CS587
Software Project Management

Syllabus

Instructor: Dr. Atef Bader
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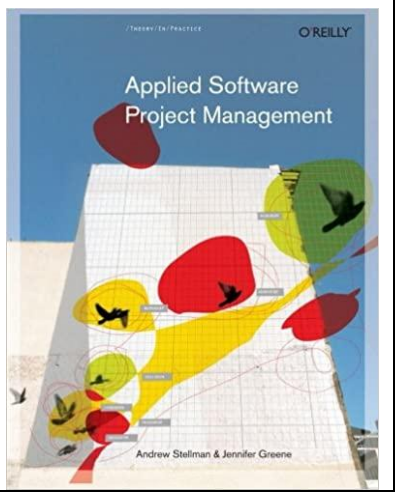
Grading:

Exam	35%
Final Project	35%
3 Assignments	30%

Textbooks:

Managing and Leading Software Projects Author: Richard E. Fairley ISBN: 978-0-470-29455-0 Year: 2009 Publisher: Wiley - IEEE Computer Society Press	
Applied Software Project Management Author: Jennifer Greene and Andrew Stellman ISBN: 978-0-596-00948-9 Year: 2005 Publisher: O'Reilly Media	

Recommended References:

Product Manager vs. Project Manager, Bruce McCarthy, 2018, ISBN: 9781492034445, O'Reilly Media

Software Project Estimation: Intelligent Forecasting, Project Control, and Client Relationship Management, Dimitre Dimitrov, 2019, ISBN: 9781484250259, Apress

Metrics and Models in Software Quality Engineering 2nd Edition by Kan, 2003, ISBN: 0201729156, Addison-Wesley

The Economics of Software Quality, Capers Jones and Olivier Bonsignour, June 2011, ISBN: 9780132564731, Addison-Wesley

Software Metrics, 3rd Edition, James Bieman and Norman Fenton, 2014, ISBN: 9781439838228 , CRC Press

Practical Time Series Analysis, Aileen Nielsen, 2019, ISBN: 9781492041658, O'Reilly Media

Course Description

This course covers the concepts necessary to successfully manage the software projects. All phases of the project management cycle are covered including project initiation, project planning and control, project status reporting and reviews through project completion and post project lessons learned analysis. The concept of process maturity is introduced using the SEI Capability Maturity Model to show the correlation between established management and development practices and project success. In addition to treating the key project management processes, tools, and techniques, the course gives special emphasis to the human side of project management including leadership and motivation strategies. The course emphasizes the importance of software quality and the use of disciplined software development processes in managing successful projects. The course delivery format is a blend of lectures, class discussions, and team presentations.

Course Objectives

At the completion of this course, students will have the following competencies:

- Understand how to create project plan, track and record task status, and present project status to management

- Have a thorough understanding of the software project management process and the software development process
- Understand the fundamental concepts necessary to manage a modern software project including techniques and tools used for project initiation, project planning and control, project status reporting and reviews, project completion and lessons learned analysis
- Compare and contrast the different software size estimation techniques and quality management metrics
- Understand why risk management and contingency planning are at the heart of any successful project
- Understand the issues regarding the project cost, resources, schedule, productivity and quality
- Compare and contrast project quality metrics, product quality metrics and in-process quality metrics
- Understand the skills required of a successful project manager that capable of leading and managing the team members and reliable relationships with the customers and higher management

The following topics are covered in detail:

- **Introduction**
  - Roadmap for software project management
  - Software Products: computer Science, software engineering, and software project management
  - Organizational structures and software product lines
  - Software Development Process Models: Waterfall, Iterative and Agile
  - Software estimation, measurements, metrics, and quality
  - The growth of project management as a profession
  - Software project quality tracking and defects forecasting

- **Principles of Project Management**
  - Defining
  - Planning
  - Executing
  - Controlling
  - Closing

- **Project Analysis**
  - Software project size, effort, and scheduling of projects
  - Estimating software project size and complexity
  - Scheduling tools and techniques
  - Measurements for tracking project progress

- **Resource Management**
  - Assessing competencies and skills
  - Resource allocation

- **Project Monitoring**
  - Metrics collection and analysis
  - Milestones and status reporting

- **Defect Detection/Prevention**
  - Defect removal effectiveness
  - Phase-based defect removal model

- **Risk Management**
  - Risk identification, quantification, and prioritization
  - Risk avoidance, mitigation, and contingency planning

- **Configuration Management**
  - Basic configuration concept
  - Configuration management process
  - Configuration control and configuration audits

- **Quality Control, Planning and Assessment**
  - Software project quality assessment and process maturity assessment
  - ISO audits & quality reviews
  - Testing process and product certification
  - Monitoring compliance with processes
  - Process improvement