A course on aspects of parallel computing involving clusters and networks of PC workstations. Parallel algorithms are introduced in the context of simplistic abstract parallel models such as the PRAM (Parallel Random Access Machine). They are then transported to more realistic parallel computing models such as the Bulk-Synchronous Parallel model and architecture independent design and analysis of the algorithms is then introduced. Numerical and combinatorial algorithms are presented and their parallel performance analyzed in detail: examples could include FFT computations, odd-even merge sort, bitonic sorting, deterministic and randomized sample-based sorting, matrix computations and financial applications. Students will use PC cluster resources for the programming part and will be introduced to parallel computing libraries such as LAM-MPI, BSPlib, and PUB-library.

CONTACT INFORMATION

COURSE WEB PAGE: http://www.cs.njit.edu/~alexg/courses/cis786/index.html

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OFFICE:	GITC 4213, 4th floor	TEL:	(973)-596-3244
OFFICE HOURS:	Wed, Thu 4:00-5:30pm		Thu 11:30-1:00pm (with appointment)
CLASS HOURS:	Thu 6-9:05pm, Fac 412		

After the first class go to the course Web page, download this document and print it. Compare it to the hard copy handed out in class. If there are any differences, you may need to adjust your printer. Report problems to the e-mail address above.

COURSE INFORMATION

Prerequisites	CIS 610, C/C++ programming.
Textbook	An Introduction to Parallel Computing: Design and Analysis of Algorithms, Second Edition by A. Grama, V. Kumar et al. Pearson Addison Wesley. ISBN: 0201648652.
Reference	Using MPI - 2nd Edition: Portable Parallel Programming with the Message Passing Interface (Scientific and Engineering Computation) by William Gropp, Ewing Lusk, Anthony Skjellum. MIT Press; 2nd edition (November 26, 1999), ISBN: 0262571323.
Grading:	Six homeworks will be given through the semester. Each one is worth 100 points and can consist of algorithmic and/or programming problems.
Due Date:	The algorithmic portion of a homework must be turned in before the beginning of class; programs MUST be received by email before midnight the day they are due.