

ISE 315L: Engineering Project Management

Spring 2017, Tue/Thu 3:30-4:50

Prerequisites: ISE 225 or ISE 330

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COURSE DESCRIPTION AND REQUIREMENTS

Organizations of all types (profit, nonprofit, government) are increasingly using contract projects to accomplish their business objectives. To do so, they are relying on project-based work structures. Therefore, they need skillful project managers to manage their projects. This course is designed as an introduction to the basic concepts and skills required for a successful project management. The course begins with the question of why we need project management skills, covers leadership and team-based performance, and continues to provide an understanding of project life-cycle (initiating, planning, executing and closing). The course provides both the theoretical and practical concepts underlying each section and uses engineering case studies and hands-on tutorials from MicroSoft Project software. The learning modes include lecture discussions, homeworks, student group discussions/presentations, case studies, and a team-based term project.

Textbook (Required):

Project Management: Achieving Competitive Advantage (Fourth Edition), 2016, by Jeffrey K. Pinto. Publisher: Pearson Higher Education. ISBN: 978-0-13-379807-4

This book is fairly expensive. The e-textbook version is much cheaper and can be found at VitalSource: <https://www.vitalsource.com/>

Software (Required):

- Copies of Microsoft @ Project are available free of charge to USC students and faculty. Please follow these steps for a free download to your computer:
Go to the following page:
<http://viterbi.usc.edu/resources/vit/services/Imagine.htm>
- Go through the initial agreements and you should see MS Project 13 among other free software downloads. If link is broken, search for Viterbi Microsoft Imagine. Click on MS Project and start the registration process, receive a code, and download. You will need a student ID and PW to finalize your download.
- You may also download Microsoft Visio using the above procedure. Visio could be used to draw a picture of the Work Breakdown Structure (WBS) in a pictorial or hierarchical format and be able to check the accuracy of your WBS. We will discuss this later during the semester. Instead of Visio, you may use Word, PowerPoint, or any other drawing software to draw your WBS.
- The textbook has a tutorial on MS Project in Appendix B. Refer to this section before using the software for your homework and integrated project.

Other (Required):

- There is a set of video tutorials for MS Project software called “Project N Motion” at the following web site: <http://www.tech.uh.edu/projectnmotion/>. We will use these video tutorials as our lab learning tool. They are referred to as PNM in the course schedule below.

- You need a calculator with a basic math and algebraic functions, like x square, square root, and log based 2 and 10. You need to bring this calculator to your exams.

Project Management Professional (optional):

Project Management has become a professional career by itself. However, you need to go through a licensing process to follow this career path. The licensing process involves a Project Management Professional (PMP) examination. In order to pass this exam, you need to know PMBOK. *Project Management Body of Knowledge (PMBOK) standard* which is available from the Project Management Institute website (www.pmi.org). The Fifth Edition (2013) is around \$60. At the end of each chapter in the textbook, there are a set of questions and their connections to the PMBOK standard. These questions often shows up in the PMP examination.

Additional Information and Links (Optional):

There are a number of organizations that are dedicated to PM. Sometimes during the semester, take a look at the following PM organizations:

- Project Management Institute (PMI) - <http://www.pmi.org/CareerDevelopment/Pages/Obtaining-Credential.aspx>
- International Project Management Association (IPMA) - <http://ipma.ch/certification/>
- APM Group Ltd (APMG) - <http://www.apmg-international.com/APMG-UK/PRINCE2/PRINCE2Home.aspx>

You can find plenty of useful information in these web sites. There are also educational resources for students. For information on student scholarships, grants, outreach opportunities and educational information on project management, please view the Project Management Institute (PMI) Educational Foundation website at <http://www.pmi.org/pmief/>

QUALITY EXPECTATIONS

Professional deliverables are expected at all times for your homework, project, papers and presentations. All assignments should have:

- Your name and your team member
- Date and document title
- No spelling errors
- Analysis, conclusions and/or recommendations
- All emails to the professor/TA should have the ISE 315L in the subject field

Student’s Roles and Responsibilities:

- This class will be more useful and exciting if you speak up and share your thoughts during the sessions.
- Complete assignments/papers/presentations on time and in a professional manner, without spelling or grammatical errors and using a professional/technical paper format. No late work will be accepted.
- The instructor will bring a Windows 8 laptop with a connection to the projector. You are responsible for the rest of the presentation hardware/software requirements. Always bring a backup drive.
- Check your email and Blackboard regularly for announcements and changes to the course schedule.
- Use of electronic devices are not allowed during the class sessions, except when in-class project work.

