

Course Information: CS 599
Introduction to Grid Computing
Fall Semester 2000

- **Instructors :**

Dr. Ann Chervenak (pronounced Shur-vu-nak)
Information Sciences Institute Rm. 1221 Phone: 310-448-8225 annc@isi.edu
Office Hours: Tu and Th immediately following class or by appointment

- **Required textbook:**

Foster and Kesselman, The Grid: Blueprint for a New Computing Infrastructure, Morgan Kaufmann Publishers, Inc., 1999. We will also read recent technical papers.

- **Prerequisites:**

You should have taken classes in operating systems and networking, preferably at the graduate level. Some knowledge of distributed systems is also helpful.

- **Course description:**

This course focuses on computational grids. A grid is the hardware and software infrastructure for wide-area distributed computing. In the first half of the course, we discuss the basic services that must be provided by the grid infrastructure, including security, resource management, information services and data management. We describe an implementation of each service in the Globus grid computing environment. In the second half of the course, we cover advanced topics, including other computational grid projects.

- **Projects:**

Students will work on a project during the second half of the semester. This project may be a survey of current research in some area of grid computing, or it may involve grid research using software such as Globus, Condor or Legion.

The final week of the course will be devoted to project reports.

- **Reading:**

It is important for students to read the papers that will be discussed BEFORE class. Each student will be required to write several summaries of recent technical papers discussed in class. These summaries will be graded. The summaries will also be posted on the web page after the papers are discussed in class.

We may have periodic quizzes on the assigned readings.

- **Class presentations:**

Each student (or a small group of students) will give one 30 to 40-minute presentation on an assigned technical paper. This presentation will be graded.

- **Attendance:**

Students are expected to attend class. Students who miss more than 25% of classes will not receive a passing grade. This includes students who expect to receive audit credit for the course.

- **Participation**

As in any seminar class, student participation is essential and will affect student grades.

- **Class Web Page**

<http://www.isi.edu/~annc/classes/grid/cs599.html>

- **Class Notes**

Class notes will be posted on the web page AFTER the material is presented in class. Posted notes are not a substitute for attending class or for taking good notes.

- **Exams**

There will not be any final exam for this course. There may be periodic quizzes on assigned readings. These quizzes are more likely to happen if it appears from class discussion that students are not reading the papers in advance.

- **Evaluation**

This is a tentative breakdown of how students will be evaluated in the course. **This distribution may change!** If we have quizzes on the contents of the technical papers, this breakdown is likely to change to give more weight to those quizzes.

TABLE 1. Evaluation

Attendance and strong participation	20%
Projects	35%
Paper write-ups (and quizzes?)	25%
Class presentation	20%

- **Tentative Lecture Schedule:**

TABLE 2. APPROXIMATE COURSE SCHEDULE

Dates	Topic	Chapter/Readings
Aug 29	Intro to Grids, Course Overview	Ch. 1 and 2
Aug 31	Intro to Globus	Ch. 11 and papers
Sep 5	The hardware & network environment of the grid	Ch. 17, 18-21
Sep 7	Grid security: authentication, access control	Ch. 16 and papers
Sep 12	Grid security: encryption	
Sep 14	Globus security	
Sep 19	Resource management	Ch. 12 and papers
Sep 21	Resource management: scheduling, QoS	
Sep 26	Globus resource management (Karl Cz.)	
Sep 28	Information management	papers
Oct 3	Directory services using LDAP	papers
Oct 5	Globus Information Management (Steve F.)	papers
Oct 10	Grid Performance Measurement (Steve F.)	Ch. 14
Oct 12	Globus Applications and Testbeds (Carl K.)	Ch. 3 to 6, Ch. 22
Oct 17	POSSIBLY NO CLASS (Grid Forum in Boston)	
Oct 19	Data management	Ch. 5 and papers
Oct 24	Globus Data management: data transport, replicas	papers
Oct 26	The Condor System (Carl K. and student)	Ch. 13
Oct 31	Condor (2 student presentations)	papers
Nov 2	Advanced Scheduling (Carl K. and student)	papers
Nov 7	NO CLASS (Supercomputing '00 in Dallas)	work on projects
Nov 9	NO CLASS (Supercomputing '00 in Dallas)	work on projects
Nov 14	The Storage Resource Broker (Ann and student)	papers
Nov 16	Resource reservations (Carl and student)	papers
Nov 21	The Legion System (Ann and student)	Ch. 9 and papers
Nov 23	Thanksgiving	
Nov 28	Legion (2 student presentations)	papers
Nov 30	International Grid Projects (Carl and student)	papers
Dec 5	Student Project Reports	
Dec 7	Student Project Reports	