



COURSE OUTLINE Spring/Summer 2019

	Date	Initials
Prepared by Instructor	April 23, 2019	N.N.
Approved by Head	May 2, 2019	A.S.

1.0 CALENDAR INFORMATION

ENGG 515 Project Management for Engineers

This course covers the application of project management principles such as planning, scope development, design, procurement, construction, commissioning and start-up of engineering projects. Aspects of a current major engineering projects and case studies will be reviewed.

Course Hours: 3 units; H(3-2T)

Academic Credit: 3

Calendar Reference: <http://www.ucalgary.ca/pubs/calendar/current/engineering.html#10174>

2.0 LEARNING OUTCOMES AND GRADUATE ATTRIBUTES

The Project Management for Engineers course is designed to provide engineering students with a basic foundation in the principles of project management tempered with some of the emerging techniques and processes that are being developed in response to the rapidly changing engineering/business environment in which most engineering projects take place.

Students will become familiar with project-gated modules for delivering engineering projects. They will learn how to use Project Management tools during the phases of a project. They will become familiar with a range of techniques commonly used during the project life cycle, from project initiation to closeout and lessons learned.

This course will examine the interdisciplinary nature of projects and the external factors that affect project success such as regulatory, environmental and global issues. Time will be spent understanding the role and skills of the project manager/engineer, as well as on the interaction of the project team and stakeholders. At the end of this course, students will be able to:

1. Learn how to plan, define and manage an engineering project from inception to completion
2. Learn about, and implement, a rigorous project management methodology
3. Understand how to build and sustain project teams
4. Use project management techniques in planning and developing projects and in to solve problems in the engineering environment

3.0 TIMETABLE

LECTURE SECTION	SESSION	DAYS OF THE WEEK	START TIME	DURATION (minutes)	LOCATION
L01	Spring	MWF	9:30	140	UMalaga, Spain (room 1.26 IE Building)
T01	Spring	MWF	2:00	150	Malaga, Spain (Res)

4.0 COURSE INSTRUCTORS

SECTION	NAME	PHONE	OFFICE	EMAIL
L01	Dr. Nashaat Nassar			nassar@ucalgary.ca
T01	Dr. Nashaat Nassar / Ms. Leidy Tatiana Montoya			nassar@ucalgary.ca

5.0 EXAMINATIONS

There will be a final examination in this course on June 3rd from 1:00 to 3:00 in room 1.26 in Industrial Engineering Building at University of Malaga in Spain.

6.0 USE OF CALCULATORS IN EXAMINATIONS

You **must** use one of the approved Schulich School of Engineering calculators for exams. These calculators are the Casio 260 fx Solar, the Casio 300 MS, and the Texas Instruments TI30XIIS. Please note that no laptop computers, tablets, personal digital assistants, cellular phones, or other electronic devices will be permitted during exams.

7.0 FINAL GRADE DETERMINATION

Your final grade in this course will be determined on the components shown in the table.

Component	Learning Outcomes Evaluated	Weight
Class Participation, Log Book (individual)	1, 3	10%
Team Project (group), PM Weekly Reports	1, 2	35%
Case Study (group)	1, 4	20%
Final Exam	1, 2, 4	35%

Note that these components will address the learning outcomes listed in section 2 of this course outline. It is not necessary to earn a passing grade on the final exam in order to pass the course as a whole.

Conversion from a score out of 100% to a final letter grade will be done using a scale determined after the final examination has been marked. This allows for the creation of a scale appropriate to the relative difficulty of the term work and the final examination.

Letter Grade	Total Mark (T)	
A+	T ≥	94.00%
A	88.00% ≤ T <	94.00%
A-	82.70% ≤ T <	88.00%
B+	78.10% ≤ T <	82.70%
B	73.30% ≤ T <	78.10%
B-	69.30% ≤ T <	73.30%
C+	66.10% ≤ T <	69.30%
C	62.10% ≤ T <	66.10%
C-	58.90% ≤ T <	62.10%
D+	55.40% ≤ T <	58.90%
D	50.00% ≤ T <	55.40%
F	T <	50.00%

8.0 TEXTBOOK

There is no required textbook for this course. Students are expected to take their own notes during the lectures and tutorials. Any material discussed in lectures and tutorials will also be part of the exam. Exams will be based on course notes.

The textbooks listed below (available online) are not required but can be used for extra exercises and examples. In case of discrepancies between course notes and textbook, the course notes will always prevail.

Title	<i>Don't Park Your Brain Outside: A Practical Guide to Improving Shareholder Value with SMART Management</i>
Author(s)	Francis T. Hartman
Edition, Year	<i>1st Ed., 2010</i>
Publisher	Project Management Institute (PMI)

Title	<i>Risk Navigation Strategies for Major Capital Projects</i>
Author(s)	<i>Asbjørn Rolstadås, Per Willy Hetland, George Farage Jergeas, Richard E. Westney</i>
Edition, Year	<i>2011</i>
Publisher	<i>Springer</i>

9.0 COURSE POLICIES

9.1 Advising Syllabus

All Schulich School of Engineering students and instructors have a responsibility to familiarize themselves with the policies described in the Schulich School of Engineering Advising Syllabus available at: <http://schulich.ucalgary.ca/undergraduate/advising>

9.2 Emergency Evacuation/Assembly Points

In the event of an alarm sounding, all classrooms and labs must be evacuated immediately. Please respond to alarms promptly by leaving the building by the closest available exit. Faculty and students must remain outside the building until the 'all clear' has been given by a Fire Marshall. In case of emergency, call +34 607 21 10 26 (English – Dr, Jose (Pepe) Aguado) or +34 637 46 40 99 (University of Malaga, Security).

