

The University of Texas at San Antonio
Division of Mathematics, Computer Science, and Statistics
San Antonio, Texas 78285

CS 2073-001
Computer Programming With Engineering
Applications
Course Information
Spring Semester, 1992

Course:

CS 2073-001, Computer Programming With Engineering Applications.

Time, Place, Dates:

Section 001, MWF 10–10:50 am, 2.03.014 SB. (Final: Wednesday, May 6, 7:30–10:15 am.)

Instructor:

Dr. Neal R. Wagner, Office: 4.01.42 SB, Telephone: (512)691-5550.

Course Description:

Algorithmic approaches to problem solving and computer program design for engineers. Engineering and mathematically-oriented problem sets will be emphasized, including non-numeric applications. Searching, sorting, linked-lists, and data types will be introduced. May not be applied towards a major in the Division of MCSS.

Prerequisites:

Prerequisite: MAT 1214. Concurrent enrollment: MAT 1223.

The MAT 1214 (Calculus I) prerequisite is strictly required. (Some of the programs will involve calculus concepts.)

This course is intended for engineers, and others who want the challenge of a difficult introductory programming class. Previous programming experience is not required, but even science-oriented engineering majors often find the course difficult and time-consuming. There are other introductory computer courses for other majors, such as business (CS 1043), life sciences (CS 1073), and education and general education (CS 2083). This course is similar in content and difficulty to the course for computer science majors (CS 1713).

Textbooks:

Required: *Turbo Pascal*, 3rd Ed., by Nell Dale and Chip Weems, Heath, 1992.

Course Requirements (with tentative percentages of grade):

- Programming (35% of grade): There will be six or seven programming assignments, each handed out roughly two weeks before the due date. These must be well-documented, in a way which will be explained in class. Initially you will turn in a program listing. Later you may turn in a floppy disk with your program on it. (Note: The programming assignments are a basic course requirement, like engineering lab work, and not at all like homework in a calculus class. You must complete most of the programs in order to pass the course.)
- Homework (5% of grade): The homework that will be required is not yet determined.
- Two In-class Hour Exams (15% of grade each, or 30% total)
- Final Exam (30% of grade): The final will be about twice the length of the hour exams.

Late Assignments:

- Programming assignments are due at the start of class on the date shown in the Detailed Course Outline. There will be penalty for late programs.
- Homework assignments are due at the start of class on the due date and late homework will not be accepted.

Scholastic Dishonesty:

From the UTSA Bulletin:

The integrity of a university degree depends on the integrity of the work done for that degree by each student. The University expects a student to maintain a high standard of individual honor in his/her scholastic work.

Scholastic dishonesty includes, but is not limited to, cheating on a test or other class work, plagiarism (the appropriation of another's work and the unacknowledged incorporation of that work in one's own written work offered for credit), and collusion (the unauthorized collaboration with another person in preparing course work offered for credit).

In practice, for this course, you may discuss assignments in general terms, but you are not allowed to share any details of actual algorithms or of program code. You may help someone else debug their program as long as you do not start substituting in your own code when there are problems. Turning in a copy of someone else's program, even a copy with extensive changes made to it, is a very serious offense in this course.

Missed Classes:

You are urged to get to know other class members so that you can find out what happened in class if you have to miss.

Detailed Course Syllabus:

(Each program is due on Friday. Each in-class exam is given on Wednesday.)

Week	Text Chaps	Topics Covered
1	1	Introduction, course organization. Several sample Pascal programs. Overview of computer systems, high-level languages, compilers. Discussion of Turbo Pascal and PC's.
2	2	Syntax notation. Simple data types, computer memory, assignment statement, constant and variable declarations, step-by-step problem solving. Arithmetic operators, writing out data. Program 1 due Friday (copy)
3	3, 4	Reading in data, top-down program construction. If-then, if-then-else, nested if-then-else, booleans, relational operators, precedence.
4	4, 5	Testing, debugging, errors, compilation, syntax and semantics, milestones, test output. Looping—while loops, examples. Program 2 due Friday (simple if-then).
5	6, 8	More loop examples. Start discussion of procedures and functions.
6	6, 7, 8	More procedures/functions/parameters, with examples. FIRST HOUR EXAM, WED. (Chapters 1-5). Program 3 due Friday (more complex logic, looping).
7	7, 8	Continuation with examples. Emphasis on parameters, var and non-var.
8	9, 11	Arrays. Repeat and for loops. Program 4 due Friday (includes procedures).
9	11, 13	More arrays, 2-dimensional arrays. Last day to drop (Friday, Mar. 13).
		SPRING BREAK
10	12	Sequential search, binary search, sorting. Program 5 due Friday (includes arrays).
11	12	Character strings. SECOND HOUR EXAM, WED. (Chapters 6-8, 11, parts of 12 and 13).
12	10, 14	Records, simple types, more strings. Program 6 due Friday (includes 2-dimensional arrays).
13	10, 13, 14	Examples of records and simple types, used with arrays. Multi-dimensional arrays.
14		Leeway. Program 7 due Friday (includes records, strings).
15		Review, wrap-up, leeway.