# CS-430/530 Programming Languages
## Fall 2007 Semester



## Professor:

Dr. Elizabeth Adams
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Office: 213 ISAT/CS
e_mail:

Office Hours:
Mondays: 4:00-5:00 pm
Tuesdays: 10:30-11:30 am
Wednesdays: 1:30-3:00 pm
Thursdays: 10:30-11:30 am
Fridays: by appointment And whenever my door is open_

NOTE: I am frequently in my office at other times, particularly in the evening and you are welcome whenever I am there and my door is open

## Class Meeting Times:

CS 430 - Section 0001 Tuesday,Thursday - 12:30-1:45 – ISAT/CS 250
CS 430 - Section 0002 Tuesday,Thursday – 2:00-3:15 - ISAT/CS 250
CS 530 - Section 0001 Tuesday,Thursday – 2:00-3:15 - ISAT/CS 250

Final Exam for all sections: Tuesday, December 11th 7pm – room ISAT/CS 136

**Important Information about deadlines**
..\Fall_Semester_2007_Add-Drop_Dates.doc

## Catalogue Description:

Several actual programming languages are studied in terms of the fundamental principles of computer programming language design, including object-oriented programming, functional programming, concurrent programming and logic programming.

## Prerequisites:

*CS 240, CS 350*

## About the Course:

It has been said that languages shape the way we think. Thus it follows that different programming languages with different grammars and syntax, representing different paradigms of thought lead us to solve problems in different ways. This course will look at the underlying structures of programming languages and see how these structures are implemented in a variety of languages. The particular languages examined in the course will depend on the backgrounds of the students in the course. By writing short program in a variety of different languages, students will develop their ability to learn to use new languages and to recognize the threads common to all programming languages. Students will have the opportunity to explore a language not covered in class and to prepare slides on the language and present them to the class.

## Required Text :

Sebesta, Robert W. Concepts of Programming Languages, Seventh Edition (2005), Addison Wesley, Boston,

## Optional: BURKS CD-ROM:

BURKS (the Brighton University Resource Kit for Students) is a non-profit set of 4 CDs containing over 2 gigabytes of useful resources for computer science students. It is intended to provide some of the benefits of the Internet to students with no (or limited, or expensive) Internet access. It provides students with a comprehensively indexed website on CD-ROM which can be used either online or offline. The whole BURKS collection is online at http://burks.brighton.ac.uk/burks/index.htm BURKS includes a range of tutorial and reference material ranging from short introductions to full-length textbooks, as well as several hundred megabytes of software which can be installed at the click of a mouse. To use BURKS, you need an IBM PC or compatible running Windows 95 or later. A bundled copy of Netscape Navigator 3.04 is used by default, but you can choose to use an existing browser if you prefer. If you do use your own browser, the CD also provides a free-text search engine to help you find relevant material on the CDs. BURKS is produced by John English. The student ACM chapter will be selling copies for $5. You will be programming in a variety of languages this semester and you will need compilers or interpreters for those languages. BURKS contains compilers and/or interpreters for: Ada 95, APL and J, Assembler, C, C++, Eiffel, Forth and PostScript,.Fortran, Haskell,. Icon, Java and JavaScript, Lisp and Scheme, ML, Modula-2, Oberon, Objective-C, Pascal and Delphi, Perl, Prolog, Python, Smalltalk, Snobol, Tcl/Tk and other languages. Note that this information about BURKS comes almost verbatim from the online information about BURKS.

## Student Evaluation:

As I have to assign grades, you have to be evaluated. This is a sad, but necessary part

of college life. Please remember that you are here to **LEARN**!!!! Keep this foremost in your mind. This is for you! You are paying me and my colleagues to present, profess and teach you new concepts and ideas. Please complain if you are not getting this, because we certainly will if we are not seeing satisfactory effort!