COURSE SCHEDULE

Date	Chapter/Topic	Assignment/Deliverable (due at beginning of each class)
1/10	Class expectations Team formation for Integrated Projects (Term Projects)	
1/12	Chapter 1: Introduction: Why Project Management?	Read The Manhattan Project (read the files uploaded in Blackboard)

		Integrated Project: Read Appendix C as a template to get a feel for what you will be required to do for your project throughout the semester
1/17	Case 1.2 The IT Department at Hamelin Hospital Case 1.3 Disney's Expedition Everest	Discussion Q: 1.5, 1.7, 1.8 Internet Exercise: 1.1 Integrated Project: The team leader submits one-page project proposal for approval
1/19	Chapter 2: The Organizational Context	Integrated Project: Final approval for the project
1/24	Case 2.2 Classic Case: Paradise Lost – The Xerox Alto Case 2.3 Project Task Estimation and the Culture of "Gotcha!" Case 2.4 Widgets 'R Us	Discussion Q: 2.5, 2.6 Internet Exercise: 2.1, 2.4 Integrated Project: Develop the project narrative and goals (page 72-74)
1/26	Chapter 4: Leadership and the Project Manager	Lab/Demo: PNM Section 1 – Lesson 5-6 (Overview)
1/31	Case 4.1 In Search of Effective Project Managers Case 4.2 Finding the Emotional Intelligence to Be a Real Leader Case 4.3 Problems with John	Discussion Q: 4.3, 4.7 Internet Exercise: 4.4
2/2	Chapter 5: Scope Management	
2/7	Case 5.1 Boeing Virtual Fence Case 5.2 California's High-Speed Rail Project	Problems: 5.1, 5.2 Internet Exercise: 5.1 Lab/Demo: PNM Section 2 – Lesson 1 to 5 (Scope Management)
2/9	Chapter 6: Project Team Building, Conflict, and Negotiation Read Project Profile: Engineers Without Borders: Project Teams Impacting Lives (p. 187)	MS Project Exercise: page 179 (the entire list) Integrated Project: Develop the Work Breakdown Structure (page 182). Also, read Appendix 5.1, Sample Project Charter
2/14	Case 6.1 Columbus Instruments Case 6.3 Johnson & Rogers Software Engineering, Inc.	Discussion Q: 6.2, 6.9 Internet Exercise: 6.5
2/16	Chapter 7: Risk Management Read Project Profile: BoA Completely Misjudges its Customers (p. 230)	
2/21	Case 7.2 The Spanish Navy Pays Nearly \$3 Billion for a Submarine That Will Sink Like a Stone Case 7.3 Classic Case: Tacoma Narrows Suspension Bridge	Discussion Q: 7.10 Problems: 7.2, 7.3, 7.5 Internet Exercises: 7.5
2/23	Chapter 8: Cost Estimation and Budgeting Read Project Profile: Sochi Olympics – What's the Cost of National Prestige? (p. 257)	Integrated Project: Determine the project Risk Assessment (page 253)
2/28	Case 8.1 The Hidden Costs of Infrastructure Projects – The Case of Building Dams Case 8.2 Boston's Central Artery/Tunnel Project	Discussion Q: 8.10, 8.12 Problems: 8.6, 8.10, 8.12 (for the learning curve calculation using Excel, see https://www.youtube.com/watch?v=3xPkAFo4iM0) Internet Exercise: 8.4
3/2	EXAM 1	Integrated Project: Develop the Cost Estimates and Budget (page 292)
3/7	Chapter 9: Project Scheduling: Networks, Duration Estimation, and Critical Path	Lab/Demo: PNM Section 3 – Lesson 1 to 6 (Basic Time Management)

