

Syllabus: ISE 515 - Engineering Project Management

Spring 2023 | Tuesdays 4:00pm – 6:40pm | KAP146 | Section 31515D

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Course Description:

This course will provide you with a basic exposure to the tasks and challenges facing today's projects and in particular, those of the project manager. Imagine managing globally distributed teams while adhering to scope, budget, time constraints while balancing project risks and rigorous quality demands. This course will provide you with the tools and – as important – behavioral skills to systematically manage projects for profit and non-profit organizations. The course objectives are:

- Acquire and fine-tune the skills and techniques for the 4 phases in the life cycle of a typical project: initiating, planning, executing and closing
- Gain an understanding of essential principles associated with effective project management and how to apply these principles in the day-to-day business environment
- Familiarize yourself with commonly available computer software tools
- Understand and apply methods for solving common difficulties associated with project management

The subject matter will be covered using lectures and discussions, case studies, text reading, individual research, group discussion and preparation of a comprehensive project management plan in a team environment.

This course is also an elective option for the [Technology Commercialization Certificate Program](#) at the USC Marshall School of Business.

Materials:

- *Engineering Project Management*, by G. Neil Siegel. Publisher: Wiley
- *Case Studies Harvard Business Review Sourced* (<http://hbr.org/>). **HBS CoursePack**
- *Software: Microsoft® Project*
 - via MyDesktop; [My Desktop Link](#)
 - via Microsoft (Windows only) [Microsoft SW Link](#)
- **OPTIONAL: *Project Management Body of Knowledge***: Available from the university bookstore or from the Project Management Institute website [PMI Student Membership Link](#).

Week	Milestones	Topic	Reading*
1	1/10/23	1) Class Introduction 2) Projects: Definition and Background	Chapters 1 Elon Musk Article re PM
2	1/17/23 Student Survey Due Fri 1/20	3) Starting a Project: Business Case, RFP & Contracts <i>BC-RFP examples/NPV spreadsheet</i> <i>USC non-classroom resources</i>	Chapters 2-3 (O) Chapters 4-5 Business Acumen Article
3	1/24/23 HW #1 due 1/24	Discuss Henry Tam & the MGI Team Team Assignments Guest Panel Discussion	
4	1/31/23	4) Requirements/Work Breakdown Structure (WBS) 5) Project Schedule – Activity Identification	Chapters 6-7
5	2/7/23 HW #2 due Fri 2/10	6) Activity Time Estimation Microsoft Project – class exercise	Chapter 8 (O) 10 Best PM Tools Video
6	2/14/23	7) Project Budget w/ Examples 8) Resource Planning & Organization	Jurgen Klopp Video RACI Video
7	2/21/23	9) Project Plan - Accelerate a Project Class Project Kickoff Project Management Simulation exercise	Chapter 13 Movement Video
8	2/28/23 HW #3 due Fri 3/3	10) Risk Management Midterm Exam Review Sponsor Meetings (10 minutes per team x 3)	Chapter 9
9	3/7/23	Sponsor Meetings (10 minutes per team x 3) Midterm Exam at 5:00pm	Managing with a Business Architect's Mindset (Part II)
	3/14/23	Spring Break	
10	3/21/23	11) Project Monitoring – Controls/Quality 12) Project Execution – Change Control <i>Discuss Midterm Exam</i> Balanced Scorecard Simulation exercise	Chapters 10-11 Balanced Scorecard article (in HBR CoursePack)
11	3/28/23 Class Project Pt#1 due Fri 3/31	13) Program Management Office (PMO) Guest: Rene Garcia (SoCalGas) 14) Effective Writing / Presentation	Chapter 14 (O)
12	4/4/23	15) Organization Change Management (OCM) Guest: TBD 16) Conflict Resolution – Negotiations	5 Steps from 12 Angry Men
13	4/11/23	17) Project Closure & Leadership Course Eval in Class/ Final Exam Review Guest Lecture: TBD	Chapters 12, 15
14	4/18/23	Make-Up Week	
15	4/25/23 Class Project Pt#2	Class Project presentations	
	5/9/23	Final Assignment: Due Tue May 9 5pm	

*Note: all Chapter readings from the [Engineering Project Management](#) book. O=optional reading

Note: This syllabus is subject to change as announced in class. Certain sessions may be conducted via Zoom.

Assignment Summary:

Homework #1:
<ul style="list-style-type: none"> Case Study: Henry Tam & the MGI Team (Team Dynamics) (individual assignment)
Homework #2:
<ul style="list-style-type: none"> Develop a Business Case (team assignment)
Homework #3:
<ul style="list-style-type: none"> Case Study: American Constructors (Project Schedule) (individual or team of 2 assignment)
Class Project:
<ul style="list-style-type: none"> TBD – 2 parts (team assignment)
Midterm:
<ul style="list-style-type: none"> Exam w/ variety of question types (individual exam)
Finals:
<ul style="list-style-type: none"> Case Study: Hydro One (PM principles, multiple questions) (individual or team of 2 assignment)

Student Portal: [DEN \(D2L\)](#)

The assignments, handouts, lecture notes, team rosters and other class information will be posted on D2L system of the DEN Network. All students are expected to be able to access information from here.

