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Office Hours:
1:15:-3:15 MW
And by appointment

NOTE: The course meets in Drake 30 every Friday.

Textbook:

- * *Numerical Computing with MATLAB*, Cleve Moler, SIAM
- * Supplementary materials as distributed in class.

Description:

Computational science involves the design and analysis of computer models to study problems in a variety of disciplines such as biology, engineering, mathematics, chemistry, and business. This course represents a continuation of CPS 201. The concentration in this course is on more advanced programming concepts (in both MATLAB and Fortran 90) and the development of advanced computational models. In addition, the use of the UNIX operating system will be covered.

Objectives: At the completion of this course you will be able to:

- Design computer models for problem investigation.
- Use MATLAB for the development of models and visualization of computational results.
- Obtain experience in advanced numerical programming in Fortran 90.
- Learn to use fundamental numerical libraries such as the BLAS and LAPACK.
- Learn how to optimize the performance of computer programs through efficient programming and compiler optimizations.
- Learn effective communication techniques through written presentations.
- Gain experience on the use of the UNIX operating system.

Topics:

1. Basic topics in linear algebra
2. MATLAB programming and graphics
3. Advanced Fortran 90 Programming
4. Use of standard computational libraries (BLAS / LAPACK)

5. Use of compiler options for optimization of computer programs
6. Effective communication of computational results
7. Use of the UNIX operating system.

Grading:

Your final grade will be based on:

- 60% Homework assignments (10 - 25 points each)
- 30% 2 large projects (each will require a formal technical report).
- 10% Final Exam.

Your final weighted average will be determined using the weights indicated and your grade will be determined according to the following scale:

Average	Grade	Average	Grade
100-95.0	A	74.0-76.9	C
94.9-90.0	A-	70.0-73.9	C-
87.0-89.9	B+	67.0-69.9	D+
84.0-86.9	B	64.0-66.9	D
80.0-83.9	B-	60.0-63.9	D-
77.0-79.9	C+	< 60.0	E

The instructor may administer quizzes in class (announced or unannounced) at any time. These will be included with the take-home project scores. This will almost certainly be done if significant numbers of students fail to submit homework assignments on a timely basis or produce a very low quality of work.

From time to time, there will be in-class projects (10 points each, counted in the homework total). If you are absent, these cannot be made up.

Assignments:

Homework assignments given in class will have varying due dates. Short assignments will usually be due at the next class meeting while longer assignments will be due in 1-2 weeks time. These assignments typically involve analytical investigation and computer programming. Late assignments will be penalized at a rate of 25% points per day. Homework is due at the beginning of class. No assignments of any type will be accepted after the final class meeting day. Students may meet together in small groups to discuss aspects of a given assignment, but all work presented must be your own.

As the semester proceeds, all assignments will need to be produced using document processing software as MS Word. When computer output is requested, provide printouts of the programs and other material as requested. Do not submit large volumes of printed data.

Policies

Students with Special Needs Students with documented disabilities may be entitled to specific accommodations. SUNY Brockport's Office for Students with Disabilities makes this determination. Please contact the Office for Students with Disabilities at 395-5409 or osdoffic@brockport.edu to inquire about obtaining an official letter to the course instructor detailing approved accommodations. The student is responsible for providing the course instructor with the official letter. Faculty and staff work as a team with the Office for Students with Disabilities to meet the needs of students with disabilities.

NO CELL PHONES OR PAGERS. These are distracting to other students. You will lost 1/2 credit on your next homework assignment if a cell phone or pager goes off during class.

Attendance:

You are expected to attend all classes. Significant amounts of material are not contained in the textbook. If you miss a class, it is your responsibility to get class notes and handouts and find out what you missed. The instructor reserves the right to fail any student who acquires more than 4 unexcused absences.

No incompletes or withdrawals will be given for this course except in cases of illness, personal tragedy, or extraordinary circumstances beyond the student's control, and then only if documented to the instructor's satisfaction.

Here is the official SUNY Brockport Attendance Policy:

The student is responsible for all assigned course work and cannot be absolved of this responsibility. When enrolled in a particular course, the student is obligated to do all of the work assigned. Punctual and regular attendance is vital to the discharge of this obligation. Absences, excused or not, do not alter this responsibility. Absences deemed excessive by the instructor may result in a lowered grade. Students whose unexcused absences exceed 15% of the scheduled classes and laboratories will be subject to failure at the instructors discretion. Absences will be excused for (a) documented illness, (b) official representation of the college, (c) death of a close relative, (d) religious holiday, and (e) circumstances beyond the control of the student. Excuses for official representation of the college must be obtained from the official supervising that activity or event. Policies regarding absences from quizzes, exams, and laboratory sessions will be at the discretion of the instructor. Substantiation of excused absences is, in any case, the responsibility of the student. Regulations more restrictive than those stated above may be established by the instructor.

Authorship:

When you turn in an assignment, you are certifying it as your own work. Submitting material as you own work that is not entirely of your own authorship, or knowingly providing an answer to another person constitutes cheating. If I am convinced beyond a reasonable doubt that cheating has occurred, the person(s) submitting the illicitly obtained answer, and any person(s) knowingly providing same, will receive a grade of zero for that assignment. Further disciplinary procedures may also be considered.

Buckley Amendment:

The purpose of the Buckley Amendment is to protect the confidentiality of your grades. This law states that I cannot reveal any information regarding your performance in the course to anyone other than yourself and authorized college administrators without your written permission.

Disclaimer:

Announcements given in class are considered official addenda to this policy. All policies described are subject to change as the situation warrants. Should changes be necessary, all students will be notified in a timely fashion.