ISE 515 – Engineering Project Management (4 Units)
Course Syllabus – Jan. 04, 2024
Semester: Spring 2024, Sections: 31505D (On Campus) & 31705D (DEN)
Wednesdays 4:00 pm - 7:50 pm
Room: OHE 136

Instructor: Ali Nowroozi
E-mail: nowroozi@usc.edu

CP #1: Tanvi Chimte
E-mail: chimte@usc.edu

In Person: Wed. 2:30 pm–3:30 pm
Virtual meeting (Zoom)
App. email to CP at least 48 hours prior

CP #2: Niharika Prashanth
E-mail: nprashan@usc.edu

In Person or Virtual meeting (Zoom)
App. by email at least 24 hours prior

Catalog description:
Methods, processes, and tools for managing projects to create engineered systems. Project management; engineering economics; risk management. Industry-drawn large-scale engineering case studies. Team project presentations.

This course is designed for engineering graduate students interested in learning how to manage engineering projects.

Society today depends on many engineered systems – complex ensembles of capability, interconnected to provide some benefit not achievable by the individual components. Examples include air traffic control and scheduling, medical systems that optimize care and cost, the power grid that integrates many sources of energy to provide continuous electric service (even in the presence of disruptions and failures of components), systems that coordinate the supply chain of businesses to ensure continuous availability of desired products while also reducing waste, and so forth. It is not an exaggeration to say that society as we know and expect it could not exist without such systems, which provide safety, reliability, and affordability for many critical products and services.

Such systems are among the most complex artifacts ever created by humans. And each such project needs a project manager, someone who will lead the project to a successful conclusion.

Of course, there are also many smaller projects, of varying sizes and degrees of complexity. They all need project managers, too.

This course introduces the subject of learning to be such a project manager. The students will learn a set of guidelines, objectives, techniques, practices, and tools that can help the students understand how to perform the role of an engineering project manager.

This course, however, is not intended to prepare the student for any particular project management certification exam.

Primary Objective: This course provides a framework for understanding project management basics, its tools & techniques, its behavioral aspects, and its place within the organizational context. You will develop a structured knowledge of project management from a managerial perspective (not just mechanistic, and not just organic, but an integrative perspective). We will go through the project life cycle, from inception to completion. Through the course assignments, case studies, and projects, we will...
get familiar with project manager’s challenges and paradoxes as a manager and as a leader; you will learn how to use the PM tools and techniques properly and adequately AND how to develop proven leadership attitudes to better lead and manage the project. You will learn, how to effectively play the chaos game between three primary project objectives; scope, cost, and schedule, as well as other less tangible, less immediate, but equally (or sometimes more) important objectives, and how to align them with the corporate strategic objectives and grand vision, as an effective project manager and corporate leader.

This course was originally designed to familiarize the students with Traditional Project Management (TPM) approach which is suited for projects with relatively well-understood voice of customer and clearly defined scope of work at the initiation stage. However, with the understanding that projects in the engineering world (six-sigma, R&D, software development, etc.), rarely fall within this category, I have gradually enhanced my emphasis on contemporary project management philosophy through the past few years (categorically labeled as “Agile” or APM). The 11th edition of Meredith, et al. (our textbook) also provides a good coverage of APM concepts and techniques. Therefore, I started teaching both philosophies recently. we will learn the applications, benefits, and limitations of both philosophies and how any project falls somewhere on the TPM ☯ APM continuum and how they complement each other to manage any project of any nature and size, effectively.

