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Fall 2003

### CS 790-01: Introduction to Parallel Algorithms

Natsuhiko Futamura

*Wright State University - Main Campus*

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# CS 790, Introduction to Parallel Algorithms

## Syllabus: Fall 2003

Time: Tuesday, Thursday, 2:15 pm to 3:30 pm

Class Room: 208 Russ Engineering Center

Instructor: Professor Natsuhiko Futamura

Office: 335 Russ Engineering Center

Email: [nfutamur@cs.wright.edu](mailto:nfutamur@cs.wright.edu)

Phone: 775-5107

Low-cost parallel computers such as PC clusters are becoming available, and many previously unsolvable problems can be solved using such computers. However, designing algorithms that perform well on parallel computers is often challenging. The focus of this course is on learning how to design algorithms for parallel computers and how to evaluate them.

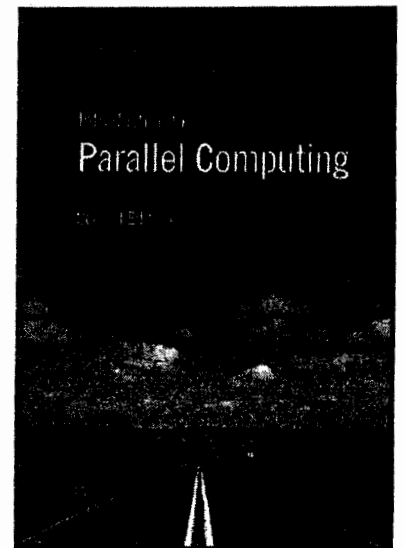
**Topics:** The topics to be covered include

- Benchmarking.
- Various kinds of parallel computers.
- Definition of performance measures.
- Primitive parallel operations.
- Sorting algorithms.
- Matrix algorithms.
- Graph algorithms.
- Biological applications.

Suggested reading: A. Grama, V. Kumar, A. Gupta, An Introduction to Parallel Computing: Design and Analysis of Algorithms, Second Edition, Pearson Addison Wesley, ISBN: 0201648652

Prerequisite: CS 400.

**Office Hours:** Tuesday, Thursday 3:30-4:30PM at my office at 335 Russ Engineering Center. Or, by appointment.



You can also stop by my office without an appointment. When the door is open, it usually means that "You are welcome to ask questions." You can use phone or e-mail to ask short question such as "What was today's homework assignment?" But, please come to see me for technical questions.

**Exams:** A midterm exam and a final exam are given during the quarter. Some portion of the exam may be given as a take-home exam.

No make-up exams are provided except for documented emergencies. Examples of acceptable documentation are a letter from a doctor (on his/her letterhead) indicating that you were unable to take the exam due to illness or a letter from an employer indicating that you will be out of town on company business at the scheduled exam time.

All exams are closed book. However, students are allowed to bring one sheet of paper as a cheating sheet.

**Projects:** Students can replace the final exam for projects. If do not do well in the project, you can also take the final exam, and the better one will be counted for the final grade. The project is due on March 10.

Tentative exam dates are

Midterm      Tuesday, Feb 2, In class exam

Final exam    Thursday, March 17, 3:15-5:15 PM

**Grading:** The grades will be based on two midterms and a final exam (or project). Each midterm exam carries 30% of the total score, and the final exam or the project carries 40% of the score. Grades will be assigned using the following scale:

A - 80% or above

B - 70% - 79%

C - 60% - 69%

D - 50% - 59%

F - below 50%

Project will be graded in a bit strict way: Only projects that contain novel idea receive A. The projects that only have implementation will receive 85% of the full mark at maximum.

The letter grades are not intended to be curved; however, I reserve the right to curve the final grades based upon the final point distribution.

A missed exam counts as a 0. The grade A indicates excellence: To receive an A, you must demonstrate a thorough knowledge of the material throughout the course.

There will be no grades of incomplete given except when documented emergencies have made it unable for the student to finish the course.

**Course Web Page:**

<http://www.cs.wright.edu/~nfutamura/CS790/>

**Homework:** Homework assignments are given occasionally to help students prepare for exams. The homework assignments are not graded and it will not be the part of the grade, but it is strongly recommended that students take a look at problems.

Students are encouraged to work together on the homework problems. This makes solving problems more enjoyable and I expect students to learn better by sharing ideas with other students. The absolute (as opposed to relative) grading scale is designed to encourage students to work together. The results of the other students in the class will not affect your grade: thus help others and get help from others yourself.

**Attendance:** Attendance at classes is strongly recommended. It is your responsibility to get class notes from other students and prepare for the next class if you miss a class. As is mentioned above, there is no make-up exam except for documented emergencies.