

IST236: Data Structures

Course Syllabus - Fall 2004, TR 12:30 PM – 1:45 PM, Prichard Hall 200

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Textbooks:

The following textbook is required for the course:

Data Abstraction and Problem Solving with C++ Walls and Mirrors (4th ed.),
by Frank M. Carrano; Addison Wesley; ISBN: 0-321-24725-6, 2005.

Computer Requirements:

Supplemental materials can be found contained within the WebCT Vista environment (<http://vista.marshall.edu/>). I will be sending class announcements, updates, etc. using your Vista account (will cover during the first lecture for those who have never used it). Access to a WWW browser is required (Netscape 4.76 or 4.8 or Internet Explorer 6.0 or higher) and Adobe Acrobat Reader.

Course Description:

This course covers linear and non-linear data structures and representation structures which support distributed and virtual platform computing and applications environments, and data manipulation algorithms.

Credit:

The course is three (3) credit hours. It includes classroom lectures, exams, and programming projects. Students will participate in projects that illustrate the implementation of concepts in general applications to learn how to implement and use data structures.

Pre/co-requisites:

PR - IST163 – Programming Practicum w/C++

Desired Objectives/Outcomes:

By the end of this course, you should be able to:

- Demonstrate a disciplined approach to problem solving methods using data structures
- Provide a clear understanding of the concepts of data abstraction and abstract data types
- Identify a number of the basic data structures used in computer science
- Demonstrate the concepts of proper object oriented programming
- Demonstrate the use of specific data structures such as lists, stacks, queues, and trees
- Be able to program using recursion

Instruction method:

There will be approximately 3 contact hours of classroom lecture per week, with most of that time being spent working through examples in the textbook and student questions. I will try to keep full class lectures to a minimum. Content from each of the chapters will be enforced through programming projects and examinations. Students may work on their programming projects in Prichard Hall 200 or 207, from home, or in the Drinko Library.

Evaluation method:

Evaluation of student's performance will be based on the quality of your performance on projects, programming projects, and exams.

Grading Policy:

2 in-class Exams	30%
Final Exam	20%
Programming Projects	45%
Attendance	5%

Assessment of Projects:

The grading of all laboratory programming projects will take into account the following:

1. Although the most important attribute of a program is correctness, grading will take into consideration such items as time and coding efficiency, **documentation**, etc.
2. Programs must have proper inline documentation and must be properly indented. 20% will be deducted for poorly documented and/or poorly indented code.
3. All submitted code must compile correctly to receive at least partial credit. Code that does not compile will receive 0 credit, NO EXCEPTIONS. This means you must debug your code before submitting.
4. When a problem does not specify a required complexity, the grading will differentiate between efficient and nonefficient code. For example, if you write a program that contains a number of checks that are redundant and/or has one or more loops that iterate zero or one time, up to 10% of the grade will be deducted.
5. When a method name and/or parameters are specified in an assignment's description, you must use that name and/or parameters.
6. When you write a function, remember that the function should work for all possible inputs. Not on just your test inputs.
7. Although interactions with other students are encouraged, you must compose your own answers, unless otherwise noted.

Individuals who utilize other people's thoughts or ideas must provide appropriate references to said resources. Failure to provide such documentation will result in a failing grade for the assignment, and may result in a failing grade for the course.

In determining the overall grade for a project, you can expect the following grades based on performance:

A – Excellent work that meets and/or exceeds all of the requirements for the project, the project is well-documented and completed efficiently.

B – Good work that meets all of the requirements of the project, but may have errors in documentation or contains errors in logic.

C – Average work that meets all of the requirements of the assignment, but is missing one or more of the items in its entirety that is mentioned in terms of an A grade.

D – Below average work which fails to meet one or more of the requirements of the assignment.

F – Unacceptable work which fails to meet two or more requirements for the project.

Final letter grades are determined based on the following grading scale, or on the basis of an acceptable contract made between the individual student and the instructor on the first day of class, due no later than the beginning of the scheduled second class meeting. This contract can not be amended once that it has been accepted by both parties, meaning that a student will either accept the grade achieved by the contract or by the grading criteria contained within this syllabus

90-100% A
80-89% B
70-79% C
60-69% D
Below 60 F

The instructor reserves the right to change these values depending on the overall class performance and/or extenuating circumstances.

