CSC/CPE 369 Distributed Computing I

1. CSC/CPE 369 Distributed Computing I

2. credit units 4  contact hours 6

3. Course Coordinator: Chris Lupo

4. Textbook:

5. a. Course Description: Introduction to distributed computing paradigms and protocols: interprocess communications, group communications, the client-server model, distributed objects, and Internet protocols. Emphasis on distributed software above the operating system and network layers. 3 lectures, 1 laboratory. Crosslisted as CPE/CSC 369.

   b. Prerequisite: Prerequisite: CSC/CPE 357.

   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:
   - Apply principles and techniques of distributed computing to the development of software to solve computational problems in a distributed environment.
   - Analyze the applicability of distributed computing techniques to an existing non-distributed solution of a computational problem and transform (reorganize) the non-distributed solution into a suitable distributed solution.
   - Explain how modern distributed computing and cloud computing infrastructures are organized.
   - Assess the results of solving a computational problem in a distributed environment.

   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)
• Introduction to distributed computing and cloud computing (3)
• Data structures for distributed data processing: dictionaries and key-value stores. Data partitioning and hashing (3)
• Modern architectures for distributed and cloud computing (3)
• Introduction to MapReduce (3)
• Building distributed algorithms using MapReduce (simple problems) (3)
• Building distributed algorithms using MapReduce (data analysis) (3)
• Building distributed algorithms using MapReduce (text processing) (3)
• High-Level Distributed Computing Languages and Environments (3)
• Distributed data warehousing (3)