

# Syllabus\*: Object Oriented Programming (1) (1910011110)

# Second Semester 2021 /2022

| COURSE INFORMATION  |                     |                |              |  |  |  |
|---|---------------------|----------------|--------------|--|--|--|
| Course Name: Object-Orient  | ed Programming 1    | Course Code    | : 1910011110 |  |  |  |
| Semester: Second  |                     | Section: 1     |              |  |  |  |
| <b>Department:</b> Department   | of Computer Science | Core Curricul  | um:          |  |  |  |
| Faculty: Prince Al-Hussein bin A  | Abdullah II Faculty |                |              |  |  |  |
| for Information Technology  |                     |                |              |  |  |  |
| Day(s) and Time(s): Sun, Tue, a   | nd Thur 10:00-11:00 | Credit Hours:  | 3            |  |  |  |
| Classroom: e.g. IT 201  |                     | Prerequisites: | 191001101    |  |  |  |
|   |                     |                |              |  |  |  |
|   | COURSE DES          | CRIPTION       |              |  |  |  |
| the course is Java, chosen because it supports object oriented programming and because it is<br>becoming widely used in industry.<br>The course will include discussions and explanations of the following topics: introduction to<br>programming; writing, compiling, and running simple programs; expressions, variables, and<br>assignments; control structures; objects and classes, methods, and arrays. |                     |                |              |  |  |  |
|   | DELIVERY N          | NETHODS        |              |  |  |  |
| The course will be delivered through an active classroom based discussion:  |                     |                |              |  |  |  |
| FACULTY INFORMATION   |                     |                |              |  |  |  |
| Name  | Dr. Alaa Eddien     | Abdallah       |              |  |  |  |
| Academic Title:   | Associate Profes    | sor            |              |  |  |  |
| Office Location:  | IT 235              |                |              |  |  |  |
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| Office Hours:   | Sunday & Tuesd      | ay 12-13       |              |  |  |  |

## **REFERENCES AND LEARNING RESOURCES**

**Required Textbook** Introduction to Java Programming Comprehensive Version. Liang, Y. Daniel. 12th Edition/2019.

https://www.amazon.com/Introduction-Programming-Structures-Comprehensive-Version-dp-0136520154/dp/0136520154/ref=dp\_ob\_title\_bk

Deitel&Deitel, Java: How to Program, 9thedition, Prentice Hall, 2011.

|  | _  |  |          |            |  |
|--|--|--|----------|------------|--|
| Core   | Program  | Course Objectives                                    | Course   | Assessment |  |
| Curriculum   | Learning   |  | Student  | Method     |  |
| Learning   | Outcomes   |  | Learning |            |  |
| Outcomes   |  |  | Outcomes |            |  |
| Docign   | COMP-2: Design,<br>implement, and<br>evaluate a<br>computing-based<br>solution to meet a | Distinguish computer's basic concepts,               | Clo2     | Exam &     |  |
| implement, and<br>evaluate a<br>computing-   |  | computer programs, history of the Java               |          | Assignment |  |
|  |  | programming language. (2)                            |          |            |  |
|  |  | In depth understanding syntax and                    | Clo1     | Exam &     |  |
|  |  | semantics of Java and demonstrate                    |          | Assignment |  |
| based solution   | given set of   | knowledge of Java language specification,            |          |            |  |
| to meet a given  | computing  | API, JDK, and IDE. (2)                               |          |            |  |
| set of<br>computing<br>requirements in<br>the context of<br>the program's<br>discipline. | requirements in<br>the context of the<br>program's<br>discipline.                        | Be able to <b>apply</b> control structure (selection | Clo2     | Exam &     |  |
|  |  | and loops) in designing Java applications. (2)       |          | Assignment |  |
|  |  | Demonstrate the ability to use methods in            | Clo2     | Exam &     |  |
|  |  | Java program flow. (2)                               |          | Assignment |  |
|  |  | Be able to <b>apply</b> arrays and Strings in        | Clo2     | Exam &     |  |
|  |  | designing Java applications. (2)                     |          | Assignment |  |
|  |  | Be able to apply Object-oriented concepts            | Clo2     | Exam &     |  |
|  |  | in designing Java applications. (2)                  |          | Assignment |  |

# STUDENT LEARNING OUTCOMES MATRIX\*

\* يتم تعديلها وفقا لما يتم تحديده لكل مساق بالتنسيق مع الكلية والقسم المعنى

# ACADEMIC SUPPORT

It is The Hashemite University policy to provide educational opportunities that ensure fair, appropriate and reasonable accommodation to students who have disabilities that may affect their ability to participate in course activities or meet course requirements. Students with disabilities are encouraged to contact their Instructor to ensure that their individual needs are met. The University through its Special Need section will exert all efforts to accommodate for individual's needs.

