



SYLLABUS - CSE 223

DATA STRUCTURES AND OBJECT-ORIENTED PROGRAMMING

Course Information

Description: Study of data structures and the analysis of algorithms, object-oriented programming, concurrency, and memory management.

Prerequisite: A grade of C or better in CSE 222; and CSE 215 or consent of instructional unit.

Credits: 5

Class hours/location, instructor information and other important details: See "Additional Information" in Canvas for section-specific details.

Text and Materials Needed

Required Text: [Introduction to Programming Using Java](http://math.hws.edu/eck/cs124/downloads/javanotes7-linked.pdf) which is an open-source text, available for free download from <http://math.hws.edu/eck/cs124/downloads/javanotes7-linked.pdf>

Recommended Texts:

- Introduction to Algorithms, by Cormen, Published by MIT Press
- A Practical Guide to Linux Commands, Editors, and Shell Programming, by Sobell, Published by Prentice Hall

Required Supplies/Materials: USB flash drive; Eclipse: (<http://www.eclipse.org/downloads>).

Course Outcomes

OUTCOMES	ASSESSMENT	SUPPORTED PROGRAMS
Apply object oriented design and programming concepts using the Java programming language.	Computer-assignments In-class assignments Tests	AST2
Design, code and test programs in an object-oriented language, demonstrating the use of encapsulation and Abstract Data Types.	Computer-assignments In-class assignments Tests	AST2



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Apply and implement advanced data structures concepts, such as: Binary, multiway and balanced trees, heaps and priority queues, to solve computational problems.	Computer-assignments In-class assignments Tests	AST2
Analyze the time and space complexity of advanced data structures and their supported operations.	Computer-assignments In-class assignments Tests	AST2
Compare the time & space tradeoff of different advanced data structures and their common operations, such as: search, add and delete.	Computer-assignments In-class assignments Tests	AST2
Understand basics of memory management, concurrency, synchronization and related issues.	Computer-assignments In-class assignments Tests	AST2
Demonstrate the ability to work effectively in a team.	Computer-assignments In-class assignments Final Engineering Project	AST2

Grading

Your grade will be based on a combination of quizzes, programming assignments, a service-learning project (SLP), a midterm and a comprehensive final exam. Points will be weighted as follows:

Programming Assignments: 35%

Quizzes: 10%

SLP: 5%

Midterm: 20%

Final: 30%



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Final Grade Assignment: Your final grade will be calculated based on your weighted average (rounded to the nearest integer), according to the following table:

95-100	A	90-94	A-	
87-89	B+	83-86	B	80-82 B-
76-79	C+	70-75	C	
60-69	D			
0-59	F			

Course Policies

Academic Honesty and Plagiarism: You are expected to do your own work. Copying or rewriting someone else's online or offline work, having someone else do your work, or cheating in any fashion will result in zero point for that test or assignment in addition to penalties prescribed by college policies. A second offense will result in an automatic 'F' for the class. **If you are in doubt as to what constitutes cheating, ask your instructor for further clarification.**

Late Paper/Assignment Policy: Points are only awarded for tests, quizzes, assignments and projects that are **completed and delivered** by the assigned due dates and times. In all other instances, zero points will be awarded unless the student has made prior arrangements with the instructor.

Missed Exam/Assignment Policy: Points are only awarded for tests, quizzes, assignments and projects that are completed and delivered on the assigned due dates and times. In all other instances, zero points will be awarded unless the student has made prior arrangements with the instructor.

Computer or Equipment Misuse: Students are expected to obey the Equipment and Computer Usage Guidelines. Students who misuse the equipment or computers will be expelled from the class and/or lab.

Support Services

ADA Accommodations: If you have emergency medical information, which should be shared, or if you require assistance in case the building should be evacuated, please make an appointment to see your instructor as soon as possible. Any student with a disability who may require accommodation in order to fully participate in this class should contact the Disability Support Services Office at (360) 992-2314 or (360) 991-0901 (VP) or stop by GH1 137.

College-Wide Policies

Non-discrimination Policy: Clark College affirms a commitment to freedom from discrimination for all members of the college community. The college expressly prohibits discrimination against any person on the basis of: Race, color, national origin, disabled veteran status, sex, sexual orientation, age,



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gender identity, creed, gender expression, Vietnam-era veteran status, religion, marital status, and presence of physical, sensory or mental disability. The responsibility for, and the protection of, this commitment extend to students, faculty, administration, staff, contractors, and those who develop or participate in college programs. It encompasses every aspect of employment and every student and community activity.

Additional Information

All grades are posted on Canvas, along with additional details on exams, assignments, etc.

Tentative Schedule

The following is subject to change. See Canvas for the detailed list of assignments, exact dates for exams, and other details.

Week 1: Introduction to Java Programming.

Overview; introduction to the course; Introduction to Eclipse IDE; Elements of the Java language; Hello World

Week 2: More Java programming.

Objects; Methods; Arrays; Multi-dimensional arrays. Basic text I/O.

Week 3: Object Oriented Programming.

Particular classes for lists, trees, stacks, queues, etc. Exceptions (catch/try blocks)

Week 4: Hashes, iterators. Inheritance and polymorphism.

Week 5: String handling; other data types; advanced I/O. GUIs.

Week 6: More I/O; Event-driven programming. Networking from Java.

Week 7: Multi-processing. Threads. Synchronization. Potential problems.

Week 8: Static vs class methods; ADTs.

Week 9: More data structures: trees, heaps, stacks, queues, priority queues, etc.

Week 10: Advanced topics; review.

Week 11: **Final Exam** (cumulative)

Student Conduct Guidelines

- **Be sure to read the "Additional Information" section of Canvas for important section-specific information about this course.**



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- Be an active participant in the class.
- Ask questions! All content-related questions are welcome.
- Use the resources available. Create prototypes – create “throw away” code.
- Get to know the students around you. Form study and work groups if possible.
- It is recommended to exchange ideas and work with peers. Note however that unless it is a team project, all assignments must be completed individually and independently.
- It is not all right to copy any part of a program from the web and call it your own.
- Come to every class, and arrive on time.
- Do all assigned work, and complete it on-time.
- Use Canvas.

Class Cancellation

In the event of bad weather conditions or other events, check the local radio & TV stations, newflash or the Clark College website, to see if Clark College is delayed or closed:

www.clark.edu

Engineering and Computer Science Course Policies

Visit http://www.engrcs.com//courses/ECS_Course_Policies.pdf for additional information and supporting materials.