CSC/CPE 405 Software Construction

1. CSC/CPE 405 Software Construction

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

3. **Course Coordinator:** David Janzen


5. a. **Course Description:** Design and construction of sizeable software products. Technical management of software development teams. Software development process models, software design, documentation, quality assurance during development, software unit and integration testing; CASE tools, development environments, test tools, configuration management. 3 lectures, 1 laboratory. Crosslisted as CPE/CSC 405.

   b. **Prerequisite:** Prerequisite: CSC/CPE 402

   c. **Required/Elective/Selective Elective for CPE, CSC, EE, SE**

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6. a. **Course Goals/Outcomes**
   - To learn skills required to produce and maintain a high-quality software product on time and in budget.
   - To know and execute principles of software construction.
   - To know and execute principles of software architecture.
   - To work effectively as a team member to meet project milestones.
   - To understand and apply a software process.
   - To understand and apply software metrics.
   - To effectively write and speak about software engineering.

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

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7. Major Topics Covered: (3 hours per week)
Week 1: Team organization and leadership; Design review methods and practice
Week 2: Enterprise software – fundamental principles and processes; Software development infrastructure; configuration management, software modeling
Week 3: Categories of testing, test plan generation, system quality attributes; design quality, design patterns, style guides, detailed design
Week 4: QA review techniques, defect tracking, software design patterns
Week 5: Risk analysis, quality assurance practices, documentation (external, internal)
Week 6: Integration testing
Week 7: Release management, team quality attributes, code reviews, leadership reviews
Week 8: Alternative software process models
Week 9: Release management
Week 10: Product delivery practices, post-mortem analyses