Project Management and Engineering Cases  
CEE 3348a Department of Civil and Environmental Engineering  
Course Outline – Fall 2021 (in Class)

Instructor

Kevin McGuire, M. Eng., P. Eng. Kmcgui5@uwo.ca

Description

This course introduces students to the planning, controlling and management of civil engineering projects. The course covers basic elements of Construction Project Management - the science and engineering of managing and optimizing space, time and resources on construction projects. Through studying and analyzing actual case studies students will be exposed to the complex and multidisciplinary nature of the decisions faced by civil engineers on a daily basis in real world applications.

The general objectives are for the student to become able to:

- Apply knowledge of planning, executing and controlling to the management of construction projects;
- Utilize professional planning and scheduling software to create, schedule and effectively optimize a project activities and resources;
- Identify, formulate, analyse and plan project main elements, specifically time, cost and quality while working individually or functioning on a team;
- Develop an awareness of construction project management from actual life on-site situations;
- Examine, in some depth, the specific management processes applied in utilizing construction resources on the project.
- Recognize the need for life-long learning to keep abreast of new planning and construction methods, enhance one’s abilities as a construction project manager, and maintain one’s professional competence.
- Develop decision making skills based upon case histories including those involving project management and sustainable development.

Prerequisite(s): Completion of second year of the Civil Engineering program or third year of the Integrated Engineering program

Course Content: Shown as lessons 1 through 11 including learning outcomes

Lesson 1 – Introduction to Project Management  
Lesson 2 - Introduction to Construction and Estimating  
Lesson 3 - Bidding Law and Bonds  
Lesson 4 - Construction Contracts and Delivery Methods  
Lesson 5 – Basic Systems in Buildings  
Lesson 6 - Site Logistics & Lab #3 Overview  
Lesson 7 - Project Planning and Scheduling & Lab #4 Overview  
Lesson 8 - Project Cost Management (Cash Flow) & Lab #5 Overview  
Lesson 9 - Term Project Overview
General Learning Objectives

Note: Attributes are being assessed at a “Developing” level.

E=Evaluate, T=Teach, I=Introduce; (I) = Introduction, (D) = Developing, (A) = Advanced level

<table>
<thead>
<tr>
<th>Knowledge Base</th>
<th>E</th>
<th>Engineering Tools</th>
<th>T</th>
<th>Impact on Society</th>
<th>I</th>
<th>Problem Analysis</th>
<th>T</th>
<th>Teamwork</th>
<th>E</th>
<th>Impact on Society</th>
<th>I</th>
<th>Ethics and Equity</th>
<th>E</th>
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<tbody>
<tr>
<td>Investigation</td>
<td>T</td>
<td>Communication</td>
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<td>Economics and</td>
<td>E</td>
<td>Life-Long Learning</td>
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<td>Design</td>
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Lecture Schedule

Lectures with voice over will be posted to the course OWL website at least a week before each scheduled lecture. In lectures we will primarily go over curriculum materials. Also, information concerning each laboratory will be discussed. At these times, objectives will be reviewed for completing each laboratory. Students are strongly encouraged to attend lectures as attendance will be documented and will go towards the 5% participation mark.

<table>
<thead>
<tr>
<th>Date of Lecture</th>
<th>Time of Lecture</th>
<th>Hours</th>
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<tbody>
<tr>
<td>Thursday Sept. 9th, 2021</td>
<td>6:30 pm – 8:30 pm</td>
<td>2</td>
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<tr>
<td>Thursday Sept. 16th, 2021</td>
<td>6:30 pm – 8:30 pm</td>
<td>2</td>
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<tr>
<td>Thursday Sept. 23rd, 2021</td>
<td>6:30 pm – 8:30 pm</td>
<td>2</td>
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<tr>
<td>Thursday Sept. 30th, 2021</td>
<td>6:30 pm – 8:30 pm</td>
<td>2</td>
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<tr>
<td>Thursday Oct. 7th, 2021</td>
<td>6:30 pm – 8:30 pm</td>
<td>2</td>
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<tr>
<td>Thursday Oct. 14th, 2021</td>
<td>6:30 pm – 8:30 pm</td>
<td>2</td>
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<tr>
<td>Thursday Oct. 21th, 2021</td>
<td>6:30 pm – 8:30 pm</td>
<td>2</td>
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<tr>
<td>Thursday Oct. 28th, 2021</td>
<td>6:30 pm – 8:30 pm</td>
<td>2</td>
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<tr>
<td>Thursday Nov. 4th, 2021</td>
<td>6:30 pm – 8:30 pm</td>
<td>2</td>
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<tr>
<td>Thursday Nov. 11th, 2021</td>
<td>6:30 pm – 8:30 pm</td>
<td>2</td>
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<td>Thursday Nov. 18th, 2021</td>
<td>6:30 pm – 8:30 pm</td>
<td>2</td>
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<tr>
<td>Thursday Nov. 25th, 2021</td>
<td>6:30 pm – 8:30 pm</td>
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<tr>
<td>Thursday Dec 2nd, 2021</td>
<td>6:30 pm – 8:30 pm</td>
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Laboratory Schedule