Our **unchangeable Core Values** (juxtaposed with ISE Core Values):

<table>
<thead>
<tr>
<th>Creativity (Critical Thinking &amp; Brainstorming)</th>
<th>Open Forum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paradoxical blend of Boldness &amp; Humility</td>
<td>Care, collectivity, assistance, patience</td>
</tr>
<tr>
<td>Candor (Vulnerability &amp; Personal Accountability)</td>
<td>Accountability, consideration</td>
</tr>
<tr>
<td>Drive (Passion for Self-learning)</td>
<td>Commitment to excellence</td>
</tr>
</tbody>
</table>

Our **Permission-to-play values** (Ref. The advantage, Patrick Lencioni):

- Academic integrity, Personal accountability, Information confidentiality and
- Care, collectivity, assistance, patience
- Accountability, consideration
- Commitment to excellence

Students who share our core values as their guiding principles will enjoy their experience and add value to everyone’s experience. Students who do not share the above permission-to-play values, do not meet the minimum requirements for this course and are advised to drop the course and seek academic integrity training immediately!

Textbooks & Software:

**Required Text book:**


**Required Software:** Microsoft ® Project: The course will utilize Microsoft Project software.

- Microsoft® Project is available at various USC computer labs (ECC, ITP, RTH109, RTH 115). You can access the USC network remotely and run the program (see the instructions attached).
- One Agile project management software of your project team’s choice, see the examples below.

*Note: This is not a software training course and the students are expected to learn this program (and/or other needed software packages) on their own. Although, we will try to arrange for as many tutoring sessions and team consultations as time allows, limitations of these trainings shall not constraint the students from learning the program to the extent needed to complete their course assignments.*
Support Readings (NOT REQUIRED):


Optional Software packages:

1. Jira Software by Atlassian (www.atlassian.net/jira) is a contemporary project management software. Students are encouraged to learn this software in practical sense and in advance as an option to use for their term project.

2. Asana (https://asana.com) is another contemporary project management software, comparable to Jira with different capabilities and limitations. Again, students are encouraging to play around with this software early on in the course and evaluate it, among other options, to use for the agile portion of their term projects.

3. Monday.com (www.monday.com) is a user-friendly and intuitive app which can be used by anyone with minimum PM knowledge. It is also mobile-friendly, allowing users manage their work on the go. It has features of both traditional and contemporary project management techniques, but it is not robust enough for large-size projects in either category. You can play around with this app at the initiation and planning phases of the term projects to get acquainted with basics of project management, as a novice. Other similar tools with less or more capabilities include: Smartsheet, Wrike, hotspot, and many more… I would not call these TPM nor APM tools, but an “Ad-hoc PM” tool for intuitive, less sophisticated, project management.

Course Material: Handouts, all topics discussed in lecture by the instructor, guest speakers (if any), other students, and all related handouts.

Study Guidelines: The lectures and class discussions are not limited to reading assignments. Merely reading the textbook does not guarantee students’ successful completion of the course. The instructor’s Class notes are not sufficient either and all students are responsible to take their own notes in the class and use them to study and elevate their understanding of the reading materials and the class discussions.
Performance Evaluation:

1. Class Participation & Workshops 100 (10%) ➔ Instructor’s assessment
2. Homeworks 300 (30%)
3. Exams 300 (30%)
4. Term Project(s) 300 (30%)
Total 1000 (100%)

1. CLASS PARTICIPATION:

i. 10 points: All students to submit a student profile questionnaire and propose their own term project idea (a Project management Plan will be developed within the semester timeline) **within the first week** of joining the class. You will get full credit upon on time submittal. This assignment is not graded, but it will not be accepted after the deadline (with or without penalty).

ii. 30 points: Students who are not talkative but attend the workshops effectively can earn up to 30 points. DEN students who are unable to join the workshops live due to time zone restrictions will earn these points by commenting on the workshops, the same way they make comments on the class discussions, i.e. through the Discussion Board (within the following week).

iii. 60 Points: **ON-CAMPUS (OC)** students are expected to **attend and participate** in as many class discussions as possible. **Participation** in this class means **active contribution to in-class discussions, debates, Q&A on presentations, etc.** If you do not talk in this class, you will not earn any points in this category (except for the DEN students who cannot attend and comment on the discussion board, see next bullet). **Attending the workshops and talking to your teammates within the workshop does not count towards this category** (see the previous bullet). While we do not take attendance in this course (with an exception), OC students who miss several sessions will also miss the opportunity to improve their learning experience and contribution and, therefore, their class participation grade could be adversely impacted.

