Course Number: 3460:480 – 3460:580
Course Name: Software Engineering and Formal Methods
Course Credits: 3
Schedule: Spring Semester

Syllabus Date: 25 February 2004
Prepared By: Donald McCoy

Prerequisites: 316 with grade of C- or better, or equivalent

Text: Pressman, Software Engineering – A Practitioner’s Approach, McGraw Hill

Bulletin Description:
In-depth study of software engineering processes, procedures and concepts. Various tools and techniques are introduced for software engineering management. Estimating, planning, control, metrics, and testing are significant subjects.

Detailed Description:
Cost control in software design and development has been an industry wide problem affecting nearly all efforts in all companies. Lack of control results in project cancellation, loss of market opportunities and lost revenues. Software engineers exposed to the true costs of development, management techniques, decision making processes and tools are much better equipped to compete in an increasingly competitive industry. This course details industry accepted practices while focusing upon the IEEE standard software development process.

Course Goals:
After completing this course, the student should be able to complete a full software development project as a team leader or manager. This includes accepting a Statement of Work from a customer, developing a Software Requirements Specification, assembling a development team, estimating time and resources required, estimating costs, organizing processes and procedures and delivering a final tested product on time and on budget. The student should understand the ramifications of decisions made while focusing upon the project completion. Skills of management, team building, business, law and finance are also covered.

Topics:
1. The software Engineering Process
2. Project Management
3. Metrics collection / analyze
4. Project Planning and Estimating
5. Risk Management
6. Project Scheduling and Tracking
7. Software Quality and Testing
9. Design and Development Principles / Architecture considerations
10. User interface design / Security Engineering
11. Formal methods / Clean room techniques

Computer Usage:
Documentation of five IEEE standard documents (SOW, SRS, SDD, SPMP, VDD). Word, Excel, Calculator. Students are assumed to be well versed in software coding.

References:
Jones, Assessment and Control of Software Risks, Prentice-Hall, ISBN: 0137414064
Schach, Classical and Object Oriented Software Engineering, Irwin, ISBN: 0256182981