Catalog Description: This course introduces graduate students to key concepts and techniques underlying the design and engineering of distributed computing systems. Topics covered in this course include interprocess communication, remote invocation, distributed naming, distributed file systems, security, distributed clocks, process coordination, concurrency control, consistency and replication, and fault-tolerance. Also included is an introduction to grid/cloud computing and autonomic computing.

Credits: 3

Prerequisites: Undergraduate courses on operating systems and networking

Goals: To prepare students for graduate work or software development directed at grid/cloud computing and distributed information processing

Outcomes: Students who successfully complete the course will understand the fundamental issues involved in the design of distributed computing systems

Textbook: Andrew S. Tanenbaum, Maarten van Steen, Distributed Systems: Principles and Paradigms, 2nd edition, Prentice Hall, ISBN-10: 0132392275 ISBN-13: 9780132392273

Grading: Based on exams and a project. Failing grade given in case of academic dishonesty. FIU student honor code applies.

Topics:

	Lectures
Architectures (layers, tiers, peers, middleware, management,…)	2
Communication (Layered Protocols. Remote Procedure Call …)	3
Processes (Threads. Clients. Servers. Code Migration. Agents)	3
Naming (Naming Entities. Mobile Entities. Removing Entities…)	3
Synchronization (Logical Clocks. Global State. Distributed Transactions…)	4
Consistency and Replication (Models, Protocols, Examples…)	4
Fault Tolerance (Process Resilience. Reliable Communication. Recovery…)	3
Security (Secure Channels. Access Control. Security Management…)	3
Distributed File and Web-based Systems (Sun NFS. WWW, …)	3
Introduction to grid/cloud computing and autonomic computing	2
Exam and project presentations	3