

COURSE INFORMATION	Location:	CB 102
	Class Times:	MWF 13:00 – 13:50
	Instructor:	Karl Frinkle
	Office:	MTH 112
	Office Hours:	MTWRF 11:00 – 12:50
	Office Phone:	(580)745 – 2028
	E-mail:	kfrinkle@se.edu
	Website:	http://homepages.se.edu/kfrinkle/
Cluster URL:	http://cumulonimbus.se.edu/	

COURSE OVERVIEW In this course, we will use MPI (Message Passing Interface) in a C/C++ environment running under the Rocks OS cluster operating system (<http://www.rocksclusters.org>) to write high performance computing (HPC) programs. All work will be done by programming in C/C++ on the Cumulonimbus cluster (<http://cumulonimbus.se.edu>). We will focus most of our efforts on writing code in parallel to increase the performance, and reduce run times, of serial code.

COURSE OUTLINE Although the course will be more project based, these are some of the key areas we will cover:

I. Introduction:

- Hardware inspection of the Cumulonimbus cluster
- Overview of parallel versus serial programming

II. Working on the Cluster

- Connecting to the cluster using SSH
- User accounts, privileges, and responsibilities
- Editors: Vi, nano

III. Compiling Programs

- C
- C++
- MPI with C
- MPI with C++

IV. Submitting MPI Jobs to the Queue

- Queues
- .qsub files
- Job Status
- Job Output

V. Getting Started with programming

- Simple Hello World
- MPI Hello World

VI. MPI Topics

- Initialization
- Broadcast and Communication
- File I/O
- Helpful MPI Commands and their uses
- Optimization

COURSE WORK Most work will consist of writing programs, analyzing the results, and revising programs after the analysis is complete. You will be expected to hand in programs which compile and execute as described by the given assignment. A major emphasis will be placed on the revising of programs based upon runtime analysis. You will be expected to be able to present your work, analysis, and revisions in a coherent manner, not just to the instructors, but to your fellow students.

GRADES Programming will count for the entirety of your grade. You will be expected to turn in programming assignments in a timely manner, and will receive subsequent feedback in a timely manner.

POLICIES All cell phones must be silenced and put away before class begins. If you are caught using a cell phone during class, your final grade will be dropped by **one letter grade per incident**. It is also expected that everyone will behave in a kind and courteous manner towards fellow students and the instructor.

I reserve the right to change any policies as I see fit to ensure that you are indeed receiving the best possible education that I can give you in the subject matter at hand. If I feel a certain aspect of the course does not appear to be effective in its method, I will attempt to change it (for the better I hope).

IMPORTANT DATES FOR FALL 2016

- 2016.08.15 - Classes begin
- 2016.08.17 - Last day to enroll in or add classes
- 2016.08.19 - Last day to drop a class with no grade record
- 2016.08.19 - Last day to drop a class with refund/no charges
- 2016.11.11 - Last day to drop a class with automatic 'W'
- 2016.12.09 - Classes end

UNIVERSITY AND SCHOOL POLICIES *Privacy:* Available through the Southeastern Online Learning website or <http://www.se.edu/academics/general-information/students-rights/>

Academic Integrity: Available through the Southeastern Online Learning website or <http://www.se.edu/dept/student-life/files/handbooks/2015-2016-Student-Handbook.pdf>

There is a zero-tolerance policy concerning plagiarism and/or duplication of another individual's work. Besides making you feel horrible, you will receive a zero and the policy will be enforced under the guidelines of the Academic Honesty Policy for the University. Students are expected to work individually and turn in their own work. Any violation of academic honesty will be reported to the Office of Student Affairs. The policies regarding academic misconduct are set forth in the institution's Student Code of Responsibilities and Conduct

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.

EQUAL OPPORTUNITY STATEMENT In Compliance with Title VI of the Civil Rights Act of 1964, Executive Order 11246 as amended, Title IX of the Education Amendments of 1972, Sections 503 and 504 of the Rehabilitation Act of 1973, and other Federal Laws and Regulations, Southeastern Oklahoma State University does not discriminate on the basis of race, color, national origin, sex, sexual identity, sexual

orientation, age, religion, handicap, disability, or status as a veteran in any of its policies, practices or procedures, this includes but is not limited to admissions, employment, financial aid, and educational services.

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(20 U.S.C. §1681) states: “No person in the United States, shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any education program or activity receiving federal financial assistance...” Southeastern Oklahoma State University does not discriminate on the basis of sex in its education programs or activities, in compliance with Title IX and the U.S. Department of Education’s regulations at 34 C.F.R. §§86.1 et seq. Individuals who believe they have been discriminated against on the basis of sex may contact S.E.’s Title IX Coordinator at (580) 745–3090, titleix@se.edu, or PMB 2750.