iv. 60 Points: DEN students have the following options to participate (sorted by preferred method):
   a. Local DEN students are **strongly encouraged** to occasionally join us in person, but not required.
   b. Upon availability, you can participate in class discussions **remotely** and get credit for that.
   c. Students can make comments on the lectures and class discussions, on the **discussion board**, under the appropriate lecture forum, **within one week of the lecture**.
   d. Text messaging through WebEx is not the most effective way of communication, but such comments will be addressed as practically as possible.

By registering in this course, **students are accepting the instructor’s judgement** and will not debate on their class participation grades. Nevertheless, once the class participation grades are posted, students will have a chance to **provide evidence** of their participation, if they believe some aspects of their participation were not captured accurately. This, however, shall be only limited to providing dates & times of the student speaking in the class (or through the Chat Window) and/or teammates’ confirmation of effective contribution to workshops. Students are encouraged to record the time and date of their in-class contribution to discussions, debates, Q&A, etc. as the course progresses, so they can share with the instructor if needed. The grade improvement is limited to the maximum points allowed for the class participation category for which the evidence was provided (items i – v.).

Students who do not participate in any of the open discussions will not receive any class participation points in category iv (v for DEN), even if they attend all classes. **Term project activities are not considered as class participation.** Attending the workshops can earn up to 30 points for its own category

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3 Attendance will be taken only at the students’ presentation sessions. **All OC students are required to attend those sessions.**
of class participation (iii), as stated above. Talking to teammates (term project or workshop) does not earn any additional class participation points.

All students to avoid using the discussion board to ask questions from the instruction team or to discuss personal/non-course related topics (exception: the welcome page of the course site is designed for posting personal information). All questions should be emailed first to the teaching assistant / or course producer briefly and then, if not responded to in a timely manner (see footnote 1 in page 1), to the instructor.

2. Case Studies / Homeworks consist of 4@75 Points Each. They may be real-life (or simulated) business cases, or some may be in the form of homework assignments. You will be expected to work on these assignments individually. DEN students may post their comments on the case study via DEN Discussion Board, after the Case Study final submittal deadline. The case studies MAY NOT be discussed before the FINAL submission deadline (including the grace period with penalty, see below). The CASE STUDIES due dates are shown in the attached schedule.

ALL CASE STUDIES / HOMEWORK ASSIGNMENTS MUST BE PERFORMED INDIVIDUALLY. NO “TEAMWORK” IS ALLOWED HERE! Students must attempt to use their intellect, analyze the case comprehensively, and answer the questions in their own words. Copying form other sources without citation is plagiarism and I HAVE and WILL take disciplinary action in such cases. In cases of necessity, appropriate quotation is required. However, merely repeating the lecture and textbook materials without proper and direct connectivity to the case study will not earn you any credit. The students, who miss the deadlines and submit the case studies up to one week late, will be graded based on 80% of that assignment’s total points. No assignment will be accepted afterwards.

3. Two Exams will be given on with the following points distribution:

<table>
<thead>
<tr>
<th>Exam Type</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIDTERM (Take-Home)</td>
<td>150</td>
</tr>
<tr>
<td>FINAL EXAM (Optional)</td>
<td>150</td>
</tr>
<tr>
<td>Total EXAMS</td>
<td>300</td>
</tr>
</tbody>
</table>

The exams will cover the materials presented up to and including the preceding lecture. Points will be assigned to each section of the exam. Partial credit will be awarded according to work shown, unless explicitly stated otherwise. No re-takes will be allowed. No make-up exam will be given.

The Midterm Exam is take-home and will be managed as homework and its timing is shown in the “Assignments and Due Dates” sheet. Like all homework and case assignments, teamwork is strictly prohibited on this assignment.