PMI and PMBoK are marks of the Project Management Institute Inc.
Not all laboratory events are graded. Each graded laboratory assignment will be made available on the Tuesday, the week of each lab meeting, one hour before the laboratory commences. Tuesday lab meetings will be used to answer questions related to the laboratory exercise and to discuss the expectations and required outcomes. Students will have until 9:30 pm the evening of the graded laboratories to complete them penalty free.

<table>
<thead>
<tr>
<th>Laboratory</th>
<th>Meeting Date</th>
<th>Meeting Time</th>
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<tbody>
<tr>
<td>Laboratory #1 (graded)</td>
<td>Tuesday Sept. 25th, 2021</td>
<td>6:30 pm – 9:30 pm</td>
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<tr>
<td>Laboratory #2 (graded)</td>
<td>Tuesday Oct. 5th, 2021</td>
<td>6:30 pm – 9:30 pm</td>
</tr>
<tr>
<td>Laboratory #3 (graded)</td>
<td>Tuesday Oct 26th, 2021</td>
<td>6:30 pm – 9:30 pm</td>
</tr>
<tr>
<td>Laboratory #4 (graded)</td>
<td>Tuesday Nov 2nd, 2021</td>
<td>6:30 pm – 9:30 pm</td>
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<tr>
<td>Laboratory #5 (graded)</td>
<td>Tuesday Nov 9th, 2021</td>
<td>6:30 pm – 9:30 pm</td>
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<tr>
<td>Laboratory #6 (Ungraded Project Consultation)</td>
<td>Tuesday Nov 16th, 2021</td>
<td>6:30 pm – 9:30 pm</td>
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<td>Laboratory #7 (Ungraded Project Consultation)</td>
<td>Tuesday Nov 23rd, 2021</td>
<td>6:30 pm – 9:30 pm</td>
</tr>
<tr>
<td>Laboratory #8 (Ungraded Project Consultation)</td>
<td>Tuesday Nov 30th, 2021</td>
<td>6:30 pm – 9:30 pm</td>
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<tr>
<td>Term Project Submission</td>
<td>Tuesday Dec 7th, 2021</td>
<td>Per Owl</td>
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**Evaluation**

Laboratories:
- Lab 1: 4% (3% for lab, and 1% associated lab exit quiz)
- Lab 2: 4% (3% for lab, and 1% associated lab exit quiz)
- Lab 3: 4%
- Lab 4: 4%
- Lab 5: 4%

Assignment #1 15%
Term Project 35%
Final Assessment Exam 25% (synchronous time limited event in person)
Participation: 5% (based upon full duration attendance to lectures)

Total 100%
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Evaluation Note(s):

1. Term Project: The instructor will be working with Western Facilities Management to schedule hybrid tours of the Ivey building – the subject of the term project. We may not be able to get all students out to Ivey building for a tour due to COVID restrictions, however we will have at least 2 representatives from each group out at site for a review. The remaining students will join the tour virtually and all will have access to a video record of the event.

2. Term Project: Supplementary construction videos will be shared to complement the hybrid tour(s).

3. Students that do not get a chance to review Ivey due to COVID social distancing restrictions, will be invited to tour the Thames Hall renovations to gain an appreciation of many similar construction practices to those that were applied in the building of the Ivey School of Business.