3/9	Chapter 10: Project Scheduling: Lagging, Crashing, and Activity Networks	
	SPRING BREAK	
3/21	Case 10.1 Project Scheduling at Blanque Cheque Construction (A) Case 10.2 Project Scheduling at Blanque Cheque Construction (B)	Discussion Q: 9.4 Problem: 9.10 Internet Exercise: 9.1 MS Project Exercise: 9.3
3/23	MANDATORY: Each team will present a 7-minute formal Integrated Project presentation and Q/A to follow. The presentations must show the topics covered so far (goals, scope, risk and budget)	
3/28	Chapter 12: Resource Management	Discussion Q: 10.6 Problems: 10.2 MS Project Exercise: 10.1, 10.2, 10.3
3/30	Case 12.1 The Problems with Multitasking	Integrated Project: Develop the Project Schedule (page 363) Lab/Demo: PNM Section 4 – Lesson 1 to 6 (Resource Management)
4/4	Chapter 13: Project Evaluation and Control Project Profile: New York City's CityTime Project (p. 432)	Discussion Q: 12.7 Problems: 12.5, 12.6, 12.7, 12.8, 12.9 MS Project Exercise: 12.1, 12.2, 12.3
4/6	Case 13.1 The IT Department at Kimble College Case 13.3 Boeing's 787 Dreamliner: Failure to Launch	Integrated Project: Manage your Project's Resources (page 430) Lab/Demo: PNM Section 5 – Lesson 1 to 9 (Tracking)
4/11	Chapter 14: Project Closeout and Termination Project Profile: Duke Energy and its Cancelled Levy County Nuclear Power Plant (p. 478)	Discussion Q: 13.2, 13.11 Problems: 13.7, 13.8, 13.9 MS Project Exercise: 13.1, 13.2
4/13	Case 14.1 New Jersey Kills Hudson River Tunnel Project Case 14.3 The Navy Scraps Development of Its Showpiece Warship – Until the Next Bad Idea	
4/18	MANDATORY: In-class Integrated Project work to finalize your term project and report	Discussion Q: 14.3, 14.10, 14.11 Internet Exercises: 14.1, 14.3, 14.4
4/20	EXAM 2	Materials after EXAM 1
4/25	Integrated Project presentations (15 min per team)	Do your peer evaluations now...
4/27	Integrated Project presentations (15 min per team)	Integrated Project: Closeout your Integrated Project, edit the writings and submit the file Do your course evaluations now...

Different color fonts in the above schedule table represent the following activities/assignments:

- Black:
 - Chapter slides and discussions prepared by the instructor. The slide sets are provided in Blackboard.
 - Case studies presentations led by the student teams with class participation. Each case has been summarized in a .ppt file uploaded in Blackboard.
- Green: These are called Project Profiles, which are case readings at the beginning of the assigned chapters. They are called profiles, which means that they do not have a Q/A at the end. We want you to read them on your own. The contents could be included in an exam question. They WILL NOT be discussed in class. The profiles have been summarized at the end of its respective chapter slide set.

- **Red: term project (Integrated Project) sections. The teams must perform these tasks and follow them throughout the semester. You have a mid-semester presentation and a final presentation.**
- **Yellow: lab demonstrations from the University of Houston web site called ProjectNMotion. The web site includes a set of videos that the student teams must watch together. As the videos go through MSPProject examples, the teams must discuss and repeat those actions on their own MSP software. This is primarily a hands-on learning session just like a software lab session, but it should be performed on your own time with your team members present.**

