

**CE 311K Introduction to Computer Methods  
SPRING 2008**

**Instructor:** Howard M. Liljestrand  
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471-4604

**Office Hours:** As posted outside office **ECJ 8.206** each week, typically TuTh 9:30-10:30 and other hours

**Teaching Assistant:** Leo Ramirez, ECJ 9.230, [leo.ramirez@gmail.com](mailto:leo.ramirez@gmail.com)

**Texts:** Structured FORTRAN 77 for Engineers and Scientists, 5th Edition, D.M. Etter, Wiley, 1997.

Numerical Methods for Engineers, 5<sup>th</sup> Edition, S. C. Chapra and R. P. Canale, McGraw Hill, 2006.

**Lectures:** 8:00-9:30 TuTh, CPE 2.212

**Laboratories:** Tu 12:30-2:30 ECJ 3.302 (Unique No. 14885)  
Tu 3:30-5:30 ECJ 3.302 (Unique No. 14890)

**Course Description from the Undergraduate Catalog:** Organization and programming of civil engineering problems for computer solutions. Two lecture hours and two laboratory hours a week for one semester. *Prerequisite:* Credit or registration for Mathematics 408D or M 308L; additional prerequisite for civil engineering majors, Civil Engineering 301.

**Grading:**

Homework	20%
Laboratory Reports	30%
Exam 1	25%
Exam 2	25%
Optional Final Exam	25%

**Final Exam: Friday, May 9, 9:00–12:00 noon**

The date and time of the final exam; these are given on page 11 in the Spring 2008 Course Schedule, or can be found on the Web at:  
<http://www.utexas.edu/student/registrar/schedules/082/finals/>

Final grades will be assigned according to the following scale:

$A \geq 90$ ,  $80 \leq B < 90$ ,  $70 \leq C < 80$ ,  $60 \leq D < 70$ ,  $F < 60$

There will be approximately 14 homework assignments. Due dates for homework will be established when the assignment is made. Late homework will not be accepted. DO NOT wait until the last day to begin a homework or laboratory assignment; computers may be in use when you need them.

Computers and compilers are available for your use in the Learning Resource Center on the third floor of ECJ. Computers in the LRC have been loaded with two different FORTRAN compilers. If you wish to use your own computer and do not have a FORTRAN compiler, you can purchase one, but this is not recommended. There are free FORTRAN compilers available on the web, and they require less hard-

disk space. You might look at g95 which is a FORTRAN 95 compiler under GNU license. The homepage is <http://g95.sourceforge.net/>.

You are encouraged to work with other students in the class, but the work you turn in must be your own. **Plagiarism will not be tolerated, and suspect cases will be turned over to the Dean of Students for disciplinary action.** Engineering ethics are required.

All computer assignments should contain the following [unless the TA specifies otherwise]:

1. One or more sheets with a statement of the problem, the formulae, or algorithm used to solve the problem, and verification by hand that the program generates correct results. Use of a word processor is recommended.
2. A listing of your program, your data file (if one is used) and the output from a successful run.
3. Input data should be echo printed and the results should be appropriately tabulated.
4. The assignment should contain a cover page that includes, as a minimum, your name, assignment number, course number, and date.

**EVALUATION:** The University Measurement and Evaluation Center forms will be used during the last week of class to evaluate the course and the instructor.

**DISHONESTY:** Students who violate University rules on scholastic dishonesty are subject to disciplinary penalties, including the possibility of failure in the course and/or dismissal from the University. Since such dishonesty harms the individual, all students, and the integrity of the University, policies on scholastic dishonesty will be strictly enforced. For further information, visit the Student Judicial Services web site <http://deanofstudents.utexas.edu/sjs/>, and the General Information Catalog information at <http://www.utexas.edu/student/registrar/catalogs/gi06-07/app/appc11.html>

**ATTENDANCE:** Regular class attendance is expected in accordance with The University's General Information catalog and the College of Engineering policy. Attendance is highly encouraged but not directly factored into grading. Lecture notes and assignments will be posted on Blackboard.

**IMPORTANT NOTE:** "The University of Texas at Austin provides, upon request, appropriate academic adjustments for qualified students with disabilities. Any student with a documented disability (physical or cognitive) who requires academic accommodations should contact the Services for Students with Disabilities area of the Office of the Dean of Students at 471-6259 as soon as possible to request an official letter outlining authorized accommodations. For more information, contact that Office at 471-6259, Video Phone 232-2937, or the School of Engineering Director of Students with Disabilities at 471-4321."

