



Shanghai Jiao Tong University

EI920 Studies in Engineering Contracts (Online)

<b>Instructor Information</b>	<p>Nazmul Huda Home Institution: Macquarie University Email: dr.huda.nazmul@gmail.com</p>		
<b>Term</b>	December 17, 2020 - January 8, 2021	<b>Credits</b>	4 units
<b>Course Delivery</b>	<p>The class will be delivered in the format of online. Other than recorded lecture videos, the instructor will arrange 5 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.</p>		
<b>Required Texts (with ISBN)</b>	<ol style="list-style-type: none"> <li>1. Engineering Project Management by Nigel J. Smith (2nd Edition), ISBN-13: 978-1405168021, Blackwell Science Publications</li> <li>2. The Aqua Group Guide to Procurement, Tendering and Contract Administration (2nd Edition), by Mark Hackett and Gary Statham, ISBN <u>978-1-118-34654-9</u>, Wiley Blackwell Publications</li> <li>3. Procurement Principles and Management, 11th Edition, by Peter Baily, David Farmer, Barry Crocker, David Jessop, David Jones, ISBN <u>978-1-292-01601-6</u>, Pearson Publications</li> <li>4. Engineers Procurement Manual for Major Plant Equipment: A guide to Principles and Procedures for Planning, Specifications, Bidding, Evaluations, Contract Award, by Robert C Lesser, Prentice Hall Publications</li> </ol>		
<b>Prerequisite</b>	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

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. Interpret and work within policies, procedures, legislation, and or standards as related to Engineering Management

## Grading Policy

Case Study (4 x 15 Marks each)	60%
Final Assignment	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
Day 1	Introduction, Course Overview and relevant definitions, Value Management (VM) in Engineering Projects, Procedures and Techniques of VM, Benefits of VM, Procurement, Procurement scope and Development	Chapter 2 – Nigel Smith Chapter 1 – Peter Baily
Day 2	Strategic Procurement and Supply Chain Management, Strategic analysis, development and implementation	Chapter 2 – Peter Baily
Day 3	Key procurement issues: outsourcing, quality management, Lead time and time compression, Sourcing strategy and relationship	Chapter 4, 5 and 7 – Peter Baily
Day 4	Inventory management, Price and Total Cost of Ownership (TCO)	Chapter 6 and 9 – Peter Baily
Day 5	Negotiations, Project Procurement: planning, control, subcontracting and risk, Procurement of commodities, International and global sourcing	Chapter 10, 11, 12 and 13 – Peter Baily
Day 6	<i>Case Study 1: Catawba Industrial Company</i>	In class case study discussion and Assign questions
Day 7	Capital procurement, Services Procurement, Corporate Social Responsibility, E-Procurement	Chapter 14, 16, 17 and 18 – Peter Baily
Day 8	Contract Management and performance measurement,	Chapter 19 – Peter Baily
Day 9	Contract strategy and Contractor Selection process, Contractual considerations, Sub Contracts, Contract policy and documents	Chapter 11 and 12 – Nigel Smith
Day 10	Engineering contracts in Construction industries, Fixed price and Cost Reimbursement Contracts, Target Cost Contracts	Chapter 8, 9, 10 and 11 – Mark Hackett
Day 11	<i>Case Study 2: Whirlpool China – Strategic Sourcing</i>	In class case study discussion and Assign questions
Day 12	Management and Construction Management Contracts, Design and Build Contracts, Continuity Contracts	Chapter 12, 13, and 14 – Mark Hackett
Day 13	Building a contract team, Team based Supply Chains and partnering, Benefits and Constraints of partnering, Partnership Contracts	Chapter 16 – Nigel Smith, Chapter 1, and 15 – Mark Hackett



Day 14	<b>Case Study 3:</b> Boeing Australia Limited – eProcurement System	In class case study discussion and Assign questions
Day 15	Preparing and inviting tenders, Pre-Contract cost control, Sub contractors and Tendering, Preparation of procurement requirements.	Chapter 17, 18 and 23: Mark Hackett, Chapter 3, 5, 6, 7, 8, and 9: Robert Leeser
Day 16	Compiling the contract conditions, developing commercial terms. Preparing technical specifications	Chapter 17, 18 and 23: Mark Hackett, Chapter 3, 5, 6, 7, 8, and 9: Robert Leeser
Day 17	<b>Case Study 4:</b> TBA	In class case study discussion and Assign questions
Day 18	Summary, discussion, review and conclusion.	