

**University of Texas at San Antonio**  
**Department of Computer Science**  
**Syllabus for**  
**CS 2073-001 - Computer Programming with Engineering Applications**  
**Fall 2010**  
**Part A – Course Outline**

**Catalog Description:**

CS 2073 Computer Programming with Engineering Applications (3-0) 3 hours credit.  
Algorithmic approaches to problem solving and computer program design for engineers. Engineering and mathematically-oriented problem sets will be emphasized, including nonnumeric applications. Searching, sorting, linked lists, and data typing will be introduced. May not be applied toward a major in computer science.

**Prerequisite:**

Prerequisites: MAT 1214 and completion of or concurrent enrollment in MAT 1223.

**Textbook:**

Engineering Problem Solving with C, 3rd Edition, Delores Etter, Prentice Hall, 2004 (optional)

**References:**

C How to Program, Fifth Edition, P. J. Deitel and H. M. Deitel, Prentice Hall, 2007.  
C Programming for Scientists and Engineers, Reddy and Ziegler, Jones and Bartlett, 2010.  
C for Engineers and Scientists, H. Cheng, Mc Graw Hill, 2010

**Major Prerequisites by Topics:**

1. The ability to create and manage plain text files.
2. Knowledge of basic math as covered in MAT 1214.

**Course Outcomes:**

1. Understand and use five-step problem solving technique [Correlates to Program Outcomes A & E].
2. Demonstrate competency in the fundamental principles, concepts and methods of programming in C language [Correlates to Program Outcomes B & E].
3. Develop structured C programs to solve simplified engineering problems [Correlates to Program Outcomes A, B & E].
4. Use modular decomposition to reduce the complexity of engineering problems [Correlates to Program Outcomes A & E].
5. Understand software development cycle, testing and validation of programs [Correlates to Program Outcome B].

**Topics:**

- |  |             |     |
|--|-------------|-----|
| 1. Engineering Problem Solving                   | (2 classes) | 1wk |
| 2. Simple C Programs                             | (4 classes) | 2wk |
| a. Constants, Variables, Assignments, Operators, |             |     |
| b. Basic I/O functions, and                      |             |     |
| c. Math functions                                |             |     |
| 3. Control Structures                            | (8 classes) | 4wk |
| a. Conditions, Selections, Loops                 |             |     |
| 4. Data Files                                    | (2 classes) | 1wk |
| 5. Modular Programming with Functions            | (4 classes) | 2wk |
| 6. Arrays and Matrices                           | (6 classes) | 3wk |
| a. One-dimensional Arrays, sorting, searching,   |             |     |
| b. Two-dimensional arrays, matrix multiplication |             |     |
| 7. Programming with Pointers                     | (2 classes) | 1wk |
| 8. Review and Midterm Test                       | (2 classes) | 1wk |

**Class Schedule:**

Two 75-minute lecture sessions/week

**Contribution of Course to Professional Components:**

Computer Programming with Engineering Applications (CS 2073) is a sophomore level electrical engineering supporting course that builds on topics covered primarily in freshmen level math, science and engineering courses.

**Relationship to Electrical Engineering Program Outcomes:**

This course primarily contributes to the Electrical Engineering Program Outcomes:

- A. An ability to apply knowledge of mathematics, science, and engineering.
- B. An ability to design and conduct experiments, as well as to analyze and interpret data
- E. An ability to identify, formulate, and solve engineering problems..

This course secondarily contributes to the Electrical Engineering Program Outcomes:

- G. An ability to communicate effectively.

Students have to submit well-documented programming assignments.

**Evaluation Methods:**

1. Two 75-minutes exam
2. Quizzes and attendance
3. Weekly programming assignments
4. Final exam

**Performance Criteria:** (Numbers in brackets refer to evaluation methods used to assess student performance)

1. Students understand and use five-step problem solving technique [1, 3, 4].
2. Students demonstrate competency in the fundamental principles, concepts and methods of programming in C language [1,2,4].
3. Students develop structured C programs to solve simplified engineering problems [2,3].
4. Students use modular decomposition to reduce the complexity of engineering problems [1,3,4].
5. Students understand software development cycles, testing and validation of programs [3].

**Course Content:**

Basic Science: Computer Science – 3 credits (100%)

**Relationship to Other Courses:**

This is a sophomore level electrical engineering supporting course.

