

# 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 management using 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). Examples from real-life projects will be presented and discussions on the rising trends will provide insight to the students.

### 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>
<b>Week 1:</b> Feb 16	<b>Course Introduction and Overview Introduction to Project Management Project Stakeholders Leadership in Project Management</b>
<b>Week 2:</b> Feb 23	<b>Project Management Standards and Performance Domains Project Phases and Project Life Cycle</b>
<b>Week 3:</b> Mar 1	<b>How to Plan and Scope a Project</b>
<b>Week 4:</b> Mar 8	<b>Project Cost Management Project Time Management Project Risk Management</b>
<b>Week 5:</b> Mar 15	<b>Project Human Resource Management Project Communications Management</b>
<b>Week 6:</b> Mar 22	<b>Project Quality Management Project Scheduling</b>
<b>Week 7:</b> March 29	<b>Project Progress, Reporting, Issue Tracking Management Closing a Project</b>
<b>Week 8:</b> Apr 5	<i>Midterm</i>
<b>Week 9:</b> Apr 12	<b>Ramadan Holiday / Spring Break</b>
<b>Week 10:</b> Apr 19	<b>Software Project Management Methodologies: Waterfall</b>
<b>Week 11:</b> Apr 26	<b>Software Project Management Methodologies: Agile and Kanban</b>
<b>Week 12:</b> May 3	<b>Capability Maturity Model Integrated DevOps Fundamentals</b>
<b>Week 13:</b> May 10	<b>Software Configuration Management Future Trends and Applications</b>
<b>Week 14:</b> May 17	<b>Final Projects Presentations</b>
<b>Week 15:</b> May 24	<b>Final Projects Presentations</b>