CS 191 (ST) Introduction to Scientific Computing.

Spring 2005
T-R 10:20–11:30
PPHAC-235
http://www.cs.moravian.edu/cs191
Office Hours: TR 1:30–2:30, W 11:10-12:00

CS 19x. Introduction to Scientific Computing (1u)

This course is intended to give students from various areas of science, e.g., biology, chemistry, mathematics, and physics, the basic programming and computational skills to solve discipline specific problems. Examples and projects will be taken from the various scientific disciplines. Time permitting, topics will include root finding, interpolations, equation solving, function fitting and optimization, data representation and visualization, basic statistical analysis, numerical differentiation and integration, simulation, and computational error issues. Other computational, analytical, and presentational computing tools will be introduced as necessary. This course may not be used by computer science majors as an elective.

Prerequisite: Math 170 and some previous computing experience.

Instructor

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Goals

- Learn Fundamental C/C++ programming

- Learn various numeric problem solving techniques

- Become familiar with a scientific computing environment

Text

The required texts for the course Essential C++ for Engineers and Scientists by Hanly, the C++ Pocket Reference by Loudon, and the C Pocket Reference by Prinz and Kirch-Prinz. An optional text is the GNU Emacs Pocket Reference by Cameron.

Prerequisites

Students are expected to have some science background, including some calculus. Computing experience beyond simple literacy skills is also expected.

Assignments, Programs, and Tests

Homework and programming assignments will mostly consist of C/C++ programs. Tests will consist of three hour exams and a final.

Homework

Each homework (non-program) will be graded out of a possible 100 points. Late homework will be penalized with the same schedule as late programs (see below).

Programs

- Each program will be graded out of 100 points, but will be weighted to reflect its relative complexity. Programs will be graded on correctness (~70%), style (~20%), and documentation (~10%). If an assignment is one *class-day* late, it will be penalized 10%. If it is no more than *class-week* late, it will be penalized 50%. After one class-week, it is worth no credit.

- Unless explicitly stated otherwise, programs are due electronically on midnight on the due date.

- Failing to turn in correct programming assignments in a timely fashion is hazardous to your grade, directly and indirectly. If you start missing assignments, I will notify your academic advisor.

Keep in mind the following items about submitting programs.

1. Program source files must contain the program header in a comment section as well as a code section. This header consists of the program title, number, author, course, and due date.

2. Programs are collected electronically. Pay close attention to directory and files names, including case.

- You must execute `touch DONE` in the proper directory, <u>cs191.051/x</u>.
- A collect program will periodically look for these <u>DONE</u> files.
  - If the <u>DONE</u> file is found, the contents of the directory will be copied, a <u>.collected</u> file will be deposited, and a congratulatory email message will be sent.
  - If no <u>DONE</u> file is found, an email will be sent pointing out that no collection was done.

Computer Resources

The primary computer resources will be the Unix-based Sun Solaris 2.x workstations on MoCoSIN. The software will be the `gcc/g++` compiler and related utilities from the Free Software Foundation. All programs must compile and run on this platform.

You are expected to comply with all MoCoSIN, CIT and campus policies with respect to use of the computer resources. This includes, but is not limited to, such policies as not locking workstations, not using an account other than your own, etc.

Grading

Programs	30
Homework and Quizzes	15
Hour Exams	30
Final Exam	25
Total	100 %

Policies

- Incomplete grades will **not** be assigned for failure to do the work as required during the semester.

- Attendance is very important, and pop quizzes, which would count in the homework category, may spontaneously occur. You are responsible for everything discussed in class.

- No makeup exams will be given. Students missing one or more tests, in a properly excusable fashion, will be graded based on the available scores as the total score.

Important Dates

Jan 10	M	First day of classes
Jan 17	M	M. L. King Day, no classes
Jan 18	T	Last Day to Add/Drop
Feb 17	R	**Hour Exam 1**
Feb 25	F	Mid-Term
Mar 5–13	S–U	Spring Recess
Mar 24	R	**Hour Exam 2**
Mar 25–28	F–M	Easter Break
Apr 1	F	Last Day to Withdraw with a W
Apr 14	R	**Hour Exam 3**
Apr 22–23	F–S	CCSC-NE
Apr 29	F	Last Day of Classes
Apr 30–May 1	S-U	Reading Days
May 2–7	M–S	Final Examinations
May 14	S	Commencement

General

- Keep backups of all assignments, especially during program development.

- Special circumstances, will, of course, be considered on an individual basis. Please see us as soon as possible if any such circumstances arise.

- All work, unless explicitly stated in the problem definition, is to be an individual effort. Students are encouraged to discuss approaches so long as the final submission has a single, clearly identifiable author. Violations of this will be dealt with as a case of academic dishonesty, see below.

Academic Dishonesty Policy

Students are encouraged to read and understand the college policy on academic honesty. Violations of this policy will certainly result in reduced (0?) scores on the assignments and may result in a failure of the class. In addition, students are expected to read and comply with the course specific policy on improper collaboration.

Terms and Conditions

I consider this syllabus to be a contract between myself as instructor and you as student. Therefore, I will do my best to adhere to the policies herein. However, if the circumstances warrant, there may need to be changes. Such changes will clearly be communicated to the class.