

Atlantic Cape Community College
5000 Blackhorse Pike
Mays Landing, NJ

CISM 254

Advanced Computer Programming – Java

Prerequisites: CISM 154 Computer Programming - Java

Course Description: The course will address the advanced topics of object orientation used in software engineering, the theory behind data abstraction, inheritance, and GUI design. Additional topics will include sorting and searching algorithms, dynamic data structures, and Java database connectivity.

Learning Outcomes:

- The student will be able to design, implement, test, debug, and document Java programs, using appropriate development tools.
- The student will be able to implement simple graphical user interface (GUI) applications using JavaFX libraries.
- The student will be able to select appropriate Java collection classes for particular applications.
- The student will be able to increase robustness of Java applications using exception handling.

ASSESSMENT STRATEGIES

Learning Outcome	Assessment Strategy
The student will be able to design, implement, test, debug, and document Java programs, using appropriate development tools.	Programming Assignment
The student will be able to implement simple graphical user interface (GUI) applications using JavaFX libraries.	Programming Assignment
The student will be able to select appropriate Java collection classes for particular applications.	Programming Assignment
The student will be able to increase robustness of Java applications using exception handling.	Quiz

TEXT:

Starting Out w/Java: Early Objects Edition: 6th. Gaddis
ISBN: 9780134462011

Materials: USB Flash Drive

COURSE GOALS:

I. The student will examine Arrays and ArrayList Class with sorting and searching

Objectives:

1. Create arrays and ArrayList objects
2. Use arrays and ArrayList objects
3. Use the sequential search algorithm
4. Use the selection search algorithm
5. Use the binary search algorithm

II. The student will do text processing

Objectives:

1. Get introduced to wrapper classes
2. Use Character class to test and convert character data
3. Create and use String objects
4. Search and extract substrings
5. Create and use StringBuilder objects
6. Explain the difference between StringBuilder and StringBuffer objects

III. The student will develop an understanding of abstract classes and interfaces.

Objectives:

1. Describe an inheritance hierarchy
2. Describe single versus multiple inheritance
3. Distinguish between abstract and concrete classes
4. Create related classes using inheritance
5. Create and extend an abstract class
6. Create and use a final method
7. Define polymorphism and dynamic binding
8. Implement an interface

IV. The student will examine Exceptions and Advanced File I/O

Objectives:

1. Handle exceptions
2. Throw exceptions
3. Read and write data from a binary file

4. Differentiate between sequential and random access files
5. Explain object serialization

V. The student will examine GUI Applications

Objectives:

1. Define graphical user interface
2. Describe event-driven GUI programs
3. Use the JavaFX library to create GUI and graphical applications.
4. Create scenes
5. Use controls
6. Handle events
7. Use layout containers
8. Create menus
9. Draw shapes
10. Play sound and video files

VI. The student will access databases using JDBC™

Objectives:

1. Design a database
2. Create a connection to a database
3. Create and delete tables
4. Perform an SQL database query and process the result set
5. Display query results
6. Modify records with an SQL update

ADA Accommodations

As per the Americans with Disabilities Act (ADA), reasonable accommodations can be provided to students who present documentation of a disability to Atlantic Cape Community College’s Center for Accessibility, located on the first floor of “J” Building in the Counseling and Support Services department (Mays Landing campus). Reasonable accommodations cannot be provided for a course until the student registers with the Center for Accessibility. For more information, please contact the Center for Accessibility via email at cfa@atlantic.edu or call 609-343-5680.

COURSE EVALUATION

Programming Assignments	30%
Quizzes	20%
Tests	20%
Labs	20%
Lab Quizzes	10%

TOTAL	100 %

Grading scale

Grade	Percentage Range	Grade Point Value
A	93-100%	4.0
A-	90-92%	3.7
B+	87-89%	3.3
B	83-86%	3.0
B-	80-82%	2.7
C+	77-79%	2.3
C	70-76%	2.0
D	60-69%	1.0
F	0-59%	0.0