CS 239 Advanced Programming - Syllabus

General Overview: Students use various advanced problem-solving strategies to develop algorithms using classes and objects. Students also learn how to implement and use elementary data structures, including character strings, records, files, stacks and queues. developing clear, concise, and correct algorithms to solve problems on a digital computer.

Course Meets:	Tues and Thursday Lecture: 2:00 - 3:15 in Room HHS 2208
	Monday and Wednesday Labs: 1:25 - 2:15 in Room 248
Course Schedule:	Course Schedule
TA Schedule:	TBA
Links to Course Material	Programming Assignments
	Resources

Instructor Information Nancy Harris	Office:	ISAT/CS Room 217
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	Web:	[Home Page](#)
	Policies:	[Instructor Policies](#)

CS239 – Advanced Programming

General Overview:

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Prerequisites: CS 139 or equivalent with a grade of "C" or better.

Note: Students planning to continue to CS240 or CS350 next semester should take CS 227 during this semester. CS 227 is a prerequisite to CS 240 and CS350.

Overall Objectives:

1. Object-Oriented paradigm–Students will learn how to use OO programming in conjunction with other structured programming techniques.
2. UML – Students will use the Universal Modeling Language (UML) for diagramming.
3. Coding Practice – Students will write clear, concise, and correct algorithms. In addition, students will improve their ability to solve new computing problems.
4. Software Engineering Approach – Students will use the software engineering discipline in using thoughtful design and coding, desk-checking, and thorough unit and integration testing in the production of software applications.
5. Professional ethics – Intellectual property is owned by its creators and cannot be appropriated without permission. Even when used with permission, its creator must be cited. Turning in someone else's intellectual property as one's own is a violation of professional ethics as well as the JMU Honor Code. Students will be held to a high ethical standard in class and in all class assignments.
6. Reading Specifications–Students will develop skills in reading specifications carefully and understanding what they state and using such specifications in the production of correct applications.

The lecture days will include a theoretical discussion of programming concepts and features. The lab days will permit students to practice what they have learned in lecture or read in the assignments. Labs will consist of either experimentation, program development or both. If a student finishes the assigned lab exercise early, time to work on programming assignments is provided. In general, labs will have an assigned task, so should not be viewed as "study hall". Labs may take longer than the lab period provided. I strongly recommend that all students attend the lab session to get as much done there as possible. Work will be due the same day as assigned. We will go over the labs the day after the lab period.

We will use Blackboard and the web as a means of communicating. Announcements for class will be made on the Blackboard announcements page or the course web page if Blackboard is unavailable. Any other announcement that you receive through other means (such as e-mail) is suspect unless confirmed by Blackboard or the course web page in the event of Blackboard failure. If I send an e-mail to the class as a whole, I will also put the text into a Blackboard or web announcement.

Textbook and Required Material

There is no required text for this class. We will make use of material found on the Sun Java site as well as some supplemental materials.

Java API's: http://java.sun.com/j2se/1.5.0/docs/api/

Java Online Tutorial: http://java.sun.com/docs/books/tutorial/index.html

Reference Text: You may use any other textbook that you find helpful as a reference, including the book you used for your first semester. An excellent reference book is Cay Horstmann's text, Big Java, published by John Wiley and Sons. A copy of this text will be available on reserve in the CISAT library.

JAC Card:

There may be times in lab that you need to print a worksheet, a completed assignment or other work. You must have your JAC card with you and some money on it for printing. Make sure that you have a couple of dollars on the card each day.

Backup Media:

Whether you use a floppy disk or a memory stick, it will be important that you have a backup device available to use in the lab. While you will get some network space, sometimes the network goes down and you need some way to continue working. Lab machines do not provide a permanent save. When the machine is logged out, your work is lost.

Grading

Exam 1	20%
Exam 2	20%
Final Exam	30%
Programming Assignments	20%
Labs, homework, quizzes,etc	10%

I generally grade exams and programming assignments on a 100 point scale. Letter grades correspond to 10 point ranges...90 - 100 = "A", 80 - 89.999 = "B", etc. "F" is used for work below 60%. Labs, homework and quizzes will be graded as A-excellent and complete(95), B-incomplete or with some errors(85), C-major errors or missing requirements(75), F-unacceptable but some earnest attempt made(50). 0 will be used for work not turned in or seriously flawed.

Class Policies and Student Success

See the link above for general instructor policies. Specific policies and items which will insure your success in this class are:

- **Come to class**, come to class, come to class - Students who attend class regularly will keep up with the workload better, will gain insights from talking with classmates or the instructor, and will do better in this class as a result.
- **Workload -**This is a four(4) credit hour class. There is considerable outside work expected. More work will be done at the end of the semester than at the beginning. Be sure to get started on programming assignments early as these may be more difficult than they first appear.
- **Late assignments -** All lab assignments and homework are due at the beginning of class on the day that they are due. No late assignments will be accepted for credit, although I will review late assignments at your request. For programming assignments, late assignments will have a per day penalty associated with them.
- **Exams -** We have two midterms and a final exam. It is expected that all students will take the exams at the normally scheduled time. If an emergency occurs which requires you to be away, let me know as soon as you know about the situation. I may request documentation in order to allow you to take a make-up exam.
- **Honor Code -**Every semester I have incidents of students who fall behind in their work,

cheating on programming assignments in some fashion. I report ALL incidents of academic dishonesty to the Honor Council. If the violation is severe, I will refer it to the Honor Council for formal resolution. Less severe violations may be handled informally. If you know of cheating in this class, it is your responsibility to let the instructor know as soon as possible. If you are involved in a situation where you are not sure if what you did was right, please see me.

