CSC 405 – Software Construction

1. CSC 405 – Software Construction

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

3. **Course Coordinator**: David Janzen

4. **Textbook (or other required material):**

5. **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.

   b. **Prerequisite**: [CSC 305](#) and [CSC 402](#).

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

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6. **a. Course Learning Objectives**
   The student will be able to:
   - Produce and maintain a high-quality software product on time and in budget.
   - Articulate and execute principles of software construction.
   - Articulate and execute principles of software architecture.
   - Work effectively as a team member to meet project milestones.
   - Explain and apply a software process.
   - Explain and apply software metrics.
   - Effectively write and speak about software engineering.

   b. **Level at which Student Outcomes are addressed**
   ("B" = Basic level, "I" = Intermediate level, "A" = Advanced level)

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7. **Major Topics Covered: (number of lecture hours per)**
   - Team organization and leadership (1.5 hours)
   - Design review methods and practice (1.5 hours)
   - Enterprise Software (3 hours)
     - Fundamental principles and processes
     - Software development infrastructure
     - Configuration management
     - Software modeling
   - Categories of testing, test plan generation, system quality attributes (1.5 hours)
   - Design quality, style guides, detailed design (1 hour)
   - Software design patterns (2 hours)
   - QA review techniques, defect tracking (3 hours)
   - Risk analysis, quality assurance practices, documentation (external, internal) (3 hours)
   - Integration testing (3 hours)
   - Release management, team quality attributes, code reviews, leadership reviews (3 hours)
   - Alternative software process models (3 hours)
   - Product delivery practices, post-mortem analysis (3 hours)