CSC/CPE 469 Distributed Systems II

1. CSC/CPE 469 Distributed Systems II

2. **credit units** 4 **contact hours** 6

3. **Course Coordinator:** Chris Lupo

4. **Textbook:** (and/or other required material)
   a. **References:** [Useful articles](#) (click on this link to reach a set of helpful articles that may be discussed in class.)
      - *Software Architecture Design Patterns in Java* by Partha Kuchana, ISBN 0849321425
      - *Distributed Algorithms*, Nancy Lynch, Morgan Kaufmann

5. a. **Course Description:** Continued exploration of topics in distributed computing in greater depth, with emphasis on design patterns and team projects. 3 lectures, 1 laboratory. Crosslisted as CPE/CSC 469.
   b. **Prerequisite:** Prerequisite: CSC/CPE 369.
   c. **Required/Elective/Selective Elective for CPE, CSC, EE, SE**

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6. a. **Course Goals/Outcomes**
The student will be able to:

- Learning Categories:
  - Cognitive information and skills
  - Students will acquire
    - Information on design patterns as applied to software development for distributed systems.
• Cognitive skills for problem solving, critical thinking, synthesizing, analyzing, and applying in formation in the context of software development of distributed systems.

• Learning Objectives
  o Introduction to the concept of design patterns and how it applies to software development for distributed systems.
  o Application of design patterns to the development of a fair-sized distributed system such as a chatroom or an HTTP server.

b. How Student Outcomes addressed
   (“B” = Basic level, “I” = Intermediate level, “A” = Advanced level)

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7. Major Topics Covered: (number of lecture hours each)

• Week 1: Distributed computing basics, threaded programming, design documents (UML class diagram, sequence diagram)
• Week 2: Introduction to design patterns: singleton, observer, adapter
• Week 3: proxy, chain of responsibilities, broker
• Week 4: Basic remoting patterns: requestor, client proxy, invoker, request handler, remoting error, monitor, reflection, dynamic proxies
• Week 5: Identification patterns: object ID, object reference, lookup.
• Week 6: Lifecycle management patterns: static instance, per-request instance, client-dependent instance, lazy acquisition, pooling. Leasing.
• Week 7: Invocation Asynchrony Patterns: Fire and forward, sync and server, polling, result callback
• Week 8-10: Project review and presentations