| Spring 2023 | |
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| **GENERAL COURSE INFORMATION** | |
| Course Code and Title | CSBP219: Object Oriented Programming |
| Prerequisite | CSBP119 |
| Co-requisite | None |
| Credit Hours | 3 Hrs |
| Contact Hours | 2 sessions of 75 minute lectures |
| Course Schedule | |
| Course Coordinator | Dr. Hany Al Ashwal, Email: halashwal@uaeu.ac.ae |

| **SECTION INFORMATION** | |
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| **Lecture Instructor** | **Dr. Rawhi Alrae**<br>**Email:** rawhi@uaeu.ac.ae<br>**Phone:** +971 3 713 (5542)<br>**Office Location/Hours**: CIT E1/3129<br>Mon Wed: 12:30 – 2:00 , Tue Thu: 11:30 – 12:30 |

**CATALOGUE DESCRIPTION**

Object-oriented design, encapsulation and information hiding, separation of behavior and implementation, classes and subclasses, inheritance (overriding, dynamic dispatch), polymorphism (subtype polymorphism vs. inheritance), class hierarchies, collection classes and iteration, Primitive Data Structures and Application (Array, String, and String Manipulation), Programming Practice using an IDE (modularity, testing, and documentation.

**TEXTBOOK & LEARNING RESOURCES**

TEXTBOOK:
W. Savitch, Java: An Introduction to Problem Solving & Programming, 8/E, Pearson Prentice hall, 2017, ISBN:13-9780131354517

REFERENCE BOOK
D. S. Malik, Java Programming from Problem Analysis to Program Design, 5/E, Thomson Course Technology, 2015, ISBN: 13-978-1-111-53053-2.

OTHERS:
Handouts, Lecture Notes.

**TEACHING & LEARNING METHODOLOGIES**

Software packages (Netbeans with JDK), Lectures, White and Smart Board instructions, Lab experiment, discussions, projects, group work.

**COURSE LEARNING OUTCOMES (CLOs)**

Upon the successful completion of the course, students should be able to:

1. Implement classes to solve a given problem.
2. Test simple classes.
3. Design classes using existing classes and libraries.
4. Develop a class hierarchy using inheritance.

5. Develop classes for simple data structures.

| TOPICAL OUTLINE | | | |
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| Timeline | Topic(s) | **CLOs** | **Course Activities/ Teaching & Learning Methods** |
| Week 1 | • Introduction to Java<br>• Identifiers, Literals, Operators, Variables, Expressions, and Data types | | Lecture/Smartboard instructions/Hands on activities |
| Week 2 | • Reading and Writing from Keyboard and Files (I/O events).<br>• Control Structure – Selection | | Lecture/Smartboard instructions/Hands on activities |
| Week 3 | • Control Structure – Repetition<br>• Strings and Use of predefined methods<br>• User defined methods | | Lecture/Smartboard instructions/Hands on activities |
| Week 4 | • One-dimension Array declaration, definition, initialization, and use.<br>• Passing arrays to methods<br>• Two-dimensional array | | Lecture/Smartboard instructions/Hands on activities |
| Week 5 | • Objects and reference variables<br>• User Defined Classes, constructors, object instantiation, Encapsulation | 1,2 | Lecture/Smartboard instructions/Hands on activities |
| Week 6 | • Accessing private members, accessor and mutator methods, toString method | 1,2 | Lecture/Class discussion |
| Week 7 | • Assignment operator, deep and shallow copy, copy constructor, this keyword, static keyword, UML diagram | 1,2 | Lecture/Smartboard instructions/Hands on activities |
| Week 8 | • Object composition, interaction of multiple objects | 3 | Lecture/Smartboard instructions/Hands on activities |
| Week 9 | • **Review and Midterm Exam** | | |
| Week 10 | • Arrays of Objects<br>• ArrayLists: declaration and operations. | 5 | Lecture/Smartboard instructions/Hands on activities |
| Week 11 | • Inheritance: subclass and superclass, defining subclasses, defining constructors of subclasses. Overriding superclass methods, rules of overriding, rules of accessing superclass members. | 3, 4 | Lecture/Smartboard instructions/Hands on activities |
| Week 12 | • Examples of inheritance: Rectangle and Box, Point and Point3D, Circle and Cylinder. Access rights, the Object class and its methods, overriding object class methods | 4 | Lecture/Smartboard instructions/Hands on activities |
| Week 13 | • Invoking superclass constructors, constructor chaining, Introduction to polymorphism. | 4 | Lecture/Smartboard instructions/Hands on activities |
| Week 14 | • Polymorphism and dynamic binding, casting objects, rules about overriding and inheriting classes or methods with final, static, and private keywords. | 4 | Lecture/Smartboard instructions/Hands on activities |
| **Week 15** | **Review before the final exam** | | |
| **Week 16** | **Final Exam** | | |

