature:

Date:

Name of the Head of Department

Signature:

Date:

Name of the Head of Quality Assurance Committee/ School or Center

Signature:

Date:

Name of the Dean or the Director

Signature:

Date: