CSCI 325 - File Structures
Spring 2011

Department of Computer Science and Quantitative Methods
College of Business Administration
Winthrop University

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Office Hours: Mondays 1:00-4:00; Tuesdays 10:00-11:00; Wednesdays 1:00-5:00
              see homepage for weekly schedule

Course Description
The study of external storage devices and file organization techniques for such devices. The course includes an in-depth treatment of the space and time efficiency of each file organization studied.

Course Objectives
After successfully completing this course, the student will:
- analyze the performance time of various algorithms for manipulating data files
- analyze space efficiency v. time efficiency for storing and searching large files
- be able to create efficient software to sort large data files
- be able to determine the appropriateness of various storage formats
- be able to create efficient storage and search methods

Prerequisites
MATH 261 or 300, and a grade of C- or better in CSCI 208. All CSCI courses numbered above 299 have a prerequisite of junior status, an overall GPA of at least 2.00 and a grade of C- or better in HMXP 102.

Course Grades

Final grades for this course will be based on a 10-point scale. In other words,
        90.00 to 100 is an A,
        80.00 to 89.99 is a B,
        etc...

Because this course emphasizes not just the understanding of basic file principles, but also applying those principles to problems, assessment of student learning will be heavily based of programming assignments; not just exams.

Programming Assignments:	35%
Exam #1:	20%
Exam #2:	20%
Final Exam:	25%

Grades for programming assignments will be assigned using the following rubric:

	Excellent	**Good**	**Fair**	**Unsatisfactory**
Functionality 40%	The program works and meets or exceeds all specifications.	The program works and produces the correct results and displays them correctly. It also meets most of the other specifications.	The program produces correct results but does not display them correctly.	The program performs tasks that it was not supposed to perform.
Efficiency 20 %	The code is extremely efficient without sacrificing readability and understanding.	The code is fairly efficient without sacrificing readability and understanding.	The code is brute force and unnecessarily long.	The code is huge, inefficient, or appears to be patched together.
Robustness 20%	Program correctly handles all specified test cases and additional special cases. Program contains error checking code.	Program executes without errors and correctly handles most special cases. Thorough testing has been completed.	Program executes without errors for pre-specified test cases.	Program does not execute due to errors. No evidence of testing.
Documentation 20%	Clear and complete documentation. The purpose and constraints of every variable and subroutine are described. Comments for code segments make the code easy to follow.	The purpose of all variables is clearly explained. The purpose of each subroutine is described.	Most variables and subroutines are commented. Comments provide some assistance with understanding the code.	No comments are included or other documentation provided.

Closely follow instructions for submitting programming assignments.

Work submitted late will lose 10%, plus 10% for every 12-hours submitted late. For example, if an assignment is due Tuesday at 2:00pm and is submitted at 2:10pm, it loses 10%. Work submitted at 12:30am on Wednesday would lose 20%.

Some assignments are more complex than others, and so not all assignments will count the same number of points.

COLLEGE OF BUSINESS EXPECTATIONS REGARDING
PROFESSIONALISM IN THE CLASSROOM

The College of Business Administration is a professional organization with a well-defined and widely disseminated mission of student development. Accordingly, each class represents a gathering of professionals and professionals-in-training. The instructor's job as a professional is to deliver quality instruction in each class, to start and end each class on time, to be responsive to student perspectives, issues and questions, and to treat each student respectfully. The student's job, as a professional-in-training is to be prepared for class, to be on time, to attend all classes, and to be respectful of others in the classroom.

In accordance with and pursuant to these roles the following guidelines were established to specify to students (both present and prospective) faculty expectations regarding their behaviors

1. **Students will attend all class meetings.** There are no automatically "excused" absences. In the event that you will be unable to attend a class session, you should inform your professor in advance as a matter of professional courtesy just as you would/should with an employer.

2. **Students will arrive in advance of the beginning of the class session.** Late arrivals are disruptive, inconsiderate and unprofessional. Professors may make arrangements for delinquents, but are not obliged to do so. Those not present at the beginning of the classroom period will be considered absent.

3. **Students will not converse among themselves during class except when instructed to do so.** When a student creates a disturbance in the classroom, instructors will either ask the student to desist immediately or speak to the student at the conclusion of class. Repeat offenders will be sanctioned.

4. **Students will not leave class before its conclusion.** Early departures are disruptive, inconsiderate and unprofessional. Professors may make arrangements under some circumstance, but are not obliged to do so. Those not present at the conclusion of the classroom session will be considered absent.

5. **Students will have procured textbook/materials prior to the first class.** Instruction will begin with the first class meeting and consume the remainder of the class period.

STUDENTS WITH DISABILITIES

Winthrop University is dedicated to providing access to education. If you have a disability and need accommodations, please contact Gena Smith, Coordinator, Services for Students with Disabilities, at 323-3290, as soon as possible. Once you have your Professor Notification Form, please tell me so that I am aware of your accommodations **well before** the first exam.

SYLLABUS CHANGE POLICY

The grading and attendance policies for this course, as described above, will not change and are adhered to strictly. The schedule of class meetings, listed below, may change due to unexpected events such as class cancellation due to weather.

ATTENDANCE POLICY

Because exams and homework assignments will be based on the content of lectures, not a textbook or the web lecture notes, it will very difficult for students to successfully complete the homework assignments or exams without coming to class.

GENERAL EDUCATION CREDIT

This course meets the requirements for inclusion in the Logic/Language/Semiotics section of the General Education Program by: 3.4 using computers competently

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ASSESSMENT

No student performance metrics from this course are used to assess any program.

Tentative Class Schedule
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Jan 11	*no class due to snow*	
Jan 13	Course Overview	
Jan 18	file IO in C++	create an average
Jan 20	file IO in C	create an average, again
Jan 25	records IO in C and C++	
Jan 27	Sorting 1	sort a huge data file
Feb 1	Sorting 2	
Feb 3	Brute Force searching	needle in a unsorted haystack
Feb 8	algorithm performance comparison	
Feb 10	**Exam #1**	
Feb 15	NFS v. FAT	
Feb 17	Linux file system	myls
Feb 22	shared files, temporary files	
Feb 24	Linux system files	
Mar 1	Intro to Magnetic Disk Drives	
Mar 3	Efficiency: sequential file access	
Mar 8	Efficiency: space usage v. wastage	
Mar 10	**Exam #2**	
Mar 15	*Spring Break*	
Mar 17	*Spring Break*	
Mar 22	Relative Files	needle in a haystack 2
Mar 24	project work	
Mar 29	Indexed Files: single level indexing	organized haystack
Mar 31	Indexed Files: simple indexing	
Apr 5	Indexed Files: buckets	
Apr 7	Hash files	fast haystack
Apr 12	B-tree structured files	
Apr 14	B-tree structured files	B-tree
Apr 19	catch up	
Apr 21	Review	

Final Exam - Friday April 29 at 11:30am