Policy Statement:

Programming Assignments: The course includes a number of homework programming projects. All projects are due **BY THE BEGINNING OF CLASS** on their due date and must be submitted through the Vista Dropbox. **NO LATE ASSIGNMENTS WILL BE ACCEPTED.**

Exams: There are three exams. The first will come after chapter 4 the second after chapter 8 and a comprehensive Final exam (as scheduled). Exact dates of the exams will be announced in class.

Make-up Exams and Late Penalty: Make-up exams will not be given except under unusual circumstances and satisfactory written justification. Any student who misses an exam due to an unexcused absence will receive a grade of zero for that exam with no opportunity for make-up or substitution. University excused absences or those occurring with a good reason (and that reason must be given prior to missing the exam – call and leave a message if you have to) will be excused. Make up exams must be taken within one week of the original scheduled date. The decision whether to give a make up exam rests with the instructor.

Attendance Statement:

Due to severe attendance problems over the last year, I am reinstating my required attendance policy for this semester. Attendance will count as a minimum 5% of your course grade. This can make or break a final grade. However, if you miss class, it is your responsibility to catch up on material missed, and will not be the responsibility of the instructor to catch you up on material missed during my office hours.

Withdrawal Policy:

The University withdrawal policy is followed in this course. The last day to drop an individual course for the Fall of 2004 is October 29, 2004.

University Holidays:

The class is officially dismissed on the following dates:
Thanksgiving November 25, 2004

Topics and Methodology:

The following outline delineates the tentative class schedule with topics to be addressed during the course. Please note this is a tentative schedule and it may change upon class progress:

August 24	Review of Syllabus Introduction to Vista
August 26	Introduction to Data Structures
August 31	Introduction to Data Structures
September 2	Chapter 1
September 7	Chapter 1
September 9	Chapter 2
September 14	Chapter 2
September 16	Chapter 2
September 21	Chapter 3
September 23	Chapter 3 Programming Project #1 Due – Programming Problem #1 from Page 112
September 28	Chapter 4
September 30	Chapter 4
October 5	Chapter 4
October 7	Chapter 4/Review for Exam 1
October 12	Exam 1
October 14	Chapter 5
October 19	Chapter 5
October 21	Chapter 6 Programming Project #2 Due – Programming Problem #12 from Page 240
October 26	Chapter 6
October 28	Chapter 6/Chapter 7
November 2	Chapter 7
November 4	Chapter 7 Programming Project #3 Due – Programming Problem #6 from Page 332
November 9	Chapter 8
November 11	Chapter 8
November 16	Chapter 8/Review for Exam 2
November 18	Exam 2
November 23	Chapter 10 Programming Project #4 Due – Programming Problem #10 from Page 382
November 30	Chapter 10
December 2	Dead Week - Review for Final Programming Project #5 Due – Programming Problem #1 from Page 440
December 7	Final Exam, 12:45 PM – 2:45 PM

For each topic discussed in the textbook, specific experience of other students and the instructor will be discussed to enhance the characteristics involved. Programming projects for the course will be based on the chapters we discuss in the textbook. Additional material may also be covered in the class.

Every student is responsible for all materials presented in class, including lectures, notes, and handouts. Students are also highly encouraged to work through the end of chapter exercises in the textbook to help with difficult concepts. In case you are not present for a class, it is your responsibility to contact the instructor and receive information about the material presented in that class. Class attendance is very important.

Effort Required:

As a 200-level course, this course is provided as an mid-level programming course, but there will still be a considerable amount of development and research effort required of the student. For every one hour in class, the student is expected to put in an effort of at least 3 hours outside the class for studying and programming. Because of background and preparedness, some students may have to put in additional effort.

Communication:

The Bulletin Board facility of Vista and private E-mail will be used to make any general announcements, last minute changes, etc. It is mandatory that you monitor your Vista course messages at least once a day.