After the last class, students’ pre-final GPA will be announced. Students who are happy with the GPA they received may choose not to take the final exam and that will be their final GPA. Students who feel they want to improve their GPA can choose to take the final exam.

Grades are not negotiable in this course. If, after verification of all grade categories by the instructor, a student’s pre-final grade is on the borderline, he/she is encouraged to take the final exam to improve his/her grade, instead of requesting reconsideration of the grades on the completed work. Such reconsideration, only if justified, can happen after the final exam.

Students, who have a GPA of 3.00 or less and/or are on probation, must meet the professor before add/drop deadline to evaluate their ability to complete this course successfully. Students who are challenged to graduate and this is an elective course for them, should reconsider their decision.

4. Students start working on their TERM PROJECT after SESSION 2. The grading structure is provided below:
The term project criteria and its grading structure will be provided in detail in SESSION 2. Term project Initiation and Planning presentations are scheduled for SESSION 7 and final term project presentation and discussions are scheduled for the LAST TWO SESSIONS. Teams (and individuals within teams) will be evaluated by the instruction team based on the quality of their work, their ability to present and educate the audience, and their ability to rationalize and defend their conclusions. **ALL members of the presenting team should attempt to contribute to the discussion and to the Q&A.** Term project grades are ultimately based on the instructor’s judgement and are not negotiable.

5. **LINES OF COMMUNICATION:**

   All students must follow the following communication protocol set forth by the Instruction team:

   - **Assignments** must be submitted in the exact format instructed by the CP and/or the instructor. You will be receiving an email from the course producer proving assignments submittal guidelines. Assignments that do not follow submittal guidelines (File type, naming structure, content format, etc.) will NOT be graded. Email submittals are NOT acceptable, unless specifically and exceptionally agreed, in advance, or if it is due to a technology glitch (see below).

   - All students are responsible for proper communication and timely transfer of their assignment files. All students to make sure all their communication lines are open, and they can properly upload their files, during the FIRST WEEK of their registration in this course. In the exceptional case of possible glitches in the D2L system, *if it can be proven*, a student may submit the assignment by email. In this case, the “Date Modified” attribute of the submitted file will be considered as the submittal date.

   - All students are responsible to get proper training with the D2L system. If you need to schedule a training, please contact DEN staff directly to arrange for a training session as soon as possible. Out Course Producers can help you contact them, if needed.

   - **Written Communications:**
     (Please refrain from writing emails longer than one paragraph, 3 lines)
     o All written communications with the instructor and/or the CP must be through emails, and Both should be included for all course related matters. Personal private matters impacting a student’s performance in this course must be reported to the instructor ONLY.
     o Short and to the point emails are normally answered in 36 hours. **Long emails may not be answered!** Long emails are not effective means of communication, since information could be misread and misinterpreted. I typically do not read long emails and invite the students set up a meeting for such conversations. So you better save your time and just request a meeting. *Extra-curricular* technical discussions are exceptions to this norm.
     o For sensitive matters (especially personal), Emails are not appropriate. Again, please request a meeting (with the instructor only) and we can discuss your issue face-to-face or on Zoom.
     o If you are interested to debate on a course topic, you can post your subject on the discussion board as explained above.
     o You are encouraged to meet the instruction team as often as you please to discuss the course materials, term project progress, and logistics. Term project meeting should preferably include all members, if possible. Zoom meetings are preferred (especially for term projects), we can have everyone join and share their screens for more effective and productive brainstorming.
     o Your posts on the DISCUSSION BOARD must be ONLY technical and course related and can be as long as you want. We will not answer any questions on the DISCUSSION BOARD (technical

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4 DEN students who are unable to participate in their team presentation due to justifiable restrictions (time zone difference, conflict with workhours, etc.) must inform the instruction team by session 4 and get their approval and must provide recording of their presentation to a teammate to present for them. Any student’s absence in the final presentation without coordination with the instructor, and his approval, will cost the student’s individual grade in the term project 50 points and the team’s Final Presentation Grade 10 points.
or logistical). This medium is for **technical discussions ONLY** among the students and we *may* comment on them occasionally during the semester. We will try to discuss them at the open discussion session (last class), as time allows. DEN students are encouraged to attend.