Class project:

The class project consists of a group project where project management skills will be demonstrated. The students will be provided with a project where all the elements of project planning are explicit and clearly defined. The class project will be graded based on the class presentation, final report and a Peer review rating. The groups will be created during the second week of class.

Grading

Participation/Simulation: 20%. This includes class participation, interactions with the professor/TA, or contributing within your individual teams. Grading will be based on the impact of your participation – this means the quality and reach of your contribution. The Simulation will not hurt your grade but top 5 scorers will receive extra points.

Homework assignments: 30%. Homework must be turned in at the specified due date. No late assignments will be accepted.

Midterm: 10%. The midterm will cover all the materials covered during the first part of this course.

Class Project (including Peer Review): 30% (part 1 = 15%, part 2 = 15%)

Final Exam: 10%. may be in the form of a case study with questions.

Attendance:

Regular class attendance is not mandatory but is strongly encouraged and recommended as it will significantly enhance your learning experience and impact your participation grade.

Note: Attendance will be taken for the first two weeks of class. If a student fails to attend during this period, the student will be dropped from the class without further contact.

Quality Expectations:

Professional deliverables are expected at all times, both for content and presentation. This means that all the homework, project, papers and other artifacts must be prepared using a word processor, spreadsheet or any other relevant computer software (e.g. MS Project). Make sure all documents have at a minimum:

- Your name and/or your team member names
- Date and document title

Academic Integrity:

The Department of Industrial and Systems Engineering adheres to the University's policies and procedures governing academic integrity as described in SCampus. Students are expected to be aware of and to observe these academic integrity standards, as they will be strictly enforced throughout the semester.

Disability Services and Programs:

Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to me or to the TA as early in the semester as possible. DSP is located in STU 301 and is open 8:30am – 5:00pm Monday through Friday. The phone number for DSP is 213.740.0776.

Contents	PPT
Module 1: Introduction & Initiation	
Intro to Class and Management	#1
Intro to Project Management	#2
Starting a Project:	
Business Case	#3a
RFPs and Contracts	#3b
Work Breakdown Structure	#4
Requirements	#4
Module 2: Planning & Estimation	
Project Schedule - Basics, Tools	#5
Estimation	#6
Project Budget	#7
Resource Planning & Organization	#8
The Project Plan - Acceleration	#9

Module 3: Execution & Monitoring	
Risk Management	#10
Project Execution:	
Project Controls	#11a
Project Monitoring, KPIs	#11b
Project Quality	#11c
Project Change Control	#12
Program Management Office	#13
Module 4: Special Topics	
Effective Communication	#14
Organizational Change Management	#15
Conflict Management/Negotiations	#16
Project Closure/Leadership	#17

SE 515 – Engineering Project Management Topics

- Project management process – general understanding of elements
- What is the distinction between management and project management
- Difference between projects, programs and business processes
- Conceptual idea of the triple constraint; understanding what we mean by cost, schedule and performance
- Performance, schedule and cost issues – origin and avoidance
- Why does one start a project?
- Understand project initiation within context of internal and external customers
- Statement of work – what is it/application
- Elements of proposal process
- Contract types
- Program management plan
 - What is it
 - Elements
 - Planning issues
 - Benefit to PM
- Role of triple constraint in PM plan
- WBS
 - What is it
 - Meaning of product oriented, deliverable based
 - Features of a good one
 - Comparison of functional based vs. product-oriented deliverable
 - Ability to construct one
- Task size guidelines
- Network diagrams
 - Understand the different types
 - Ability to translate
- Scheduling options
 - Understand types and advantages/disadvantages
- Slack and float
 - Definition
 - Identification and usage
- Cost elements
- Resource constraints
 - Identifying them
 - Effect on plan
 - Strategies to overcome
- Accelerating projects, “crashing”
- Risk
 - What is it
 - Types of risk
 - Risk matrix
 - Process to manage
- Risk contingency plan
- Risk mitigation strategies – ability to identify them for various problems
- Effect of team size and project duration on project performance
- Expectations of the organization on the PM
- Skills needed by a PM
- Conflict resolution
- Measurements to show performance against the plan
- How do you make “% complete” work
- Program reviews – why, types
- Task review – why, content
- Tracking with cost vs. time upside/downside
- Earned value terminology, definition, usage, upside/downside, calculations
- Variances – definitions, calculation
- Change control
- Scope change control – elements, plan
- Completing a project- understanding the elements