



Shanghai Jiao Tong University

TR401 Engineering Project Management (Online)

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| Instructor Information | Nazmul Huda Home Institution: Macquarie University, Sydney, Australia Email: dr.huda.nazmul@gmail.com | | |
| Term | December 17, 2020 - January 8, 2021 | Credits | 4 units |
| Course Delivery | The class will be delivered in the format of online. Other than recorded lecture videos, the instructor will arrange 6 hours' real-time interactions with students per week (via discussion forum, zoom meeting, and WeChat). The workload students are expected to complete to properly pass this course is about 20 hours per week. | | |
| Required Texts (with ISBN) | Project Management – The Managerial Process (7th E), by Erik W. Larson, Clifford F. Gray, ISBN: 9781259666094, McGrawHill Engineering Project Management by Nigel J. Smith, ISBN- 13: 978-1405168021 | | |
| Prerequisite | N/A | | |



Course Overview

This unit provides a comprehensive understanding of project management considering different aspects throughout a project life cycle. The unit is designed to cover the duties and deliverables of engineering managers from the project's initiation to successful completion. It will provide learning modules from basic understanding to advanced project management fundamentals considering an interdisciplinary and relevant to all fields of engineering practice. Topics to be covered include project management fundamentals and practices, project delivery with timing, costing and planning, risk mitigation and resources scheduling; progress, performance, and evaluation, building managerial and leadership skills, interorganizational relations, environmental and cultural considerations, agile project management and future of project management.

Learning Outcomes

Upon successful completion of this unit, the students will be able to

1. Develop a comprehensive understanding of project management in engineering practices
2. Identify the responsibilities and deliverables of engineering managers from the project's initiation to successful completion
3. Compare different project delivery methods, assess the associated risks, and follow standard procedures for risk mitigation
4. Estimate project timelines and scheduling resources within required budgets
5. Evaluate progress and performance, and take necessary measures for optimum output
6. Develop concept and knowledge of various project management techniques project development, design, optimization, budgeting, planning scheduling, monitoring, supervising, recruiting, procurement
7. Build knowledge and skills on environmental and cultural factors for large scale international projects
8. Learning agile project management and the future of engineering project management



Grading Policy

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| Case studies (4 x 7.5 marks each) | 30% |
| Team Project | 30% |
| Final Exam | 40% |

Grading Scale is as follows

| Number grade | Letter grade | GPA |
|--------------|--------------|-----|
| 90-100 | A | 4.0 |
| 85-89 | A- | 3.7 |
| 80-84 | B+ | 3.3 |
| 75-79 | B | 3.0 |
| 70-74 | B- | 2.7 |
| 67-69 | C+ | 2.3 |
| 65-66 | C | 2.0 |
| 62-64 | C- | 1.7 |
| 60-61 | D | 1.0 |
| ≤59 | F (Failure) | 0 |



Class Schedule

| Date | Lecture | Readings |
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| Day 1 | Introduction, Engineering Project Management Overview and definitions, Modern Project Management | Chapter 1: Project Management by Erik Larson Chapter 2 – Nigel Smith |
| Day 2 | Organization Strategy and Project Selection, Organization Structure and Culture | Chapter 2 and 3: Project Management by Erik Larson, Chapter 13 – Nigel Smith |
| Day 3 | Defining the project, Project Appraisal - Estimating Project Time and Cost | Chapter 4 and 5: Project Management by Erik Larson |
| Day 4 | Developing a Project Plan, Risk Management, Risk Evaluation, Engineering Risks, Uncertainty Management | Chapter 6 and 7: Project Management by Erik Larson |
| Day 5 | Scheduling Resources and Cost – Overview, Types of Resource Constraints, Scheduling problem, Resource allocation methods, Multiproject Resource Schedules | Chapter 8: Project Management by Erik Larson |
| Day 6 | Reducing Project Duration – Accelerating Project Completions, Project Cost-Duration Graph, Practical Considerations | Chapter 9: Project Management by Erik Larson |
| Day 7 | Case study 1: Teradyne Corporation – Review of Project Management Tools Team formation and project allocation | In class case study discussion and Assign questions |
| Day 8 | Building Managerial Skills, Managing Project Stakeholders, managing vs Leading, Ethics and Project Management, Qualities of an Outstanding Project Manager | Chapter 10: Project Management by Erik Larson |
| Day 9 | Managing project teams, Five stage team development model, Building high performance project teams, Minimizing risks and pitfalls | Chapter 11: Project Management by Erik Larson |
| Day 10 | Managing Interorganizational relations, Outsourcing, Negotiations, Customer relations, Accounting and Contract Management | Chapter 12: Project Management by Erik Larson |
| Day 11 | Case study 2: Turner Construction Company | In class case study discussion and Assign questions |
| Day 12 | Project Evaluation, Progress and Performance Measurement, Monitoring time and resources allocation, | Chapter 13: Project Management by Erik Larson, Chapter 10 – Nigel Smith |
| Day 13 | Indexes to monitor progress, Project control using Earned Value Technique | Chapter 13: Project Management by Erik Larson, Chapter 10 – Nigel Smith |



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| Day 14 | <i>Case study 3:</i> AtekPC Project Management Office | In class case study discussion and Assign questions |
| Day 15 | Project Closure, Audits, Post Implementation Evaluation, Wrap up | Chapter 14: Project Management by Erik Larson |
| Day 16 | Introduction to Agile Project Management, Traditional vs Agile, Cross-cultural considerations, Managing international projects <i>Case study 4:</i> American Constructions Inc. | Chapter 16: Project Management by Erik Larson, Chapter 20 – Nigel Smith, Chapter 15: Project Management by Erik Larson, Chapter 5 and 10 – Nigel Smith |
| Day 17 | Summary, review and conclusion. Final Project Presentation and Discussion | |
| Day 18 | Final Examination | |