

ESE 536/CSE 626

Switching and Routing in Parallel and Distributed Systems

Time: Tuesday/Thursday 11:30am-12:50pm

Classroom: Frey Hall 226

Instructor: Professor Yuanyuan Yang

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Office Hours: Tuesday/Thursday 11:00am-11:30am and 1:00pm-1:30pm

- **Course description**

This course covers various switching and routing issues in parallel and distributed systems. Topics include message switching techniques, design of interconnection networks, permutation, multicast and all-to-all routing in various networks, nonblocking and rearrangeable capability analysis and performance modeling.

- **Learning objectives**

To become familiar with the state of the art on various communication issues in parallel and distributed computing systems. At the end of the course, students should be able to

- Explain the details of the switching techniques, designs of interconnection networks, unicast and collective communication routing algorithms, and performance analytical models that have been discussed in class.
- Compare and contrast between different approaches and determine which approach is most suitable for particular applications.
- Perhaps perform original research on a topic covered in the course.

- **Textbook**

We will cover selected materials in the following book

Interconnection Networks: An Engineering Approach, J. Duato, S. Yalamanchili, and L.M. Ni, Morgan Kaufmann Publishers (Recommended but not required).

In addition, we will discuss a number of articles from recent issues of journals and conference proceedings. Copies of these papers and additional handouts will be made available in class.

- **Grading**

Since this is a topic course, there will be a minimal number of assignments and exams. One third of the overall grade will be determined by the performance on a few homework problem sets. Another third will be determined by the grade of the final exam. For the final third of the grade, each student should give an in-class presentation on a research paper assigned by the instructor.

- **Accommodations for Students with Special Needs**

If you are entitled to extra accommodation for any reason (such as a physical or mental disability), it is your responsibility to discuss this with the instructor at the beginning of the course.