

Project Management in Engineering

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ORGANIZATION OF THE COURSE

Scope, Purpose and Description

This course is aimed to help the student to learn the competencies and skills for planning and controlling projects and how it relates to business operations. The course introduces the fundamental procedures, tools and techniques and focuses on project management life cycle and the role of a project manager. Students will explore project management with a practical, hands-on approach through business examples and class assignments. Topics will include schedules, risks, resources, as well as project stakeholders. The course will also mention the behavioral skills of a project manager and show hints to resolve interpersonal issues encountered during a project schedule. A special emphasis will be given to software projects and Waterfall and Agile methodologies. The course will explore Capability Maturity Model (CMM) and its impacts on project success. Another bonus topic which is essential for software engineers will be software configuration management (and its relationship with Dev-Ops fundamentals).

Objectives and Goals

This course focuses on project management methodology. At the end of this course, students will be able to

- Understand concepts of project management design, development, and deployment
- Define project scope, schedule budget and typical project phases
- Use project management tools, techniques, and skills
- Understand how to manage project cost, quality, and delivery
- Optimize critical resources in case of conflicting interests or tight schedules
- Understand the implications, challenges, and opportunities of organizational dynamics in project management
- Recognize and mitigate risks and challenges throughout project life cycle
- Define communication strategy with stakeholders
- Understand most used software project management methodologies
- Gain familiarity with processes and maturity models
- Understand the importance configuration management and see examples and its relationship with Dev-Ops models.

Required Readings

Wysocki, Robert K., (2009). "Effective Project Management: Traditional, Agile, Extreme", Wiley Publishing, Indiana

Project Management Institute (2021). A Guide to the Project Management Body of Knowledge (PMBOK Guide) – Seventh Edition. Project Management Institute, Pennsylvania, USA.

Project Management Institute (2013). A Guide to the Project Management Body of Knowledge (PMBOK Guide) – Fifth Edition. Project Management Institute, Pennsylvania, USA.

McConnell, Steve (1998) – Software Project Survival Guide, Microsoft Press

Biafore B. (2010) Microsoft Project 2010: The Missing Manual , O'REILLY

DevOps Foundations, By Ernest Mueller and James Wickett – LinkedIn Learning (though this is not a free course, I highly recommend it if you have the means for membership)

<https://www.atlassian.com/project-management>

<https://www.scrum.org>

<https://www.sei.cmu.edu/cmmi/>

<https://www.ibm.com/support/knowledgecenter/SSSH27>

<https://git-scm.com/book/en/v2>

Grading Criteria

Students will be evaluated using the following criteria:

HWs /Assignments / Projects ..	30%
Attendance & class participation & quizzes	5%
Midterm	25%
Final	40%

VF pass criteria:

- Hand in minimum 2 homework
- Total average grades for homework and attendance: 14/100
- Minimum grade for midterm: 8/100
- Minimum average grade at the end of the term: 20/100

Tentative Course Schedule

<u>Week</u>	<u>Topic</u>
Week 1:	Introduction and Overview Course Introduction Student Introduction Introduction to Project Management Project Stakeholders Leadership in Project Management
Week 2:	Project Management Standards and Performance Domains Project Phases and Project Life Cycle
Week 3:	How to Plan a Project How to Scope a Project
Week 4:	Project Cost Management Project Time Management Project Risk Management
Week 5:	Project Communications Management Project Human Resource Management
Week 6:	Project Quality Management Project Scheduling
Week 7:	Project Progress, Reporting, Issue Tracking Management Closing a Project
Week 8:	<i>Midterm</i>
Week 9:	Software Project Management Methodologies: Waterfall
Week 10:	Software Project Management Methodologies: Agile and Kanban
Week 11:	Ramadan Holiday / Spring break
Week 12:	Capability Maturity Model Integrated
Week 13:	Software Configuration Management
Week 14:	Final Projects Presentation
Week 15:	Final Projects Presentation