10.0 ADDITIONAL COURSE INFORMATION

10.1 General Information

- (i) The lecture part of this course has a no-laptop policy for note taking. You are encouraged to bring your laptops to class in order to access case studies and online material. You are also encouraged to bring your laptops to the tutorials. Please make sure you install Microsoft Excel (student version available on Schulich websites) on your computers.
- (ii) Assignments and projects will be due at times and on dates to be conveyed to you once the course begins. Late submissions will not be considered for grading, except for reasons outlined in the university calendar.
- (iii) Punctuality, professionalism, and attendance are expected from all students.
- (iv) Assignments may require the use of MS Excel software. You are expected to familiarize yourself with, and take responsibility for, learning the software.
- (v) Tutorial sessions will be used to answer questions or address problems regarding the team project and assignments.
- (vi) Attendance is mandatory for all classes and tutorials. You are responsible to take notes during all sessions. If you miss a session for any reason other than those indicated in the calendar, the responsibility for covering the missed material will be on you.

10.2 Lecture Topics

The schedule and topics listed in the table below are tentative and subject to change.

Period	Topics
Week 1	<p>Introduction to Project Management and Engineering Projects</p> <ul style="list-style-type: none"> ○ Project examples ○ Projects, programs, portfolios ○ Project Management Definition ○ The role of the project manager ○ Projects, programs, portfolios ○ Overview of the project life-cycle <hr/> <p>Stage 1 – Project Definition</p> <ul style="list-style-type: none"> ○ State the Problem ○ Identify project goal, objectives, risks, feasibility etc. ○ Identify success criteria ○ Identify resources, stakeholders ○ Develop project scope ○ Develop project charter ○ Develop project proposal
Week 2	<p>Stage 2 – Planning</p> <ul style="list-style-type: none"> ○ Overview of the Engineering phase ○ Process Groups ○ Identify project activities ○ Identify Regulatory regime, Environmental concerns, Stakeholder impact ○ Work Breakdown Structure (WBS), RACI charts ○ Sequence activities, schedule, cost estimating, contingency ○ Interactive Planning (IAP) ○ Identify risk types, mitigation and management – Risk Register ○ Project Execution Plan (PEP)
Week 3	<p>Stage 3 - Organize</p> <ul style="list-style-type: none"> ○ Leadership, the selection of Project Manager and the Project execution team ○ Organize the project – Org chart ○ Establish work processes, standards and procedures ○ Develop work packages ○ The Procurement Phase ○ Team Communications ○ Resource allocation ○ Constructability ○ Building and sustaining teams

	<p>Stage 4 – Control and Monitor</p> <ul style="list-style-type: none"> ○ Establish Progress Reporting system ○ Schedule control ○ Cost control and productivity reports ○ Change orders ○ Status reports ○ Team reports ○ Variance reports ○ Update risk register ○ The Construction Phase
Week 4	<p>Stage 5 – Project Close</p> <ul style="list-style-type: none"> ○ The Commissioning and Start-up Phase ○ Gaining approval ○ Client acceptance ○ Lessons Learned ○ Document Control – As built drawings ○ Issue Final project report ○ Technical Review ○ Project ad business performance review <p>Agile Project Management (Time permitting)</p> <ul style="list-style-type: none"> ○ Definition ○ Lean Agile PM ○ Life cycle ○ Iterative and Adaptive PM

10.3 Class Participation

This will be an interactive course where part of the learning is expected to come through sharing of practical experiences from working on projects. Therefore, students will be encouraged to ask questions during the class on elements of project management. Students are also expected to maintain a daily log book on the lectures, questions and other activities taking place in class. Three takeaways from the student’s perspective are to be recorded in the student’s log book.

10.4 Team Project

Teams of 3-4 students will work on the class project. It will be a social development project which does not have to be implemented (project details will be provided by the Instructor). Application of project management tools learnt in class and analyses are expected to be presented in the report. Presentation of schedules, tables, sketches, diagrams, heat maps (for risk) and others must also be included as needed. The project will be graded based on, among other things, application of project management principles and tools, creativity and a group presentation.

Two project-related deliverables will be required during the course. Each deliverable will be a well-structured PDF document that includes a detailed analysis of the project, and the application of each step of project management that has been discussed to date in the lectures. Discussion, alternative approaches, problems and possible solutions, meeting minutes, team performance evaluation and team feedback must be included in the document. Additional requirements for these deliverables will be discussed in class.

The project team will have a rotating Project Manager (PM) for each week. The PM will have the responsibility to provide a written one-page summary weekly report highlighting how the project is advancing (type-written and signed on the cover page by each project team member) This report is to be discussed at the project group meeting with the Instructor to be scheduled on Fridays. 2 points will be deducted if no report is presented in class by Friday each week.

10.5 Case Study

Examples of successful and non-successful projects will be analysed via case studies. A case study will be assigned to each group of 2 students. A 15-minute presentation will be required. The presentation must be accompanied by slides in PowerPoint or PDF. The slides will act as the report of the case study and must be submitted at the end of the class presentation.

The case study will be graded looking at both individual contributions, and also from a team perspective. Individual and team components of the mark will be discussed in class. The same case study may be distributed to several teams. Discussion about the case study is not permitted between teams before the presentation, but is encouraged in the discussion session after the presentations are completed. One of the following topics will be selected as a case study:

- La Sagrada Familia church
- The Sidney Opera House
- Berlin Brandenburg Airport