1. Course number and name
   CSC 648: Software Engineering

2. Credits and contact hours
   3 credits
   Contact hours: 150 minutes of lecture sessions /week

3. Instructor’s or course coordinator’s name
   Course coordinator: Dragutin Petkovic, Professor of Computer Science

4. Text book, title, author, and year
   Software Engineering, Ian Somerville, Addison Wesley, current edition
   a. other supplemental materials
      Lecture slides

5. Specific course information
   a. brief description of the content of the course (catalog description)
      Practical methods and tools for SW Engineering, including organizational teamwork. Course is paired
      with CSC 848. Students who have completed CSC 848 may not take CSC 648 for credit.

   b. prerequisites or co-requisites
      a grade of C or better in CSC 413; or consent of the instructor

   c. indicate whether a required, elective, or selected elective course in the program
      Elective for Computer Engineering.

6. Specific goals for the course
   a. specific outcomes of instruction, ex. The student will be able to explain the significance of current
      research about a particular topic.
      Students completing the course successfully will be able to demonstrate
      • Knowledge of basic SE engineering methods and practices, and their appropriate application
      • Knowledge of basic components and tools for full SW development lifecycle
      • Knowledge of design and build practices for easy to use, maintainable SW developed using modern multi-tier
        architectures
      • Knowledge of basic SW dependability metrics, quality metrics, and basic architectural models
      • Ability to constantly iterate and re-prioritize goals based on user needs, budget, schedule and resources
      • Development of significant teamwork and project based experience, as close as possible to real life
      • Knowledge of basics of copyright, IP, digital rights management as it relates to SW development
• Exposure to global and open-source SE methods and practices.

*b. explicitly indicate which of the student outcomes listed in Criterion 3 or any other outcomes are addressed by the course.*

Course addresses ABET Student Outcome(s): a, b, c, e, j, k.

7. **Brief list of topics to be covered**

- Introduction and motivation for Software Engineering
- Overview of several basic SE methodologies with emphasis on Iterative and Incremental Development and User Centered Design
- Usability and UI design principles and practice
- Basic components of SW Engineering process: Planning; Requirements and Specifications; Iterative Design, Rapid Prototyping, Mockups; Software Design; Coding and documentation techniques (high level only)
- SW Engineering related to Web application development
- Open source SW development and management (NEW)
- Software Configuration Management, Delivery, Installation, and Documentation
- Software Metrics, Performance and Usability Measurements
- Software QA and Testing
- Software Maintenance
- Project Management issues
- Teamwork and Communication as integral part of SW Engineering
- Issues related to global SW engineering
- Basics of IP, licensing, digital rights management and copyright
- SW Engineering ethics
- Real life examples and cases from instructor and students
- Guest and student presentations
- Final Group Project including several milestones, interaction with instructor, and final demo and delivery.