CS 4973 - Projects in HPC Spring 2015

Course Information

Location:	SCI 324
Class Times:	MW 15:00 – 16:15

Instructor:	Mike Morris
Office:	CB 126
Office Hours:	MW 11:00 – 12:00, 13:45 – 15:00 TR 10:00 – 12:00 F 11:00 – 12:00
Office Phone:	(580)745 – 2294
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Instructor:	Karl Frinkle
Office:	MTH 112
Office Hours:	MW 9:00 – 9:50, 11:00 – 11:50, 13:00 – 13:50, TR by appointment only F 9:00 – 9:50, 11:00 – 11:50
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Website:	http://homepages.se.edu/kfrinkle/

General Information

This course will introduce the student to computer programming in the context of large data sets and complex computational programming. Students will work in groups on projects agreed upon by the group.

This course will present and analyze technologies that are relatively new to the computer science and information technology fields. The main area of specialization to be explored is parallel computing. We will use MPI (Message Passing Interface) in a C/C++ environment running under the Linux operating system.

Several applications currently in our inventory will be converted to parallel processor applications. All work will be done by programming in C/C++. Speed and processor performance under single versus parallel processing will be measured.

At a minimum, the above descriptions address objectives 1, 3, 5 and 7 listed below in Appendix A.

Prerequisites

Admission is by approval of instructors only.

Text

There is no required book. See the website for course documents which may come in handy.

Other Material

You will need access to computers with a SSH terminal program installed on them. There are some in the computer labs, and you are encouraged to install SSH on your personal computer as well. See the website for more details on SSH Secure Shell Terminal.

Course Policies

Attendance – Attendance is one of the most important parts of this class. You will be penalized for each class that you miss. You are expected to work well within your group, and work on your designated tasks outside of the classroom. You will also have access to our clusters throughout the semester, and are expected to keep them in working order throughout the semester.

Late Assignments and Make-ups – Except for extenuating circumstances evaluated individually by the instructors, whose decision is final, no submission will be accepted after the posted due date, resulting in a '0' for that assignment or exam. Extenuating circumstances are rare, including but not limited to: "The clusters were down", or "I couldn't get to a computer" or "A relative was ill".

Student Expectations of Instructor – Students should expect a timely response to email questions and prompt grading and posting of assignments and exams. Unless an announcement was posted indicating a lack of instructor availability, you should receive a response to your email within 24 hours. Grading of and posting of scores for all assignments will be completed before the next assignment is due.

Instructor Expectations of Students – All students are required to produce their own work unless the activity has been designed as a group project. Evidence of cheating will result in at least a zero for that activity. In general, show all work on assignments and exams. Suggestions for avoiding such circumstances are: have a backup plan with at least one alternate location to complete and/or submit an assignment, don't wait until the last minute to take, perform or submit your work and stay current with assigned readings and homework.

Changes Deemed Necessary – We reserve the right to change any policies as we see necessary to ensure that you are indeed receiving the best possible education that we can give you in the subject matter at hand. If we feel a certain aspect of the course does not appear to be effective in its method, we will attempt to change it appropriately. All changes will be made in writing.

Grades

Grades will be assigned based on completion of tasks and ability to meet with (and work with) the instructors. Lack of attendance will result in percentage points deducted for the particular assignment unit in which the occurrence exists.

The percentage grading scale for this course is:

Letter Grade	Percentage Range
A	90-100 %
B	80-89 %
C	70-79 %
D	60-69 %
F	0-59 %

Grades will not be dispersed over the telephone. Grades and graded assignments will not be dispersed to anyone other than the student. Grades will be available to the student via CampusConnect. Except for extenuating circumstances as described in the Course Policy – *Late Assignments and Make-ups* section above, the grade of "I" will not be assigned.

Privacy

The rights to privacy of each student are extensive and comprehensive. For a complete survey, visit http://academics.se.edu/academics/general-information/students-rights/ which is found on the Online Learning page of Southeastern's website.

Academic Dishonesty

Academic dishonesty or misconduct is not tolerated. Academic dishonesty is behavior in which a deliberately fraudulent misrepresentation is employed in an attempt to gain undeserved intellectual credit, either for oneself or for another. Academic misconduct is behavior that results in intellectual advantage obtained by violating specific standards. Anyone cheating in this course - each party involved - the first time through will receive zero points for the assignment. Anyone cheating in the course - the second time through - all parties involved will receive an F for the course. Withdrawal is not an option. It does not matter if you are the provider of the information or the recipient of the information. All parties involved will be treated equally. Penalties for cheating or copying someone elses work may include expulsion from the class and/or the university.

Important Dates for Spring 2015

- 2015.01.12 - Classes begin
- 2015.01.16 - Last day to enroll in or add classes
- 2015.01.16 - Last day to drop a class with no grade record
- 2015.01.16 - Last day to drop a class with refund/no charges
- 2015.01.19 - Martin Luther King Jr Day (no class)
- 2015.03.04 - Assessment Day
- 2015.03.06 - Last day to drop a class with automatic 'W'
- 2015.03.16–20 - Spring Break
- 2015.04.01 - Last day to complete final application for graduation
- 2015.04.03 - Easter Holiday
- 2015.04.10 - Last day to drop a class
- 2015.05.08 - Classes end

Special Accommodations

Any student needing special accommodations due to a disability should contact the Coordinator for Disability Services, GDJ Student Union, Suite 328 or call (580) 745 – 2392 (TDD# 745 – 2704). It is the responsibility of each student to make an official request for accommodations to the Coordinator.

At-Risk Students

Any student experiencing mental or emotional issues who desires free, confidential, clinical counseling is encouraged to contact the SE Counseling Center at (580) 745 – 2988 to schedule an appointment during normal working hours Monday – Friday, 8:00 AM to 5:00 PM. For after hours mental health emergencies, please call SE Campus Police at (580) 745 – 2911 or the Mental Health Crisis Hotline at 1 – (800) – 522 – 1090.

Appendix A: Program Objectives

1. An ability to apply knowledge of computing and mathematics appropriate to the discipline
2. An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution
3. An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs
4. An understanding of professional, ethical, legal, security and social issues and responsibilities
5. A recognition of the need for and an ability to engage in continuing professional development
6. An ability to use current techniques, skills, and tools necessary for computing practice
7. An ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the tradeoffs involved in design choices.
8. An ability to apply design and development principles in the construction of software systems of varying complexity.