| GRADING | | |
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| Assessment Methods | Weight | Due Date |
| Quizzes | 15% | One every three weeks |
| Assignments | 15% | One every month |
| Group project | 20 % | 15th week of instruction. |
| Midterm | 20 % | TBA |

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| Final | 30 % | TBA |
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| Rubrics | Rubrics will be provided to students, as applicable, for grading their direct assessment works such as assignments, group projects. | |
| Feedback | Feedback on progress in the course will be regularly provided to students to keep them informed and provide them with opportunities to improve their performance. | |

**COURSE POLICIES**

**Attendance**

Students shall be required to attend all classes, practical sessions, seminars and examinations related to the course in which they are registered. A student who misses 15% of the class meetings allotted for a course will receive an "FA" (Fail for Absences) grade in the course. If there is a valid reason for the absence, which has been approved by the Dean in the semester in which the absence occurred, the student will be granted Administrative Withdrawal from the course and will receive a final grade of "AW". Students are responsible for checking and tracking their attendance records for each course via e-Services. For more details on attendance policies, students ought to consult the university policies at: http://www.uaeu.ac.ae/en/about/procedures/admissions_and_enrollment/pro-ae_03_en.pdf.

**Academic Integrity**

Academic integrity is of central importance to education at UAEU. Students have the responsibility to know and observe the requirements of the UAEU Code of Academic Honesty available: https://www.uaeu.ac.ae/en/catalog/plagiarism_and_academic_integrity.shtml and the penalties resulting from violation of this code. This code forbids cheating, fabrication or falsification of information, multiple submission of academic work, plagiarism, abuse of academic materials, and complicity in academic dishonesty. Cheating in any form and on any academic work results in serious penalties that include dismissal from the university.

**Students with Special Needs**

Students with special needs are encouraged to discuss their needs with the course instructor. You need to contact the Special Needs Services Center at +971 3 7134264 or email (disabilityservices@uaeu.ac.ae). All academic accommodations must be arranged through that office: http://www.uaeu.ac.ae/en/student_services/special_needs/ .

**Student Support Services**

If you need more support, please go to the Student Academic Success Program: http://www.uaeu.ac.ae/en/university_college/sasp/. This program provides students with academic support services such as Independent Learning Centers (ILCs), Tutorials, Writing & Speaking Centers. All students are encouraged to use these Centers.

**COURSE CONTRIBUTION**

| **Contribution of CLOs to Programs Learning Outcomes (PLOs)** | | | | | |
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| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 |
| BSc in CS | PLO2, PLO6 | PLO1 | PLO2 | PLO2, PLO6 | PLO2, PLO6 |
| BSc in IT | PLO1 | | PLO1 | PLO2 | PLO2 |
| BSc in ISEC | PLO2 | | PLO2 | | |
| BSc in CE | PLO2 | PLO1 | PLO1, PLO2 | PLO1 | PLO1 |

PLOs of all programs are available at:
http://www.cit.uaeu.ac.ae/en/programs/undergraduate/