Instructor

- Instructor:
  - Joe Zhang
    - Office: TEC 206
    - Phone: (601) 266-5510
    - Email: chaoyang.zhang@usm.edu

- Meeting time and location:
  - 9:30AM – 10:45PM Tuesday & Thursday
  - Classroom: TEC205
Course Home Page

- Course homepage
  - http://www.cs.usm.edu/~zhang/csc510

- Office Hours
  - Tuesday & Thursday 1:00PM – 3:30PM

- Course announcements including project and assignments
  - Available online or handouts

- About lecture notes
  - Available online with PDF format or distributed in class.

Prerequisites

- CSC307
- Background in computer system, algorithms and C/C++ programming
Textbook and Resources

• Textbook
  – *Introduction to Parallel Computing: Design and Analysis of Algorithms*
  – Online resources

Course Description and Objectives

• Description
  – Parallel programming is becoming increasingly critical for a computer scientist. All new machines are now parallel. For current CPUs, it requires awareness of the multicore architecture and the cache hierarchy.
  – This course covers parallel architecture, algorithms, programming, performance analysis and other selected topics in high performance computing.

• Objectives
  – Upon completion, students will
    • be familiar with both shared memory and distributed memory systems as well as modern parallel architecture and software
    • be able to design and analyze parallel algorithms for a variety of problems and computational models
    • have experience with the implementation of parallel applications on different platforms
    • be able to measure, tune, and report their performance
Course Topics

Topics to be covered:
- Parallel architecture
- Parallel algorithm design
- Matrix multiplication
- Graph algorithms
- Solving linear systems
- MPI programming
- OpenMP programming
- Performance analysis
- Other selected topics

HPC Systems

- Shared memory or Distributed memory systems
  - at the Mississippi Center of Supercomputing Research (MCSR)
  - http://www.mcsr.olemiss.edu/
- Vislab facility
  - You can also use the facilities at High Performance Visualization Lab (TEC 205) at USM.
Schedule

• Course home page

Grading Policy

• Assignments: 40%
• One group project: 30%
• Tests and final exam: 30%
Homework Policy

- The requirements are given on the course homepage or in the handouts
- All assignments and projects are mandatory for all students
- Assignments must be turned in by the due time and in the proper format.
  - No late assignment will be accepted unless compelling reasons can be supplied and verified.
  - Without permission, late assignments will receive no grade.

Honesty

- Students are expected to do their own work on all assignments
- The answer, writing and final result that you hand in must be your own effort but you are welcome to discuss general issues with other students
- This doesn’t apply to the group project
**Attendance**

- Students are expected to attend all classes
- If you miss a class, it is your responsibility to make up the missed class.

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**DAD Policy**

If a student has a disability that qualifies under the American with Disabilities Act (ADA) and requires accommodations, he/she should contact the Office for Disability Accommodations (ODA) for information on appropriate policies and procedures. Disabilities covered by ADA may include learning, psychiatric, physical disabilities, or chronic health disorders. Students can contact ODA if they are not certain whether a medical condition/disability qualifies.

Address:

The University of Southern Mississippi  
Office for Disability Accommodations  
118 College Drive # 8586  
Hattiesburg, MS  39406-0001

Voice Telephone: (601) 266-5024 or (228) 214-3232  
Fax: (601) 266-6035

Individuals with hearing impairments can contact ODA using the Mississippi Relay Service at 1-800-582-2233 (TTY) or email Suzy Hebert at Suzanne.Hebert@usm.edu.
CSC510
Parallel Programming

Questions?