

Brooklyn College
Department of Computer & Information Sciences

CISC 7340 [*744X] Parallel and Distributed Systems

37½ hours plus conference and independent work; 3 credits

A survey of the applications and implementations of parallelism in existing and proposed computing systems. Flynn's classification of computers. Multiprocessor systems, array processors, vector machines, computer clusters and web-computing. Languages for parallel and distributed systems. Operating system issues. Notations expressing concurrency. The semantics of concurrency. Verification rules. Standard problems.

Syllabus:

Chapter 1 - Introduction to parallel and distributed computing.

Chapter 2 - Discussion of parallel architectures with an emphasis on the processors to be used this semester.

Chapter 3 - Review of parallel algorithms and design.

Chapter 4 - Message passing computing.

Applications of MPI:

Chapter 5 - A very famous application of parallel computing, the sieve of Eratosthenes.

Chapter 6 - Floyd's Algorithm.

More MPI Applications:

Chapter 8 - Matrix-Vector Multiplication.

Chapter 9 - Master/Worker paradigm.

Chapter 7 - Performance analysis.

OpenMP:

Chapter 17 - Shared memory programming with OpenMP.

Chapter 18 - Combining OpenMP and MPI.

Presentation of project results.

Textbook:

Michael J. Quinn, Parallel Programming in C with MPI and OpenMP, McGraw-Hill, 2004.