All due dates are provided in the next page: “Assignments & Due Dates”. The due dates may be changed as the course progresses, at the instructor’s discretion only (per consultation with the CP). Students must take the exams on the exam dates and times. Exceptions only include special cases such as sickness, time zone difference (for DEN students), or such unavoidable circumstances. **PLEASE DO NOT SCHEDULE ANY TRIPS ON THE EXAM DATES. PERSONAL OR BUSINESS ENGAGEMENTS DO NOT JUSTIFY EXAM DATE & TIME CHANGES.**

**Final Grades:**
Course FINAL GRADES will be determined by the distribution of point totals for the class. “Natural groupings” will be used to assign letter grades. The highest scoring group will receive A’s, the next group is the A-’s, and so on. A single point will not be the difference between any two letter grades. A “gap” must exist to create a grade boundary. Only if there are no gaps, conventional GPA brackets will be used. **Students are responsible to understand the process clearly as their actual performance may differ from their perceived performance which is conventionally based on percentages only.**

This is a qualitative management course and students’ performance assessment is based on the instructor’s judgement. Each student’s performance data combined with the instructor’s personal assessment of his/her level of effort and learning experience will determine that student’s overall grade. Ultimately, the instructor will be the sole judge of all students’ incremental and final GPAs based on personal experience. The grades are NOT negotiable and long emails debating on this topic **will not be responded to**. Please note that by taking this course, you are giving the instruction team full authority to evaluate your performance based on their judgement. Nevertheless, if a student has strong evidence that the evaluator (the instructor or the CP) may have mistakenly omitted a portion of his/her response, a **short one-sentence email** to the CP is sufficient to get our attention.
### Assignments and Due Dates:

**Note:** The assignment due dates mentioned in the syllabus are subject to change as per the instruction team’s discretion. Kindly make sure to check the logistics slide of every lecture to ascertain the submission dates.

<table>
<thead>
<tr>
<th>SESSION</th>
<th>DATE</th>
<th>TOPIC</th>
<th>ASSIGNMENTS DISTRIBUTION (Typically, the Friday of the week)</th>
<th>ASSIGNMENTS DUE</th>
<th>REFERENCES (1-4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Jan. 10</td>
<td>Course Management</td>
<td>Introduction to Project Management</td>
<td>Students’ profile questionnaire, week of joining the class</td>
<td>HOMEWORK/CASE #1</td>
</tr>
<tr>
<td>2</td>
<td>Jan. 17</td>
<td>The Project in the Organizational Select, manage, and lead projects, Team dynamics</td>
<td>Term Project Guidelines &amp; Teams</td>
<td>Students’ profile, questionnaire due Jan. 14</td>
<td>HOMEWORK/CASE #1</td>
</tr>
<tr>
<td>4</td>
<td>Jan. 31</td>
<td>Scheduling &amp; Resource allocation</td>
<td>TPM: CPM, Resource loading &amp; leveling</td>
<td>Project Charters (1 Sheet PDF File) EXCEL TEMPLATE</td>
<td>HOMEWORK/CASE #2</td>
</tr>
<tr>
<td>7</td>
<td>Feb. 21</td>
<td>Project Initiation &amp; Planning Presentations, Mission: Sell the project to the investors!</td>
<td>Project Charters (1 Sheet PDF File) EXCEL TEMPLATE</td>
<td>HOMEWORK/CASE #3</td>
<td>All I&amp;P Presentation due</td>
</tr>
<tr>
<td>8</td>
<td>Mar. 06</td>
<td>Project Controls</td>
<td>TPM: Updating, Recovery</td>
<td>Take-Home Midterm (150 Points)</td>
<td>HOMEWORK/CASE #3</td>
</tr>
<tr>
<td>9</td>
<td>Mar. 20</td>
<td>Integrated Change Management</td>
<td>TPM: What-if (Fragnet) Analysis</td>
<td>HOMEWORK/CASE #4</td>
<td>HOMEWORK/CASE #3 (75 points)</td>
</tr>
<tr>
<td>10</td>
<td>Mar. 27</td>
<td>TPM: Project Auditing</td>
<td>TPM: Continuous Client involvement</td>
<td>HOMEWORK/CASE #4 (75 points)</td>
<td>HOMEWORK/CASE #4</td>
</tr>
<tr>
<td>11</td>
<td>Apr. 03</td>
<td>Other PM Techniques</td>
<td>TPM &amp; APM continuum</td>
<td>HOMEWORK/CASE #4 (75 points)</td>
<td>HOMEWORK/CASE #4</td>
</tr>
<tr>
<td>12</td>
<td>Apr. 17</td>
<td>Final Exam – Optional</td>
<td>4:30 – 6:30 pm (150 Points)</td>
<td>In Accordance with USC Final Examinations Schedule Guideline:</td>
<td>HOMEWORK/CASE #5</td>
</tr>
<tr>
<td>13</td>
<td>Apr. 24</td>
<td>Term Project Discussion (50% of teams)</td>
<td></td>
<td></td>
<td>HOMEWORK/CASE #5</td>
</tr>
<tr>
<td>14</td>
<td>May 01</td>
<td>Final Exam – Optional</td>
<td></td>
<td></td>
<td>HOMEWORK/CASE #5</td>
</tr>
</tbody>
</table>