**CLASS WEB SITES AND STUDENT PRIVACY:** Web-based, password-protected class sites will be associated with all academic courses taught at the University. Syllabi, handouts, assignments and other resources are types of information that may be available within these sites. Site activities could include exchanging e-mail, engaging in class discussions and chats, and exchanging files. In addition, electronic class rosters will be a component of the sites. Students who do not want their names included in these electronic class rosters must restrict their directory information in the Office of the Registrar, Main Building, Room 1. For information on restricting directory information, see the General Information Catalog or go to: <http://www.utexas.edu/student/registrar/catalogs/gi06-07/app/appc09.html>

**SCHOOL OF ENGINEERING DROP POLICY:**

#### Undergraduate Students- drop policy for long sessions:

From the 1st through the 12th class day, an undergraduate student can drop a course via the web and receive a refund if eligible. From the 13th through the 20th class day, an automatic Q is assigned, no refund; approval from the Dean and departmental advisor is required. From the 21st class day through the mid-semester deadline, approval is required from the Dean, instructor of the course and departmental advisor.

#### Graduate Students- drop policy for long sessions:

From the 1st through the 4th class day, graduate students can drop a course via the web and receive a refund. During the 5th through 12<sup>th</sup> class day, graduate students must initiate drops in the department that offers the course and receive a refund. After the 12th class day, no refund is given. No class can be added after the 12th class day. From the 13th through the 20th class day, an automatic Q is assigned with approval from the Graduate Advisor and the Graduate Dean. From the 21<sup>st</sup> class day through the last class day, graduate students can drop a class with permission from the instructor, Graduate Advisor, and the Graduate Dean. Students with 20-hr/week GRA/TA appointment or a fellowship may not drop below 9 hours.

#### Important Dates

January 17 Thursday: Last day of the official add/drop period: after this date, changes in registration require the approval of the department chair and usually the student's dean.

January 30 Friday. The twelfth class day is the last day of the official add/drop period; after this date, changes in registration require the approval. (See General Information, chapter 4, for required approvals.) Last day graduate students may register and pay fees without the approval of the graduate dean. Last day to drop a course for a possible refund.

February 11 Monday, Last day to drop without a possible academic penalty.

March 24 Monday. Last day to change registration in a course to or from the pass/fail or CR/NC basis. Last day an undergraduate student may, with the dean's approval, withdraw from the University or drop a class except for urgent and substantiated, nonacademic reasons.

May 5-6, 11 Monday-Tuesday, Sunday. No-class days.

May 7-10, 12-13 Wednesday-Saturday, Monday-Tuesday. Final examinations.

**FINAL EXAM FOR THIS CLASS IS SCHEDULED IN THE COURSE SCHEDULE FOR Friday,  
May 9, 9:00–12:00 noon**

## TENTATIVE OUTLINE

Week	Topic	Reading	Homework
1	Course Overview	Etter: Ch. 1 Chapra: Ch. 2	
Lab 1	Introduction	Etter: Sec 2.1-2.3	HW-1: Chapra: 2.1, 2.3, 2.4
2	Constants and Variables	Etter: Sec 2.4-2.10	HW-2: Self Test 2-1, 2-2, 2-3
2	Assignment		
Lab 2			
3	Input-Output	Etter: Sec 2.4-2.10	HW-3: Self Test 2-4, 2-5
Lab 3			
4	Number Systems	Chapra 3.1, 3.2, 3.4.1	HW-4: Chapra: 3.1, Handout Posted on Blackboard
Lab 4			
5	Errors	Chapra 3.3	HW-5: Chapra: 3.5, 3.7, 3.9, 4.4, 4.12
5	Selection	Etter 3.1-3.3	Self Test 3-1
Lab 5			
6	Repetition	Etter 3.4-3.9	HW-6: Self Test 3-3
6	Data Files	Etter 4	Etter Problems 3.21, 4.6
Lab 6			
7	Functions	Etter 6, 7	HW-7 Self Test 6-1, 6-2
7	Review		Etter Problems 7.2, 7.4, 7.16
Lab 7			
8	<b>FIRST EXAM 4 March</b>		
8	Roots of Equations	Chapra: 5.1, 5.2, 6.1, 6.2, 7.7.1	HW-8: Chapra 5.1, 5.5, 6.1, 6.2 (for plots, use Excel)
Lab 8			
9	Matrices and Arrays	Etter 5 Chapra: Sec. PT3.1, PT3.2	HW-9 Chapra 9.1, 9.2, 9.6
Lab 9			
10	Linear Equations	Chapra: 9.1-9.3	HW-10 Chapra 9.7, 9.9
Lab 10			
11	Iterative Methods	Chapra: 11.2	HW-11: Chapra 11.10, 11.12
Lab 11			
12	Interpolation	Chapra: 18.1.1, 18.2	HW-12: Chapra 18.1, 18.2, 18.5, Chapra 21.8(a-d), 21.10
12	Integration	21.1, 21.2, 21.5	
Lab 12			
13	Differentiation	Chapra: 4.1, 4.1.3	HW-13: Chapra 23.1, 23.3, 23.8
Lab 13			
14	ODE's	Chapra: 25.1, 25.2, 25.3	HW-14: Chapra 25.1, 25.2, 25.5
Lab 14			
15	<b>SECOND EXAM 29 April</b>		
15	Instructor Evaluations		
	Optional Lab		

**FINAL EXAM ON Friday, May 9, 9:00–12:00 noon**