Special Needs Section: Tel: 053903333 EXT 5023/4583 Location: (https://hu.edu.jo/facnew/index.aspx?typ=68&unitid=70000000) Email: (huniv@hu.edu.jo)

#### Participation

Class participation and attendance are important elements of every student's learning experience at The Hashemite University, and the student is expected to attend all classes. A student <u>should not miss more than 15%</u> of the classes during a semester. *Those exceeding this limit of 15% will receive a failing grade regardless of their performance*. It is a student's responsibility to monitor the frequency of their own absences. Attendance record begins on the first day of class irrespective of the period allotted to drop/add and late registration. It is a student's responsibility to sign-in; failure to do so will result in a non-attendance being recorded.

In exceptional cases, the student, with the instructor's prior permission, could be exempted from attending a class provided that the number of such occasions does not exceed the limit allowed by the University. The instructor will determine the acceptability of an absence for being absent. A student who misses more than 25% of classes and has a valid excuse for being absent will be allowed to withdraw from the course.

#### Plagiarism

Plagiarism is considered a serious academic offence and can result in your work losing marks or being failed. HU expects its students to adopt and abide by the highest standards of conduct in their interaction with their professors, peers, and the wider University community. As such, a student is expected not to engage in behaviours that compromise his/her own integrity as well as that of the Hashemite University.

Plagiarism includes the following examples and it applies to all student assignments or submitted work:

- Use of the work, ideas, images or words of someone else without his/her permission or reference to them.
- Use of someone else's wording, name, phrase, sentence, paragraph or essay without using quotation marks.
- Misrepresentation of the sources that were used.

# The instructor has the right to fail the coursework or deduct marks where plagiarism is detected

#### Late or Missed Assignments

In all cases of assessment, students who fails to attend an exam, class project or deliver a presentation on the scheduled date without prior permission, and/or are unable to provide a medical note, will automatically receive a fail grade for this part of the assessment.

• Submitting a term paper on time is a key part of the assessment process. Students who fail to submit their work by the deadline specified will automatically receive a 10% penalty.

Assignments handed in more than 24 hours late will receive a further 10% penalty. Each subsequent 24 hours will result in a further 10% penalty.

• In cases where a student misses an assessment on account of a medical reason or with prior permission; in line with University regulations an incomplete grade for the specific assessment will be awarded and an alternative assessment or extension can be arranged.

### Student Complaints Policy

Students at The Hashemite University have the right to pursue complaints related to faculty, staff, and other students. The nature of the complaints may be either academic or non-academic. For more information about the policy and processes related to this policy, you may refer to the students' handbook.

# **COURSE ASSESSMENT**

## Course Calendar and Assessment

Students will be graded through the following means of assessment and their final grade will be calculated from the forms of assessment as listed below with their grade weighting taken into account. The criteria for grading are listed at the end of the syllabus

| Assessment          | Grade Weighting | Deadline<br>Assessment |
|---------------------|-----------------|------------------------|
|                     |                 |                        |
| e.g. Exam 1         | e.g. 30%        | 11-4-2022              |
| e.g. Exam 2         | e.g. 30%        | 09-5-2022              |
| e.g. Final Exam (3) | e.g. 40%        | Add date/time          |

#### **Description of Exams**

Test questions will predominately come from material presented in the lectures. Semester exams will be conducted during the regularly scheduled lecture period. Exam will consist of a combination of multiple choice, short answer, match, true and false and/or descriptive questions.

| Letter<br>Grade | Description | Grade<br>Points |
|-----------------|-------------|-----------------|
| A+              | Excellent   | 4.00            |
| А               |             | 3.75            |
| A-              |             | 3.50            |
| B+              | Very Good   | 3.25            |
| В               |             | 3.00            |
| B-              |             | 2.75            |
| C+              | Good        | 2.50            |

| С  |            | 2.25 |
|----|------------|------|
| C- |            | 2.00 |
| D+ | Pass       | 1.75 |
| D  | Pass       | 1.50 |
| F  | Fail       | 0.00 |
| I  | Incomplete | -    |
|    |            |      |

\* يمكن التعديل حسب طبيعة البرنامج ( بكالوريوس/دراسات عليا)

#### WEEKLY LECTURE SCHEDULE AND CONTENT DISTRIBUTION

مثال على التوزيع : مساق الكيمياء العامة 101

#### "Lecture hours and weeks are approximate and may change as needed"

Note: For Chem 101 sections with 2 lecture periods per week (S/T, M/W or T/R), one lecture period covers 1.5 lecture hours (80 minutes). The course content specifies the sections in chapters 1-10 of the textbook that will be included in quizzes, homework and exams.