## Grade Scale:

| | |
|---|---|
| A : excellent | ~90-100 |
| B : very good | ~80-89 |
| C : satisfactory | ~70-79 |
| D : poor | ~60-69 |
| F - unsatisfactory | ~0-59 |

## Tentative Grade Components:

| | |
|---|---|
| Quizzes & Homeworks | 10% |
| Participation (includes attendance) | 5% |
| Project & Presentation | 15% |
| Programming Assignments | 20% |
| Midterm Exam | 25% |
| Final Exam | 25% |

## Learning Objectives:

By the end of this course, a student should

1) understand why this course is an important part of the CS curriculum and what its value to them will be in their future
2) be able to describe the important language evaluation criteria
3) be able to discuss the primary influences on language design
4) be aware of the various categories of programming languages
5) be able to evaluate the trade-offs in language design
6) have developed an increased capacity to express programming concepts
7) have enhanced their understanding of languages already known;
8) have acquired a better ability to choose languages appropriate to particular tasks
9) have written programs in at least three languages not known to them before the course
10) have developed the ability to learn new languages easily
11) have a feel for what features they would want to include in a language they design
12) have some understanding in what is involved in implementing features of a programming language
13) be familiar with the common control structures found in programming

languages
14) understand the difference between static and dynamic scope rules
15) be able to describe the elements common to programming languages

## Class Web Site: https://users.cs.jmu.edu/adamses/web

I tend to put Word and PowerPoint documents up for you to download from the Website. I also tend to communicate with you this way. If a student asks for clarification on an assignment, or points out something that needs correction, I will post a dated message. If there is a change in schedule or assignment, it will be there too. I also communicate via e-mail using Blackboard.

## Course Components:

### Lectures:

Some of the lectures will correspond to the material in the book. Others may be on material not in the text. These lectures may be presented from slides or from notes. You will get much more out of the course if you read the assigned chapters and study the code in those chapters before coming to lecture. If you do this, you will frequently find that the lecture clears up things about which you were confused. You are encouraged to ask questions in class and lab and to see me during office hours (or whenever my door is open) if you need more attention than you can be given in class or lab. Some lectures will be language specific and may refer to programming languages covered in the text while others may not. You are responsible for the material assigned whether or not it is covered in lecture. You are responsible for all material covered in class whether it is in the text or not and whether you are in class or not..

### Class Participation:

Class participation is strongly encouraged. Attendance and class participation can help an 89 turn into an A and make the difference between a B+ and an A- or even between a C+ and a B-.

### Exams:

There will be a midterm and a final. You **must** take the final to pass the course regardless of your average at the time.

### Quizzes:

Regular quizzes will be given. **NO** makeup quizzes will be given. No individual quiz score can destroy your quiz grade. It is the **sum** of **all** your quiz scores that is important. Everyone has an off day. Every class has at least one student who knows the answers to all of the quiz questions. My method of curving on Quizzes and Homework works as follows. I find the sum of each student's quiz grades. I determine who has the 3rd highest quiz score. Everyone else's quiz grade is divided by that

scored. For example: I ask 300 points worth of quiz questions during the semester. The top student in the class earns 299 points. The 2nd highest quiz total is 275 points and the 3rd highest quiz total is 269. The top three scores earn the entire 15 points. Each of the other students earns a fraction of the 15 points computed by dividing their total by the third highest score.

**Homework:**
Homework, when assigned, is due at the next class meeting. Each problem **must** be done on a separate page to facilitate selective collection and grading. Late homework **will not** be accepted. Part credit for problems partially completed will be given. Assignments are due at the beginning of the class for which they are assigned. They should be placed on my desk at the beginning of class. If you **must** miss a class, arrange to get your homework turned in early or mail it in.

**Class Projects and Presentations:**
Students will prepare slides on specific features of languages not covered in class throughout semester and present them to the class. Hard and soft copy of these presentations must be turned in. These will be done in assigned groups which will vary as the semester progresses.

**Programming Assignments:**
Students will be expected to complete programming assignments in a variety of languages discussed in class. Details on submission procedures will be given as the course progresses. Hard and soft copy of all programs must be turned in for grading. Programs will be submitted on Blackboard.. Programs will be due on the specified dates. Program documentation guidelines will be distributed and must be followed for full credit. Programs will not be accepted late.
Hard copy of programs must **always** be submitted in a folder with your name, this course, my name and this semester in computer printed form **CLEARLY VISIBLE** on the **outside** (use a 20pt font)**.**

# Professor/Course Policies:

## Policy on Incompletes:
Incompletes are not usual. They are never automatic. They will be considered only when circumstances beyond your control prevent timely completion of the course. You can not be granted an incomplete unless you are passing the course at the time you request the incomplete.

