



Shanghai Jiao Tong University

EI920 Studies in Engineering Contracts

Instructor Information:	Nazmul Huda Home Institution: Macquarie University Email: Nazmul.huda@mq.edu.au Office Hour: Determined by Instructor		
Term:	December 16, 2019 - January 7, 2020	Credits:	4 units
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:	N/A		



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

On completion of this subject students should

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 Exam	30%
Team Project	30%
Final Exam	40%

Grading Scale

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
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