

# COT 6617 - Distributed Systems Design

- **Catalog Description:**

Prerequisite: A high-level programming language, basic knowledge of architecture and operating systems, elementary discrete mathematics, or permission of the instructor. We consider a distributed computer system that consists of multiple autonomous processors that do not share primary memory but cooperate by sending messages over a communication network. Discussion of special problems related to distributed control such as election and mutual exclusion, routing, data management Byzantine agreement, and deadlock handling.

- **Textbook:**

1. *Distributed System Design*  
Jie Wu, CRC Press, 1999.

- **References**

1. *Distributed Algorithms*  
Nancy A. Lynch, Morgan Kaufmann Publishers, Inc., 1996
2. *Distributed Systems: Principle and Paradigms*  
Andrew S. Tanenbaum and Maarten Van Steen, Prentice Hall, 2002.

- **Instructor:**

Dr. Jie Wu, Professor of Computer Science and Engineering  
jie@cse.fau.edu, <http://www.cse.fau.edu/~jie>

- **Goals:** The student will get exposed to fundamental issues in distributed system design, recent development, and research trends in this area.

- **Class time:** M-W 12:30 AM - 1:50 PM

- **Office hours:** M-W 9:00 AM - 12:00 AM S&E 410

- **Grading Policy:**

- Homework: 25%
- Midterm: 25%
- Final: 25%
- Project: 25%

- **Prerequisite by topic:**

1. Basic concepts of computer architecture and operating systems
2. Knowledge of a high level programming language
3. Elementary discrete mathematics

- **Topics:**

1. Introduction and motivation
2. Program languages and clock synchronization
3. Event ordering and clock synchronization
4. Election and mutual exclusion
5. Byzantine agreement
6. Distributed faults and termination detection
7. Distributed data management
8. Distributed operating systems: deadlock handling
9. Topics in distributed communication protocols: routing, broadcasting
10. Topics in distributed shared memory, database, and file systems

- **Course implementations**

- Each student will receive CD-ROM lectures offered in a regular semester (over 45 hours).
- Distance learning via Blackboard.
- All Homework assignments, tests (including sample tests), and a list of projects will be posted on Blackboard.

- **Bio**

Dr. Jie Wu a Professor at Department of Computer Science and Engineering, Florida Atlantic University. He has published over 150 papers in various journal and conference proceedings. His research interests are in the area of mobile computing, routing protocols, fault-tolerant computing, and interconnection networks. Dr. Wu served as a program vice chair for 2000 International Conference on Parallel Processing (ICPP) and a program vice chair for 2001 IEEE International Conference on Distributed Computing Systems (ICDCS). He is a program co-chair of the 12th ISCA International Conference on Parallel and Distributed Computing Systems in 1999. He is also a co-guest-editor of a special issue in IEEE Transactions on Parallel and Distributed Systems on "Challenges in Designing Fault-Tolerant Routing in Networks" and a co-guest-editor of a special issue in Journal of Parallel and Distributed Computing on "Routing in Computer and Communication Networks". He is the author of the text "Distributed System Design" published by the CRC press. Currently, Dr. Wu serves as an Associated Editor in IEEE Transactions on Parallel and Distributed Systems and three other international journals. Dr. Wu a recipient of the 1996-97 and 2001-2002 Researcher of the Year Award at Florida Atlantic University. He is also a recipient of the 1998 Outstanding Achievements Award from IASTED. He served as an IEEE Computer Society Distinguished Visitor. Dr. Wu is a Member of ACM and a Senior Member of IEEE.