## Attendance Policy:

I expect you to attend every class and be prompt. If you are late, please enter quietly so as not to disrupt the class. I would rather you come late than miss an entire class. If you have to miss class, it is YOUR responsibility to get any material you may have missed from another student in the class. If you tell a friend in advance, they can take notes for you.. If you must miss a class, please let me know via e-mail before the class or as soon afterwards as is possible.

## Written Work Policy:

All work done and turned in for grading must be computer generated and printed! This includes charts, pictures, drawings, as well as text. DO NOT turn in work that is hand written unless I specifically announce that it is okay. It must have your name, course number, semester (Fall 2006) and date of submission in the upper left corner of the first page, and multiple pages **mus**t be stapled together.

## Email Policy:

When you write to me to ask a question or make a comment, please use your own school account whenever possible and make sure that your mailbox has room for me to respond to you. If you use another account, make sure you identify yourself as I will not open mail if I can't identify the sender. I read e-mail regularly and respond to each and every message.

## The Honor System:

I uphold the JMU Honor Code. Unauthorized collaboration will be punished as will other violations of the JMU Honor System. Some violations to be aware of:

1. Sharing of computer account passwords for any reason.
2. Allow another student to use your computer account unsupervised.
3. Giving or receiving help when we have asked you to work alone.
4. Sharing documents or parts thereof electronically.

You are all here to learn, not only from me, but also from each other. I encourage you to work together towards solutions and to share your knowledge with your classmates. A number of assignments (such as the projects) will be group assignments. Others will be individual assignments (programs, homework, quizzes and tests). I expect that you UNDERSTAND anything that you turn in to me. If you do not at least know what's going on in the code, do NOT take credit for it. Please note that signing a roll for another student is considered cheating and will result in a minimum one-semester suspension from the university.

## Grades:

Grades will be clearly indicated on graded work when it is returned to you. **It is your responsibility to keep all graded work until the end of the semester in case you wish to dispute your grade.** Grades will be posted on Blackboard

## Missing Tests / Exams: -

Don't! If there is an unavoidable reason for you to miss a test, you must inform me in advance and it **may** be possible for you to make it up. If you miss a test and inform me afterwards, then, depending on the reason, you may be allowed to make it up (with a 25 point penalty). If you miss the final exam, you are out of luck and will not pass the course (i.e. you will earn a grade of F) regardless of your average at that point.

## Final Grades:

Final grades will be available as soon as I have finished grading all work for the course and submitted the grades. Final grades may only be changed if there is a clerical error in the computation or recording of your grade. Please have all of your graded work in your possession when you come to see me if you believe an error has been made.

## Extra Credit:

There will be no extra credit. Do the best job you possibly can on work and readings assigned. If you do not have time to fully complete assignments, you won't have time for extra credit.

## Crisis:

If you get seriously ill or have some family crisis that causes you to miss a deadline, please get in touch with me as soon as possible. I will work with you to help you complete the course.

## Advice:

- LEARN!!! Listen with an open mind. Be skeptical of ideas presented. Do assignments with enthusiasm. The assignments are to aid in your learning, not because I feel you need something to do. College has many purposes: to get you a job, to prove to the world that you can solve problems well, and to educate you. Learning need not be a chore. For whatever reason you're here, realize that I am here to help you learn. I can't however, learn for you. You must do it for yourself.

- PREPARE and REVIEW!!! Prepare for class and review afterwards. Doing the assigned readings before lecture helps greatly in understanding the material as it is presented. Review the lecture material (and your notes) after lecture (the next day

perhaps) to make sure that it all still makes sense. Plan to spend at least 2-3 hours of time outside of class for every hour in class

- BE AWARE!!! Know what the course policies are and carefully study the grading scheme for the course. You can see that you will be submitting a lot of work to me. It is important to understand that it is the totality of your work that will determine your grade. no one quiz can seriously affect your grade. You should retain all graded work that is returned to you so that you can study from it and learn from your mistakes. in addition, should you believe that your grade has been mis-calculated, the graded work will provide the basis for re-evaluation.

- ENJOY!!! Computer science is fun. It is a fascinating major and one which you will find challenging and rewarding. It's not easy but it can be exciting and exhilarating. Everything takes longer than expected so to keep it fun, keep up to date. This course may be one of the most useful courses you will take in terms of your future in the field.