



Shanghai Jiao Tong University

EI920 Studies in Engineering Contracts

| | | | |
|---------------------------------------|---|-------------------------------|-----------------------|
| Instructor: | Dr Nazmul Huda | Email: | Nazmul.huda@mq.edu.au |
| Instructor's Home Institution: | Macquarie University, Sydney, Australia | Office: | TBD |
| Office Hours: | TBD | | |
| Term: | December 16, 2019- January 7, 2020 | Credits: | 4 units |
| Classroom: | TBD | Teaching Assistant(s): | TBD |
| Class Hours : | Monday through Friday, 160 mins per teaching day | | |
| Discussion Sessions: | 2 hours each week, conducted by teaching assistant(s) | | |
| Total Contact Hours: | 64 contact hours (1 contact hour = 45 mins, 2880 mins in total) | | |
| Required Texts (with ISBN): | Engineering Project Management by Nigel J. Smith, ISBN-13: 978-1405168021 | | |
| Prerequisite: | | | |



Course Overview

This unit will provide students with learning modules about structuring and commissioning engineering contracts to deliver and procure engineering outcomes. Students will develop a working knowledge of contract administration and build a fundamental understanding of commercial engineering contracts and procurement. The unit is designed to cover all engineering disciplines across different stages of the career. Topics to be covered include value management, project planning, finance, control strategy, policy implications, supply chain.

Learning Outcomes

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

1. Evaluate the commercial viability of engineering projects and decide an appropriate procurement strategy for a particular project
2. Interpret the scope and meaning of contract documents for the delivery of engineering projects
3. Analyse and assess tenders, understand the fundamentals of contract law, identify potential risks associated with the engineering projects
4. Conduct cost estimation and tendering processes from a Contractors perspective
5. Apply advanced and integrated knowledge of contextual factors impacting the engineering discipline and business management, with a specific focus on project management, supply chain solutions, engineering leadership, and human resource management
6. Critically analyse, formulate and solve engineering management related problems, including complex and open-ended problems, using well-established principles, methods, and procedures
7. Interpret and work within policies, procedures, legislation, and or standards as related to Engineering Management



Grading Policy

| | |
|--------------|-----|
| Midterm test | 30% |
| Team Project | 30% |
| 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

| Date | Lecture | Readings |
|-------|---|---------------|
| Day 1 | Introduction, Course Overview and relevant definitions, Value Management (VM) in Engineering Projects, Procedures and Techniques of VM, Benefits of VM, | To be advised |
| Day 2 | Project Finance, sources of finance, financial engineering, Debt financing contract, Appraisal and validity of financial projects, Risk (financial, revenue and commercial) | To be advised |
| Day 3 | Cost estimating in contracts and projects, Estimation techniques, Estimation for process plants, IT resources in Estimating, | To be advised |
| Day 4 | Project planning, programming (bar chart, line of balance, location time diagram), resource scheduling, example problems | To be advised |
| Day 5 | Project control using Earned Value Technique, theory and applications, relationship of earned value and project functions, Earned value analysis | To be advised |
| Day 6 | Contract strategy and Contractor Selection process, factors affecting strategy, Contractual considerations, Contractor choice, Contract selection, Standard Contract Conditions and terms of payment, Sub Contracts | To be advised |
| Day 7 | Contract policy and documents, tendering procedures, Contract planning, tender review and evaluation | To be advised |
| Day 8 | Midterm exam, team formation and project allocation | To be advised |



| | | |
|--------|--|---------------|
| Day 9 | Supply Chain management, project value chain, procurement and value chain, prime contracting | To be advised |
| Day 10 | Team based Supply Chains and partnering, Benefits and Constraints of partnering, Partnership Contracts | To be advised |
| Day 11 | Implementing industrial projects, large engineering projects in developing countries, success strategy | To be advised |
| Day 12 | Engineering contracts in Construction industries | To be advised |
| Day 13 | Legal considerations in engineering contracts | To be advised |
| Day 14 | Environmental and Geographic considerations in Engineering contracts, Risk evaluation in contracts | To be advised |
| Day 15 | Summary, discussion, review and conclusion. Final Project Presentation and Discussion | To be advised |