COURSE GRADING

<i>Deliverable</i>	<i>Grade</i>
Homework: Discussion Questions, Internet Exercises, Problems, MS Project Exercises	25% Each week's assignment is equally weighed, and then summed for the final homework grade.
Integrated Project (Team Grade)	20% (half presentation, half final paper) Each project milestone deliverable (written in red) is graded as low, medium, and high to show your progress only and does not influence your final project grade.
Peer Evaluation	5% (see the description in the peer evaluation section) Your peer evaluation grades should reflect the performance of the other team members during your Integrated Project work AND during the Lab/Demo learning sessions. It is a confidential grade and cannot be adjusted by the Instructor/TA.
Exam 1	25% (Closed Book and Note)
Exam 2	25% (Closed Book and Note)

FORMATION OF TEAMS

You begin forming a team in the first session of the class. If you need help, talk to TA/Instructor. Some rules are:

- All team members will receive equal grades, but each member has the opportunity to evaluate the other members based on a peer evaluation process. Use the peer evaluation form in this syllabus.
- All team members must participate in the presentation with equal workload assigned to each member.
- All activities internal to each team is assigned, performed and managed by the team members. The instructor will only intervene when one or more of the team members deviate from acceptable norms of team behavior.

CASE STUDY

We have a number of case studies that help us understand each chapter content more deeply. For each case study, we ask each team to read the case before the class and come to the class prepared to discuss the case and offer reasonable answers to the case study questions. Each chapter is assigned to a team at the beginning of the semester.

How to Present Each Case

We have uploaded our description of each case in .ppt files. **DO NOT** change the slides. Begin by explaining the case in detail. After the case is explained, show the question at the end (without answer). Then, start a discussion with the class and try to get the audience involved. Then, click so that your answer appears on a slide. After your discussions, the professor will show his answers and we compare and contrast. The professor will ask questions and moderate the discussions throughout.

The cases for the Chapter 10 are a bit different and contain some extra work. They are 10.1 (excluding question 3) and 10.2 (they are parts of the same problem). For this case, you need to design a network for a construction

project (with about 20 activities) and then try to reduce the project duration. We need slides for a simple precedence table (with durations and costs) and a simple MSP project output with critical path. So, build the network, determine the duration of each activity, and then set up the discussion on how to reduce project duration.

INTEGRATED PROJECT = Term Project

A term project is assigned to a team. (We follow the textbook sample, which is called “Integrated Project.”) The term project is designed so that you go through the important concepts in project management using a real project that you design and implement. Your textbook has a detailed description of an example and the steps you should go through in sections called: Integrated Project. The first attempt at the project definition is on page 72, and continues throughout the textbook (see the page numbers for each project step in the course schedule above in red font). To give you an idea of what to do with your project, in each section of the book where the Integrated Project step is described, a sample project has been worked on (or solved) in detail. The name of the sample project in our textbook is **ABCups**. Read these sections before working on your own project.

Important: you do not have to actually do the project! You only assume that you are managing the project.

Important: you should write your project as if you are employed by a contracting organization. You should not write to impress the professor. You should write to deliver the project to your manager.

Read *Appendix B: Tutorial for MS Project 2013*. Throughout your project, follow instructional on this appendix to get yourself familiar with MS Project. You will need to use MSP in your project and this appendix is the guide. You need to study this in addition to the Project N Motion videos indicated in the schedule table above.

Read *Appendix C: Project Plan Template*. You need to follow the information in this appendix before submitting your project proposal. This is only a template and you may vary your project for a better work outcome. Your project proposal needs to be approved by the instructor.

Project Presentations:

Each team will present the term project once in mid and once at the end of the semester. To assist you in slide preparation and presentation skills, we have uploaded two files on Blackboard. The instructional team is ready to help you if you have any questions.

Organization of your term paper:

- Use the following template for your final term paper.
- You may add any other sections or content to explain your project completely.
- The total pages should not be more than 15 single-spaced, including all charts, graphs, figures, etc.
- Upload one Word file for the report and one .mpp file for MSP project analysis you have done.