| Topics Covered            |                        |        |                             |  |                 |
|---------------------------|------------------------|--------|-----------------------------|--|-----------------|
| Торіс                     | Chapt<br>er in<br>Text | Week # | Lecture                     | Content  | Delivery Method |
| Elementary<br>Programming | Ch2                    | Week1  | Lect. 1                     | <ul><li>2.2 Writing a Simple Program 34</li><li>2.3 Reading Input from the Console 37</li></ul>                                      | Face to face    |
|                           |                        |        | Lect. 2                     | 2.4 Identifiers 40<br>2.5 Variables 40<br>2.6 Assignment Statements 42<br>2.7 Named Constants 43<br>2.8 Naming Conventions 44        | Face to face    |
|                           |                        |        | Lect. 3                     | Practical questions on teams   | Online          |
| Selections                | Ch3                    | Week2  | Lect. 1                     | <ul> <li>3.1 Introduction 78</li> <li>3.2 boolean Data Type, Values, and<br/>Expressions 78</li> <li>3.3 if Statements 80</li> </ul> | Face to face    |
|                           |                        |        | Lect. 2                     | 3.4 Two-Way if-else Statements 82<br>3.5 Nested if and Multi-Way if-else Statements<br>83  | Face to face    |
|                           |                        |        | Lect. 3                     | Practical questions on teams   | Online          |
|                           |                        | Week3  | Lect. 1                     | 3.6 Common Errors and Pitfalls 85 (cont.)<br>3.13 switch Statements 102  | Face to face    |
|                           |                        |        | Lect. 2                     | 3.14 Conditional Operators 105<br>3.15 Operator Precedence and Associativity<br>106  | Face to face    |
|                           |                        |        | Lect. 3                     | Practical questions on teams   | Online          |
| Characters                |                        |        | Lect. 1                     | Character Data Type and Operations 126   | Face to face    |
| and Strings               | Ch4                    | Week4  | Lect. 2 The String Type 131 |  | Face to face    |
| and builds                |                        |        | Lect. 3                     | Practical questions on teams   | Online          |

| Loops C                     |            | Week5  | Lect. 1 | 5.2 The while Loop 160<br>5.3 Case Study: Guessing Numbers 163   | Face to face |
|-----------------------------|------------|--------|---------|--|--------------|
|                             |            |        | Lect. 2 | 5.4 Loop Design Strategies 166<br>5.5 Controlling a Loop with User Confirmation<br>or a Sentinel Value 168   | Face to face |
|                             | Ch5        |        | Lect. 3 | Practical questions on teams   | Online       |
|                             |            | Week6  | Lect. 1 | 5.6 The do-while Loop 171<br>5.7 The for Loop 173  | Face to face |
|                             |            |        | Lect. 2 | 5.8 Which Loop to Use? 176<br>5.9 Nested Loops 178   | Face to face |
|                             |            |        | Lect. 3 | Practical questions on teams   | Online       |
|                             |            | Week7  | Lect. 1 | 6.2 Defining a Method 206<br>6.3 Calling a Method 208  | Face to face |
|                             |            |        | Lect. 2 | 6.4 void vs. Value-Returning Methods 211   | Face to face |
|                             | CL         |        | Lect. 3 | Practical questions on teams   | Online       |
| Methods                     | Cho        | Week8  | Lect. 1 | 6.5 Passing Arguments by Values 213  | Face to face |
|                             |            |        | Lect. 2 | <ul><li>6.8 Overloading Methods 221</li><li>6.9 The Scope of Variables 224</li></ul>   | Face to face |
|                             |            |        | Lect. 3 | Practical questions on teams   | Online       |
| Single-<br>Dimensional      |            | Week9  | Lect. 1 | 7.1 Introduction 250<br>7.2 Array Basics 250   | Face to face |
|                             | <b>a 1</b> |        | Lect. 2 | 7.5 Copying Arrays 260<br>7.6 Passing Arrays to Methods 261  | Face to face |
|                             | Ch/        |        | Lect. 3 | Practical questions on teams   | Online       |
| Arrays                      |            | Week10 | Lect. 1 | 7.7 Returning an Array from a Method 264   | Face to face |
|                             |            |        | Lect. 2 | Solve Questions  | Face to face |
|                             |            |        | Lect. 3 | Practical questions on teams   | Online       |
|                             | Ch8        | Week11 | Lect. 1 | <ul><li>8.2 Two-Dimensional Array Basics 290</li><li>8.3 Processing Two-Dimensional Arrays 293</li></ul>   | Face to face |
| Multidimensi<br>onal Arrays |            |        | Lect. 2 | <ul> <li>8.4 Passing Two-Dimensional Arrays to<br/>Methods 295</li> <li>8.5 Case Study: Grading a Multiple-Choice<br/>Test 296</li> </ul>                            | Face to face |
|                             |            |        | Lect. 3 | Practical questions on teams   | Online       |
|                             | Ch9        | Week12 | Lect. 1 | <ul><li>9.2 Defining Classes for Objects 324</li><li>9.3 Example: Defining Classes and Creating<br/>Objects 326</li></ul>  | Face to face |
| `Objects and<br>Classes     |            |        | Lect. 2 | <ul> <li>9.4 Constructing Objects Using Constructors<br/>331</li> <li>9.5 Accessing Objects via Reference Variables<br/>332</li> </ul>                               | Face to face |
|                             |            |        | Lect. 3 | Practical questions on teams   | Online       |
|                             |            | Week13 | Lect. 1 | 9.7 Static Variables, Constants, and Methods 339   | Face to face |
|                             |            |        | Lect 3  | 9.8 Visibility Modifiers 344<br>9.9 Data Field Encapsulation 346<br>9.10 Passing Objects to Methods 349<br>9.11 Array of Objects 353<br>Practical questions on teams | Face to face |
|                             |            |        | Leet. J | i iacucai questions on teams   | Omne         |