* **TPM:** Traditional Project Management, **APM:** Contemporary Project Management

**Outreach DEN Students**

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5. This is a general road map to the course. As you will learn, depending on the general class absorptive capacity, we may change the pace of the course to keep sufficient emphasis on the depth, as well as breadth of the content, within the context of the course. Students are responsible to coordinate with the instruction team to prepare for each class, as the content of each lecture may change as the pace of the course changes.

6. Students who register late will be assigned this task upon registration and will have one week to turn it in.
This course is conducted in outreach format, meaning, it is available to off-campus students via video recording and streaming. Students in on-campus or off-campus receive the same instruction and perform the same tasks.

**Language Support Systems**
USC provides support for students who need help with scholarly writing. 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.

**Emergency Services**
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 D2L, blackboard, teleconferencing, and other technology.

**Statement for Students with Disabilities**
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 the professor(s) as early in the semester as possible. DSP is located in STU 301 and is open 8:30 a.m.–5:00 p.m., Monday through Friday. The phone number for DSP is (213) 740-0776.

**Academic Integrity**
USC seeks to maintain an optimal learning environment. The Department of Industrial and Systems Engineering adheres to the University’s policies and procedures governing academic integrity as described in Scampus, the Student Guidebook. General principles of academic honesty include the concept of respect for the intellectual property of others, the expectation that individual work will be submitted unless otherwise allowed by an instructor, and the obligations both to protect one's own academic work from misuse by others as well as to avoid using another's work as one’s own. Scampus, contains the Student Conduct Code in Section 11.00, while the recommended sanctions are located in Appendix A. Students will be referred to the Office of Student Judicial Affairs and Community Standards for further review, should there be any suspicion of academic dishonesty. The Review process can be found at http://www.usc.edu/student-affairs/SJACS. All students are expected to understand and abide by these principles, as they will be strictly enforced throughout the semester.

Note: This syllabus is subject to change.

We take academic integrity very seriously. Since this is a qualitative course and students should use their creativity to respond to most of the questions, it will be very easy to identify information borrowed from others (other students, textbooks, articles, etc.) without proper quotation. If more than one sentence is identified to closely mimic a source (or another student’s response) on a qualitative & creative question, disciplinary action will be taken on **all** students involved.