- **Extra Credit -** I generally do not have extra credit opportunities. One exception (and there may be a few others) are students who help test the submit system are given extra points on that assignment only.

Student Success - You will be successful in this class if you:

- Attend class and lab each day.
- Ask for help when you need it. We have TA assistance in the evening, and I have plenty of office hours.
- Get started early on assignments.
- **Think** about what you are doing...don't just do. In this course, the why is more important than the what.
- Experiment with the language and assignments and talk to your colleagues during lab time. Feel free to explore.
- Don't put yourself into a position of providing unauthorized help to another student.

If you need additional resources to help you with your learning, let me know. Additional reference books may be placed in the library upon request.

Students with Disabilities: If you are a student with a documented disability, who will be requesting accommodations in my class, please make sure you are registered with the Office of Disability Services, Wilson Hall, Room 107 (568-6705) and provide me with a copy of your Access Plan letter outlining your accommodations. I will be glad to meet with you privately during my office hours to discuss your special needs. The sooner you can do this, the better I can assist you in meeting your learning goals in this course.

Student Responsibility: Student are responsible for adding and dropping courses via e-campus. The last day to add a course for the Fall 2006 semester is Thursday, September 14, 2006 (signatures required after Tuesday September 5). The last day to drop a course for the Fall 2006 semester with a "W" grade is October 26, 2006. I do not give "WP" or "WF" grades to students requesting a drop after the deadline except in extraordinary circumstances.

Religious Observance: Students who are unable to attend class due to religious observance may request deadline extensions BEFORE the expected absence. I will do my best to accommodate your special circumstances.

For clarification of these and other instructor policies please refer to the policies link.

[Department of Computer Science](#)   [Nancy Harris Home Page](#)   [Current Classes Link](#)

CS 239 Spring 2006 Schedule

Professor Nancy Harris

TA Consulting Schedule for Fall 2006

Welcome to CS 239

- Part 1: Review and Preparation to Move Ahead
- Part 2: Fundamentals of Object Oriented Programming
- Part 3: Advanced Techniques
- Part 4: Introduction to Data Structures
- Part 5: Optional Topics

Date	Lab Room 248 Link to lab manual (in progress)	Lecture Room 2208	Homework or Assignment Due
Part 1: Review and Preparation to Move Ahead			
Aug 28	Introduction SurveySurvey		

Aug 29		[Operators, Decisions and Repetitions](#)	Survey due no later than tonight.
Aug 30	[Reviewing objects](#) submit to the Blackboard assignment.		
Aug 31		[Classes, Objects and References](#)	Lab assignment is due by noon today.
Sept 4	The network environment and submit.\n\nSee the Blackboard assignment.		
Sept 5		[Review of Classes, Objects, and References II](#)	Big Java: Chapter 7 Tutorial: [classes](#) & [objects](#)
Sept 6	Object review continues and javadocs.		Sept 4 lab due at 1:25 today.
Sept 7		Handling Exceptions\n\nInput/Output Basics	Big Java: Chapter 14 Tutorial: [exceptions](#)
Sept 11	Experimenting with Exceptions\n\nExperimenting with I/O		
Part II: Fundamentals of Object Oriented Programming			
Sept 12		The Object-Oriented Paradigm	Tentative due date for PA1

Sept 13	Enumerated Types	
Sept 14		Developing Classes
Sept 18	Developing mutable and immutable classes	
Sept 19		More on Developing Classes	Tentative due date for PA2
Sept 20	More work with enumerated types	
Sept 21		Specialization (Derived Classes and Inheritance)
Sept 25	Experimenting with Specialization	
Sept 26		Accessibility/Visibility Revisited
Sept 27	Experimenting with Accessibilty/Visibility	
Sept 28		Polymorphism through Specialization
Oct 2	Experimenting with Polymorphism	
Oct 3		Review and overflow topics	Tentative due date for PA3
Oct 4	Printf - Format Strings - Lab	
Oct 5		EXAM 1
Oct 9	Review exam 1	

Part III: Advanced Techniques

Oct 10		Abstract Classes

Oct 11	Experimenting with AC	
Oct 12		Interfaces
Oct 16	Experimenting with Interfaces	
Oct 17		Polymorphism through Interfaces
Oct 18	Experimenting with PI	
Oct 19		Abstract class and interface design	Tentative due date for PA4
Oct 23	Abstract classes and interfaces	
Oct 24		Recursive Algorithms I
Oct 25	Recursion Tracing	
Oct 26		Recursive Algorithms II
Oct 30	Experimenting with Recursion	
Oct 31		Testing
Nov 1	Experimenting with Testing	
Nov 2		Testing continued	Tentative due date for PA5
Nov 6	Experimenting with Testing	
Nov 7		Exceptions
Nov 8	Experimenting with Exceptions	
Nov 9		EXAM 2

Part IV: Introduction to Data Structures

Nov 13	Exam Return and Review	
Nov 14		Multi-Dimensional Arrays
Nov 15	Exploring Arrays of Arrays	
Nov 16		Using Collections
Nov 20	Experimenting with Collections	
Nov 21		Data Storage... Categorization of Data Structures...Intro to Stacks, Queues, and Trees	Tentative due date for PA 6

THANKSGIVING HOLIDAY

Nov 27	Experimenting with Type Safe Collections	
Nov 28		Type Safe Collections
Nov 29	Data Structures See reference - Generics	
Nov 30		Stacks and Queues I
Dec 4	Experimenting with Stacks and Queues	
Dec 5		Stacks and Queues II

Part V: Optional Topics and Wrap Up

Dec 6	

Dec 7		Tentative due date for PA7
	FINAL EXAM	
12/14 Thursday	FINAL EXAM IS ON Thursday in HHS 2208	