CIS 879-011 Topics: Compilation Research Issues for Massive Parallelism **Fall 1994**

Course Information

Course:

Compilation Research Issues for Massive Parallelism.
TR 9:30-10:45PM (3 hours) 102A Smith Hall

Prerequisites: CIS 879-010: *Optimizing and Parallelizing Compilers.*
CIS 879-010: *Introduction to Parallel Computing.*

Instructor:

Lori Pollock pollock@cis.udel.edu
406 Smith Hall (831-1953)

Office Hours:

TTh 2:00-3:00 PM
By appointment.

Course Objectives:

This course is intended to give the students a good grasp of the issues in effectively compiling for massive parallelism, where massive parallelism implies scalable high performance computing. The course will investigate the current research problems that need to be addressed in building an effective software environment for applications programmers who want to create scalable programs on physically distributed memory multiprocessors or clusters of workstations.

Required Materials:

Recent journal and conference papers.

Requirements and Grading:

- (40%) Topic Summaries (due 1 week after end of each topic).
- (40%) Lectures.
- (20%) Class Participation.

Course Outline:

- Introduction and current scalable architecture overview

- Compiler support for managing memory hierarchy (cache coherence, automatic and semiautomatic data partitioning, increasing data locality)

- Distributed shared memory systems

- Improving communication

- Compiling nonscientific, nonnumeric codes

- Parallel and distributed debugging