Department of Mathematics and Computer Science
Adelphi University
Spring 2014

0145-172-001	**Introduction to Algorithms and Data Structures**
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Office Hours　　MWF 11:00-11:50; Tu 10:00AM-1:00PM

Course Description and Purpose　　Expand on the techniques of CSC 171 with multi-dimensional arrays, file handling, control constructs, class relationships (composition, inheritance, polymorphism), exceptions, threads, higher-order functions, simple data structures and design patterns. Develop software-engineering skills and habits, and start using big-O notation to study algorithm efficiency. (Learning Goals:Q)

Gen Ed Learning Goals and Distribution Requirements　　Quantitative Reasoning

Course Learning Goal　　Students will be able to write more complex programs in Java, using multiple object classes and will be able to write programs using data structures such as stacks queues and linked lists.

Prerequisite　　CSC 171

Texts　　*Absolute Java*, 5th edition by Walter Savitch, Addison-Wesley, 2013.

Topics　　A ***Brief*** Review of Basic Java
A Review of Programming With Classes
More About Classes: References and Packages
Structuring Data: Multidimensional Arrays, Arrays of Objects
　　　and Objects Containing Arrays and Other Control
　　　Structures
Polymorphism
Exception Handling
Files
Recursion
References and Linked Lists
Stacks and Queues
Binary Trees
Sorting and Searching

Assignments The assignments this semester will require students to use a BlueJ as an interactive programming environment and the Jada Development Kit (JDK) to create, compile and execute programs. This is available on computers on campus, but can be installed on students' own computers if they wish.

While there will be opportunities to use class time for assigned work, this will be more for debugging and other assistance that students require in class than for compledting assignments. One should expect to spend 2-6 hours outside class working on programming assignments for this class.

Grading Each programming assignment will be graded with a base grade of 90%, with points added to reflected areas in which the assignment exceeded specified requirements and/or points deducted to show areas where the assignment is deficient.
Late penalties may be assessed of 2 points per class after the due date.
The final average will be weighted (based on the following ratio:

Programming Assignments	20%
Quizzes	30%
Midterm Exam	25%
Final Exam	25%

The final average will translate to a letter grade according to the following table:

Final Average	Course Grade
A	90 – 100
A-	87.5 – 89.9
B+	83.3 – 87.4
B	80.0 – 83.2
B-	77.5 – 79.9
C+	73.3 – 77.4
C	70.0 – 73.2
C-	67.5 – 69.9
D+	63.3 – 67.4
D	60.0 – 63.2
F	0.0 – 59.9

Attendance   The following is the Adelphi University General Attendance Policy:

Only students who are registered for courses, and whose name appears on the Official Class Roster may attend courses at the University. Adelphi students make a commitment to be active participants in their educational program; class attendance is an integral part of this commitment. Attendance requirements for each course will be announced by the faculty member at the beginning of each term. Students are expected to be present promptly at the beginning of each class period, unless prevented by illness or by other compelling cause. In the event of such absence, students may request that faculty members be notified by the Office of Academic Services and Retention. Students are responsible for completing course work missed through absences. Students should wait a reasonable length of time for an instructor in the event that the instructor is delayed.

Additionally, you are also responsible for whatever work is covered in class whether or not you are there. Absence from the final exam will be excused only for a good and well-documented reason. The decision to allow a make-up exam will be made in accordance with the policies of Adelphi University.

NB: I will not be available on Wednesday, April 16 or Monday, April 21. There will be an Open Lab that day. Attendance will be taken. Students are encouraged to take advantage of the time to complete programming assignments.

