



## Shanghai Jiao Tong University

### TR401 Engineering Project Management

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|--|---|----------------|---------|
| <b>Instructor Information</b>  | Xiaosong Zheng<br>Home Institution: Shanghai University<br>Email: xiaosong.zheng@shu.edu.cn<br>Office Hours: Determined by Instructor   |                |         |
| <b>Term</b>  | December 17, 2020<br>– January 8, 2021  | <b>Credits</b> | 4 units |
| <b>Class Hours</b>   | Sunday through Thursday, 135 min per teaching day   |                |         |
| <b>Discussion Sessions</b>   | 2 hours each week, conducted by teaching assistant(s)   |                |         |
| <b>Total Contact Hours</b>   | 64 contact hours (1 contact hour = 45 mins, 2880 mins in total)   |                |         |
| <b>Required Texts (with ISBN)</b>  | Project Management – The Managerial Process (7th E), by Erik W. Larson, Clifford F. Gray, ISBN: 9781259666094, McGrawHill<br>Engineering Project Management by Nigel J. Smith, ISBN- 13: 978-1405168021 |                |         |
| <b>Prerequisite</b>  | N/A   |                |         |
| The course might be moved to online delivery due to COVID-19 pandemic. The anticipated date is November 6, 2020. |   |                |         |



## Course Overview

This course provides a comprehensive understanding of project management considering different aspects throughout a project life cycle. The course 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 course, 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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|---------------|-----|
| Midterm exam  | 20% |
| Group project | 20% |
| Case studies  | 20% |
| Final exam    | 40% |

### Grading Scale is as follows

| Number grade | Letter grade | GPA |
|--------------|--------------|-----|
| 90-100       | A            | 4   |
| 85-89        | A-           | 3.7 |
| 80-84        | B+           | 3.3 |
| 75-79        | B            | 3   |
| 70-74        | B-           | 2.7 |
| 67-69        | C+           | 2.3 |
| 65-66        | C            | 2   |
| 62-64        | C-           | 1.7 |
| 60-61        | D            | 1   |
| ≤59          | F (Failure)  | 0   |



**Class Schedule**

| <b>Date</b> | <b>Lecture</b>   | <b>Readings</b>   |
|-------------|--|---|
| Day 1       | Introduction, Engineering Project Management Overview and definitions, Modern Project Management   | Chapter 1: Project Management by Erik Larson<br>Chapter 2 – Nigel Smith         |
| Day 2       | Organization Strategy and Project Selection, Organization Structure and Culture  | Chapter 2 and 3: Project Management by Erik Larson,<br>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       | 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 8       | <b>Midterm exam</b> , team formation and project allocation  | N/A   |
| Day 9       | Case study 1   | In class case study discussion and Assign questions                             |
| Day 10      | 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 11      | Managing Interorganizational relations, Outsourcing, Negotiations, Customer relations, Accounting and Contract Management                                  | Chapter 12: Project Management by Erik Larson                                   |
| Day 12      | Project Evaluation, Progress and Performance Measurement, Monitoring time and resources allocation   | Chapter 13: Project Management by Erik Larson,<br>Chapter 10 – Nigel Smith      |
| Day 13      | Indexes to monitor progress, Project control using Earned Value Technique  | Chapter 13: Project Management by Erik Larson,<br>Chapter 10 – Nigel Smith      |
| Day 14      | Case study 2   | In class case study discussion and Assign questions                             |



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| Day 15 | Project Closure, Audits, Post Implementation Evaluation   | Chapter 14: Project Management by Erik Larson  |
| Day 16 | Introduction to Agile Project Management, Traditional vs Agile, Environmental considerations, Legal/Political, security and Geographic considerations, Cross-cultural considerations, Managing international projects | 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, discussion, review and conclusion. Final Project Presentation and Discussion   |  |
| Day 18 | <b>Final exam</b>   |  |