<i>Section</i>	<i>Max. Pages</i>	<i>Max. Grade</i>
Cover Page Title of Project Team # Team member names Date of delivery 8.5x11 sheets	1	1
Abstract A sentence describing the project A sentence on why this project is being considered or why it is important	0.5	5
Introduction	2	10

Explain the organization within which this project formed Describe the proposed project Who are the stakeholders for this project? Does the organization culture support or hinder this type of project? What are the assumptions to achieve project success? What are the major outcomes of this project? Briefly describe what are the main sections of this report		
Scope Management	2	10
Work Breakdown Structure (no more than 100 work packages)	2	12
Risk Management	1.5	8
Cost Estimation and Budgeting	3	12
Scheduling	3	12
Resource Management	2	10
Project Closeout documents	2	10
Conclusions Briefly explain what you did for this project What are the important aspects of this project you want us to remember? What are the lessons learned? What would you change the next time you are assigned a similar project?	0.5	5
References and other works cited Information from Internet should be limited to 1/3 of the references cited List all the sources that you used for data and information Use APA style for references Make sure that these references are cited inside the body of your report, where the data/information is written.	0.5	5
TOTAL	20	100

PEER EVALUATION FORM

You must fill out the following form to evaluate the work of your teammates.

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Print your name: (first, last) _____ Date: _____

Team number and title of the project: _____

Criterion (Assign 0 to 100 for each criterion)	Name	Name	Name	Name	Name
1 Communicated effectively including listening and talking with respect					
2 Offered creative solutions and accept constructive criticism					
3 Spent time and worked hard to finish the difficult parts of the project					
4 <i>Project N Motion video learning:</i> Was present in all the sessions, learned and helped other team members to learn MSP, and applied his/her MSP knowledge to the project					
Average					

- All peer evaluations in this class will be kept *strictly confidential*.
- Please be honest and truthful in your evaluation of your team members. We want you to maintain a strong ethical approach toward evaluation of your peers, since you will be asked to do the same in the real world projects.
- Email your completed form to the TA on time. If you fail to deliver your peer evaluation on time, a zero will be assigned to your own evaluation score.

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Academic Conduct

Plagiarism – presenting someone else’s ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in *SCampus* in Section 11, *Behavior Violating University Standards* <https://scampus.usc.edu/1100-behavior-violating-university-standards-and-appropriate-sanctions>. Other forms of academic dishonesty are equally unacceptable. See additional information in *SCampus* and university policies on scientific misconduct, <http://policy.usc.edu/scientific-misconduct>.

Discrimination, sexual assault, and harassment are not tolerated by the university. You are encouraged to report any incidents to the *Office of Equity and Diversity* <http://equity.usc.edu> or to the *Department of Public Safety* <http://adminopsnet.usc.edu/department/department-public-safety>. This is important for the safety of the whole USC community. Another member of the university community – such as a friend, classmate, advisor, or faculty member – can help initiate the report, or can initiate the report on behalf of another person. *The Center for Women and Men* <http://www.usc.edu/student-affairs/cwm/> provides 24/7 confidential support, and the sexual assault resource center webpage <http://sarc.usc.edu> describes reporting options and other resources.

Support Systems

A number of USC’s schools provide support for students who need help with scholarly writing. Check with your advisor or program staff to find out more. Students whose primary language is not English should check with the *American Language Institute* <http://dornsife.usc.edu/ali>, which sponsors courses and workshops specifically for international graduate students. *The Office of Disability Services and Programs* http://sait.usc.edu/academicssupport/centerprograms/dsp/home_index.html provides certification for students with disabilities and helps arrange the relevant accommodations. If an officially declared emergency makes travel to campus infeasible, *USC Emergency Information* <http://emergency.usc.edu> will provide safety and other updates, including ways in which instruction will be continued by means of blackboard, teleconferencing, and other technology.

EMERGENCY PREPAREDNESS/COURSE CONTINUITY IN A CRISIS

In case of a declared emergency if travel to campus is not feasible, USC executive leadership will announce an electronic way for instructors to teach students in their residence halls or homes using a combination of Blackboard, teleconferencing, and other technologies. See the university’s site on [Campus Safety and Emergency Preparedness](#).