If the University is closed for more than two days due to an emergency, go the home page for this course site each day for instructions and assignments. Student instructions materials can be found at http://home.adelphi.edu/~siegfried/cs174

Tentative Schedule (Subject to Change)

Date	Topic	Assignment due
January 24	Brief Review of Java	
January 27	Brief Review of Java (Pretest in lab)	Assn 1 – Playing a Game of Craps
January 29	Brief Review of Classes	
January 31	Brief Review of Classes	Assn 2 - Simulating A Series of Dice Games
February 3	References and Packages	
February 5	References and Packages	Assn 3 - A Class For A Name
February 7	References and Packages (Quiz in	

	Lab)	
February 10	Review of Strings	Assn 4 - Enhancing A Class For A Name
February 12	Review of Strings	
February 14	Review of Arrays	
February 17	Structuring Data	Assn 5 – Programming with Strings
February 19	Structuring Data	
February 21	Structuring Data	Assn 6 – Writing a Class Arrays
February 24	Polymorphism	
February 26	Polymorphism	Assn 7 – Writing An Immutable Class For Time
February 28	Polymorphism	
March 3	Exception Handling	Assn 8 - Calculating A Diver's Score in a Competition
March 5	Exception Handling	
March 7	Exception Handling	Assn 9 - Creating A Phone Book
March 10	Review for the Midterm Exam	Assn 10 – Creating a Payroll Class and Its Subclasses
March 12	Midterm Exam	
March 14	Files	Assn11 - Running the LateBinding program
March 24	Files	
March 26	Files	Assn 12 – Creating the Movie Class and Its Subclasses
March 28	Recursion	
March 31	Recursion	Assn 13 - Finding the sum of the absolute values
April 2	Recursion	
April 4	Recursion	Assn 14 - Finding the Average of Numbers stored in a text file Assignment #15 - Writing a recursive program
April 7	References and Linked Lists	Assignment #13 - Writing and Reading a Binary File.
April 9	References and Linked Lists	

April 11	References and Linked Lists	Assignment #15 - Writing a recursive program
April 14	Stacks and Queues	
April 16	Open Lab	Assn 15 - Formatting the time
April 18	Stacks and Queues	
April 21	Open Lab	Assn 16 – Creating an Inventory List Program
April 23	Stacks and Queues	
April 25	Binary Trees	
April 28	Binary Trees	Assn 17 – Working with Stacks
April 30	Binary Trees	
May 2	Sorting and Searching	Assn 18 – Working with Queues
May 5	Sorting and Searching	
May 7	Review for the Final Exam	Assn 19 – Working Sorting and Searching

Students With Disabilities

If you have a disability that may impact your ability to carry out assigned course work, and are not enrolled in the Learning Disabilities Program, it is important that you contact the staff in the Disability Support Services Office (DSS), University Center, Room 310, (516) 877-3145. DSS@adelphi.edu. DSS will review your concerns and determine, with you, appropriate and necessary accommodations. All information and documentation of disability is confidential.

Honor Code

Students enrolled in this course are expected to abide by the Adelphi University Honor Code. The purpose of the Honor Code is to protect the academic integrity of the University by encouraging consistent ethical behavior in assigned coursework by students. Following is excerpted from the Student Honor Code:

The code of academic honesty prohibits behavior, which can broadly be described as lying, cheating, or stealing. Violations of the code of academic honesty will include, but are not limited to, the following:

1. Fabricating data or citations
2. Collaborating in areas prohibited by the professor
3. Unauthorized multiple submission of work
4. Sabotage of others' work, including library vandalism or manipulation
5. Plagiarism: presenting any work as one's own that is not one's own
6. The creation of unfair advantage
7. The facilitation of dishonesty
8. Tampering with or falsifying records
9. Cheating on examinations through the use of written materials or giving or receiving help in any form during the exam, including talking, signals, electronic devices, etc.

Student Course

During the last two weeks of the class, you will receive notification, via

Evaluations   mail and eCampus, that the course evaluation is available for your input electronically. Availability will end at the start of the final examination period. Your feedback is valuable and I encourage you to respond. Please be assured that your responses are anonymous and the results will not be available to the instructor until after the end of the semester and therefore after course grades have been submitted.

STUDENT ACKNOWLEDGEMENT:

I HAVE RECEIVED AND READ THE SYLLABUS FOR [INSERT COURSE NUMBER AND SECTION].

SIGNED: _____

PRINT NAME:

_____

DATE: _____

Warning – This page must be signed and returned to the instructor to receive a complete grade in this course.