Syllabus – ISE 515: Engineering Project Management

Spring 2018, Tuesdays 3:30pm – 6:10pm VKC157

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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.

## **Materials:**

*Project Management Tools and Techniques, A Practical Guide*, by Carstens, Richardson and Smith.

Publisher: CRC Press; ISBN: 978-1-4665-1562-8.

*A Project Manager’s Book of Forms*, by Cynthia Stackpole. ISBN**:** 978-1118430781

*Software:* Microsoft ® Project: (see attached PDF for instructions)



## *Case Studies HBR Sourced (*[*http://hbr.org/*](http://hbr.org/)*).* <http://cb.hbsp.harvard.edu/cbmp/access/71776253>

OPTIONAL: *Project Management Body of Knowledge:* Available from the university bookstore or from the Project Management Institute website (<http://www.pmi.org/>) for PMI members.

## **Course Schedule:**

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|  | Week | Milestones | Topic | Reading Requirements\* |
| 1 | 1/9/18 |  | 1. Class Introduction 2. Projects: Definition and Background | [Business Acumen as an Integral Part of Project Management (Part I)](https://www.projecttimes.com/articles/business-acumen-as-an-integral-part-of-project-management-part-i.html)  Chapters 1-2 |
| 2 | 1/16/18 | [Student Survey](https://sites.google.com/kre-associates.com/ise515-haleblian/home)  due on 1/19 | 1. Starting a Project: Business Case, RFP & Contracts | Chapters 3-5 |
| 3 | 1/23/18 |  | 1. The Work Breakdown Structure (WBS) 2. Project Schedule – Activity Identification | Chapters 6-8 |
| 4 | 1/30/18 | Homework #1 due 1/30 | *Discuss Henry Tam & the MGI Team*  Sponsor Meetings (10 minutes per team x 3)   1. Resource Planning & Organization | Chapters 9, 19 |
| 5 | 2/6/18 |  | 1. Activity Time Estimation   Sponsor Meetings (10 minutes per team x 3)   1. Project Budget w/ Examples | Chapter 10, 20  *T*[*he Mythical Man Month*](https://courses.uscden.net/d2l/le/content/10097/viewContent/101989/View) |
| 6 | 2/13/18 | Homework #2 due 2/13 | *Discuss American Constructors, part 1*   1. Project Plan   Microsoft Project – class exercise   1. Accelerate a Project | Chapter 12-13 |
| 7 | 2/20/18 | Class Project Pt#1 due Friday 2/23 | 1. Risk Management   Preparation for the Midterm - Summary   1. Organization Change Management (OCM) | Chapter 11, 22 |
| 8 | 2/27/18 |  | **Midterm Exam on 10/12** |  |
| 9 | 3/6/18 | Homework #3 due Friday 3/9 | *Discuss Exam*  *Project Management Simulation* – class exercise | [Managing with a Business Architect's Mindset (Part II)](https://www.projecttimes.com/articles/business-acumen-as-an-integral-part-of-project-management-part-ii.html) |
|  | 3/13/18 |  | **Spring Recess** |  |
| 10 | 3/20/18 |  | 1. Project Execution – Change Control   Book of Forms   1. Project Monitoring – Controls/Quality | Chapters 14, 16-18 |
| 11 | 3/27/18 | Class Project Pt#2 due 3/27 | **Guest Lecture: TBD** |  |
| 12 | 4/3/18 |  | 1. Conflict Resolution – Negotiations   *Discuss Class Project part 2*   1. Program Management Office (PMO) | Chapters 24 |
| 13 | 4/10/18 | Homework #4 due 4/10 | **Guest Lecture: TBD** | *Why Good Projects Fail (on HBS site)* |
| 14 | 4/17/18 |  | 1. Earned Value 2. Project Closure | Chapters 15, 23 |
| 15 | 4/24/18 | Class Project Pt#3 due 4/24 | Class project presentations,  Review course materials, answer questions |  |
| 16 | 5/1/18 |  | **Study Days** |  |
| 17 | 5/8/18 | *Final Exam* or *Conducting a Post Mortem Analysis - Learning from Class Project*  **\*\*\*due TBD \*\*\*** | | |

\*Note: all Chapter reading from the Project Management Tools and Techniques book

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| Assignment Summary: |
| Homework #1:   * Case Study: Henry Tam & the MGI Team (Team Dynamics) (individual assignment) |
| Homework #2:   * Case Study: American Constructors case study, part 1 (team assignment) |
| Homework #3:   * Case Study: American Constructors case study, part 2 (team assignment) |
| Homework #4:   * Case Study: Mat MacGregor case study (team assignment) |
| Class Project:   * Endeavor Space Shuttle – 3 parts |
| Final Exam:   * Exam **or** Conducting a Post Mortem Analysis - Learning from Class Project (team assignment) |

## **Student Portal: Blackboard (Online access to materials):**

The assignments, handouts, lecture notes, team rosters and other class information will be posted on Blackboard. 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 360° team rating. The groups will be created during the second week of class.

## **Grading**

*Participation/Simulation: 20%.* This includes class participation whether in person, using the discussion board or contributing within your individual teams. Grading will be based on the impact of your participation – this means the quality and reach of your contributions. For example, an email to the Professor may clarify a question that you may have, however, an insightful comment in the discussion board will clarify questions other students may have.

*Homework assignments/case studies: 30%.* Homework must be turned in at the specified due date prior to the beginning of class. No late assignments will be accepted. One homework assignment (lowest grade) may be dropped.

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

*Class Project: 30% (part 1=6%, part 2=12%, part 3=12%)*

*Final Exam: 10%.* may be in the form of a team case study

## **Attendance:**

Regular class attendance is strongly encouraged and recommended, but not mandatory.

*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
* Professional analysis, conclusions and/or recommendations

## **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.

**Note: This syllabus is subject to change as announced in class.**

**ISE 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 statement
  + Process to manage
* Risk management plan – ability to write one
* 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