**Instructor:**

Turgay Korkmaz, Associate Professor of CS

**Disclaimer**

"This Syllabus is provided for informational purposes regarding the anticipated course content and schedule of this course. It is based upon the most recent information available on the date of its issuance and is as accurate and complete as possible. I reserve the right to make any changes I deem necessary and/or appropriate. I will make my best efforts to communicate any changes in the syllabus in a timely manner. Students are responsible for being aware of these changes."

## Part B – General Course Information and Policies

### CS 2073-001 - Computer Programming with Engineering Applications Fall 2010

Instructor: Turgay Korkmaz  
Office: SB 4.01.13  
Phone: (210) 458-7346  
Email: [korkmaz@cs.utsa.edu](mailto:korkmaz@cs.utsa.edu)

Class Web Page: <http://www.cs.utsa.edu/~korkmaz/teaching/cs2073>  
Lecture hours: MW 4:00 pm - 5:15 pm  
Lecture room: SB 3.02.02  
Office Hours: MW 11:00am-1:00pm (or by appointment)

#### Grading Policy:

Midterm exams	20%	two exams (0.75*max+0.25*min)
First Midterm:	<b>Wed Sept 29,2010</b>	<b>4:00 PM-5:15pm</b>
Second Midterm:	<b>Wed Nov 3,2010</b>	<b>4:00 PM-5:15pm</b>
Quizzes and attendance	10%	
Weekly Programming Assignmnets	40%	Post/submit via WebCT (BB), !NO LATE HW!
Final exam	30%	<b>Friday Dec 10, 2010 -- 1:30 PM 4:00 PM</b>

#### Final Grade Assignment

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

The new online student survey in Fall: **November 18 through December 5**

#### Class Rules:

1. Class attendance is mandatory, students are responsible for content of the course and class notes. Reading of material prior to the lecture is highly encouraged.
2. Under NO circumstances make-up exams will be given. Unless evidence of serious incidents is presented. (Flat tires, driving the neighbor to hospital, etc... will NOT be accepted).
3. Discussion of course material during office hours is highly encouraged. If the office door is widely open after office hours, appointment is unnecessary. However, if door is semi-closed please do not disturb.
4. Programming homework should be submitted using WebCT on the due date before the lecture. Under no circumstances will late homework be accepted.
5. Final grade will be based on student's performance and instructor's discretion, NOT on class average (i.e., no drastic curves).
6. Instructor is open for exam scores discussion; however, bargaining will not be tolerated.
7. Discussion of homework solutions among fellow students is highly encouraged. Experience has proven that carbon copies of homework will only guarantee failure in the course.
8. Eating, drinking, smoking, and sleeping are not allowed during lecture time.

9. Late comers will be welcomed only if no more than 15 minutes of class lecture have elapsed. The student should take the first seat available closest to the entrance.
10. It is the student's responsibility to take care of any personal needs before exam time. No one will be allowed to leave the room after exam begins.

### **Academic Dishonesty:**

As an entity of The University of Texas at San Antonio, the Department of Electrical 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 whole or in part to another person, taking an examination for another person, any act designated to give unfair advantage to a student, or the attempt to commit such acts will not be tolerated. The Coordinator for Student Judicial Affairs or faculty may initiate disciplinary proceedings against any student accused of scholastic dishonesty. Consequences of academic dishonesty may be as severe as dismissal from the University. See the website for the Students Code of Conduct at <http://www.utsa.edu/infoguide/appendiceb.cfm> for more information.

### **Information on the QEP for Course Syllabi**

The Quality Enhancement Plan (QEP) is a course of action designed to enhance student learning and is a required component of the accreditation process conducted by the Southern Association of Colleges and Schools (SACS).

The UTSA QEP *Quantitative Scholarship: From Literacy to Mastery* provides you with the skills needed to evaluate and interpret data, understand risks and benefits, and make informed decisions in your personal and professional lives. The plan focuses on integrating quantitative reasoning and communication skills in **existing** courses across the undergraduate curriculum.

All UTSA students, faculty, and staff are encouraged to learn more about the QEP by visiting the website [www.utsa.edu/qep](http://www.utsa.edu/qep)

### **The Tomás Rivera Center's (TRC) academic support**

I encourage you to utilize the academic support services available to you through the Tomás Rivera Center (TRC) to assist you with building study skills and tutoring in course content. These services are available at no additional cost to you. The TRC has several locations at the Main Campus and is also located at the Downtown Campus. For more information, visit the web site at [www.utsa.edu/trcss](http://www.utsa.edu/trcss) or call (210) 458-4694 on the Main Campus and (210) 458-2838 on the Downtown Campus.