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Office Hours: On-demand, Blackboard Collaborate

By Stephen Kochan
ISBN: 978-0321776419

Data Structures and Algorithms in C++ (2nd Edition)
By Michael Goodrich, Roberto Tamassia, and David Mount
ISBN: 978-0321776419

Optional Reference Texts:
The C Programming Language by Brian Kernighan and Dennis Ritchie
GNU/Linux Application Programming by M. Tim Jones (2nd Edition)
Linux Pocket Guide by Daniel J. Barrett (2nd Edition)

Course Description:
Foundations of data structures and algorithms. These foundations include: space and time complexity analysis, the use of data structures such as linked lists and binary trees, basic sorting and searching algorithms, and foundations of software testing/verification/validation.

Prerequisite: CS 1320 with a grade of “C” or better.

Class Hours: Online/Asynchronous
COURSE OUTLINE

Week 1: Introduction
Weeks 1-2: GNU/Linux software development environment
Week 2: C language programming constructs: variables, algebraic expressions, simple I/O
Week 3-4: C language programming constructs: decision statements and iterative control statements
Weeks 4-5: Pointers and fundamental data structures: arrays and structures; basic data structures: linked list and binary trees
Week 5: Fundamental data structures: strings and string processing
Week 5: Section I Exam
Week 6: C standard library: Console and File I/O
Weeks 7-8: Debugging basics
Week 9: Software testing/verification/validation
Week 10: Fundamental algorithms: sorting and searching
Weeks 10-11: Time and space complexity analysis of algorithms
Week 11: Section II Exam
Weeks 12-13: Recursion; Dynamic memory allocation
Weeks 14-15: Multithreaded programming
Finals Week: Section III Exam

GRADING

3 Sections – 300+ points each
Class Participation 10+ points
Quizzes 30 points
Assignments 50 points
Exam 100+ points

SCORING

A 900+ points
B 800 – 899 points
C 700 – 799 points
D 600 – 699 points
F < 600 points

IMPORTANT DATES

Fall Drop/Withdrawal Deadline: October 30th
Final Exam: Thursday, December 10th, 10:00AM – 12:45PM
LEARNING OBJECTIVES

[correlation to ACM curriculum standards in square brackets, knowledge units in bold should be covered in a pre-requisite course as well]

1. Become a proficient user of the Linux software development environment and GNU software development tool-chain [CE-SWD-2]
   a. Linux software development environment
   b. GNU software development tools – gcc, gdb, make, gprof, gcov

2. Understand C language programming constructs [CE-SWD-3]
   a. variables
   b. algebraic and logical expressions (including operator set)
   c. simple I/O
   d. decision statements
   e. iterative control statements

3. Understand and follow structured software design strategies [CE-SWD-3]
   a. programming paradigms: procedural/modular, object-oriented
   b. design for reuse using the procedural/modular paradigm
   c. utilizing standard libraries, focus on C standard library

4. Understand and utilize fundamental data structures [CE-SWD-5]
   a. arrays and structures
   b. strings and string processing
   c. pointers, linked lists, and binary trees
   d. storage allocation: static, stack and heap

5. Software testing, verification, and validation [CE-SWD-8]
   a. Understand the differences between testing, verification, and validation.
ACADEMIC DISHONESTY

As an entity of The University of Texas at El Paso, the Department of Electrical and Computer Engineering is committed to the development of its students and to the promotion of personal integrity and self-responsibility. The assumption that a student’s work is a fair representation of the student’s ability to perform forms the basis for departmental and institutional quality. All students within the Department are expected to observe appropriate standards of conduct. Acts of scholastic dishonesty such as cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in the whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student, or the attempt to commit such acts will not be tolerated. Any case involving academic dishonesty will be referred to the Office of the Dean of Students. The Dean will assign a Student Judicial Affairs Coordinator who will investigate the charge and alert the student as to its disposition. Consequences of academic dishonesty may be as severe as dismissal from the University. See the Office of the Dean of Students’ homepage (Office of Student Life) at http://studentaffairs.utep.edu/dos for more information.

If you have a disability and need classroom accommodations, please contact The Center for Accommodations and Support Services (CASS) at 747-5148, or by email to cass@utep.edu, or visit their office located in UTEP Union East, Room 106. For additional information, please visit the CASS website at www.sa.utep.edu/cass. CASS’ Staff are the only individuals who can validate and if need be, authorize accommodations for students with disabilities.

ATTENDANCE POLICY

Because this is an online course, attendance is determined by class participation online. Participation is determined by completion of the following activities:
- Reading/Viewing all course materials to ensure understanding of assignment requirements
- Participating in engaging discussion with your peers on the Discussion Boards (grading rubric provided in the “grading information” area of each forum)
- Completing all Module Activities (assignments, quizzes, etc.)
- Completing all Major Assignments

To preserve a student’s GPA, he/she WILL be dropped from the course for failure to turn in two or more major programming assignments.

TECHNOLOGY REQUIREMENTS

Course content is delivered via the Internet through the Blackboard learning management system (LMS). Ensure your UTEP e-mail account is working and that you have access to the Web and a stable web browser. Mozilla Firefox and Google Chrome are the most supported browsers for Blackboard; other browsers may cause complications with the LMS. When having technical difficulties, update your browser, clear your cache, or try switching to another browser.
You will need to have or have access to a computer/laptop, scanner, a webcam, and a microphone. Check that your computer hardware and software are up-to-date and able to access all parts of the course.

If you encounter technical difficulties beyond your scope of troubleshooting, please contact the Help Desk as they are trained specifically in assisting with technological needs of students.

NETIQUETTE

Always consider audience. Remember that members of the class and the instructor will be reading any postings.

Respect and courtesy must be provided to classmates and to instructor at all times. No harassment or inappropriate postings will be tolerated.

When reacting to someone else’s message, address the ideas, not the person. Post only what anyone would comfortably state in a F2F situation.

Blackboard is not a public internet venue; all postings to it should be considered private and confidential. Whatever is posted on in these online spaces is intended for classmates and professor only. Please do not copy documents and paste them to a publicly accessible website, blog, or other space. If students wish to do so, they have the ethical obligation to first request the permission of the writer(s).

LATE WORK POLICY

Late work is not permitted. Due dates and times will be clearly posted with all assignments, quizzes and exams.

DROP POLICY

To drop this class, please contact the Registrar’s Office to initiate the drop process. If you cannot complete this course for whatever reason, please contact me. If you do not, you are at risk of receiving an “F” for the course.

This syllabus is subject to change as the needs of the course change throughout the semester.