Notes on Projects and Laboratories (papers and reports):

- Must be academic in style and content
- Must have a clear focus
- Must present ideas in a logical and well-thought-out flow
- Arguments, analysis and conclusions must be based on clearly identified research and sources
- Must be in paragraph format
- Must be double-spaced, and typewritten (applies to projects only, not laboratory work)
- Must cite all references from other sources (applies to projects only, not laboratory work)

Grading:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
<th>Description</th>
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<tbody>
<tr>
<td>A+</td>
<td>90-100</td>
<td>One could scarcely expect better from a student at this level</td>
</tr>
<tr>
<td>A</td>
<td>80-89</td>
<td>Superior work which is clearly above average</td>
</tr>
<tr>
<td>B</td>
<td>70-79</td>
<td>Good work, meeting all requirements, and eminently satisfactory</td>
</tr>
<tr>
<td>C</td>
<td>60-69</td>
<td>Competent work, meeting requirements</td>
</tr>
<tr>
<td>D</td>
<td>50-59</td>
<td>Fair work, minimally acceptable</td>
</tr>
<tr>
<td>F</td>
<td>below 50</td>
<td>Fail</td>
</tr>
</tbody>
</table>

How often will the instructor communicate with me?

The instructor will be available to meet every Thursday evening for 2 hours during the scheduled online meetings. Any student may raise any issue at this time without the need for an appointment. Students will note the published schedule included above. Supplemental arranged online meetings are possible, but in worst case, may require several days advance co-ordination.

The instructor will also be available via e-mail. His email can be found on the 1st page of this syllabus. The instructor will check e-mail a minimum of 3 times per week and the students should as well. E-mail will be checked at minimum once per weekend, as well as once early in the work week, and once late in the work week. All e-mails will receive a response. For detailed comprehensive responses, bring forward questions that affect the entire group. These are the preferred type of questions to be brought forward. Detailed questions relating to your work specifically will receive individually tailored responses.

Please feel free to initiate supplementary Zoom meetings with the instructor by sending an e-mail or
The students will not typically have text or telephone access to the instructor although this can be arranged if the necessity arises.

**How do I hand in Laboratories and Assignments?**

All laboratory and Assignment work will be submitted electronically through Owl using the assignment tab in the course area. Failure to meet deadlines without the instructor's written permission will result in a reduction of marks. Labs received after the due date will be reduced 25% per day (including weekends). Except in exceptional circumstances, approved by the instructor before the due date, Labs more than 3 days late will not be accepted and a mark of 0% will be assigned.

**The Use of English**

In accordance with senate and faculty policy, students may be penalized up to 10% of the marks on all assignments, tests, and examinations, for the improper use of English. In addition, poor written work, with the exception of final examinations may be returned without grading. If resubmission of the work is permitted, it may be graded with marks deducted for poor English and late submission.

**Teaching Assistants**

Gillian Marie Wilton  
gwilton@uwo.ca  
Emilio Shipeng Hong  
ehong27@uwo.ca
Cheating:
University policy states that cheating is a scholastic offence. The commission of a scholastic offence is attended by academic penalties that might include expulsion from the program. If you are caught cheating, there will be no second warning.
For more information on scholastic offenses, please see:
http://www.uwo.ca/univsec/handbook/appeals/scholastic_discipline_undergrad.pdf

Attendance:
Any student who, in the opinion of the instructor, has not engaged sufficiently in class, laboratory, or tutorial periods will be reported to the Dean (after due warning has been given). On the recommendation of the Department concerned, and with the permission of the Dean, the student will be debarred from taking the regular final examination in the course.

Accommodation:
Students with disabilities work with Accessible Education (formerly SSD) which provides recommendations for accommodation based on medical documentation or psychological and cognitive testing. The accommodation policy can be found here: Academic Accommodation for Students with Disabilities.

Academic Consideration for Student Absence
Students will have up to two (2) opportunities during the regular academic year to use an on-line portal to self-report an absence during the term, provided the following conditions are met: the absence is no more than 48 hours in duration, and the assessment for which consideration is being sought is worth 30% or less of the student’s final grade. Students are expected to contact their instructors within 24 hours of the end of the period of the self-reported absence, unless noted on the syllabus. Students are not able to use the self-reporting option in the following circumstances:
• for exams scheduled by the Office of the Registrar (e.g., December and April exams)
• absence of a duration greater than 48 hours,
• assessments worth more than 30% of the student’s final grade,
• if a student has already used the self-reporting portal twice during the academic year
If the conditions for a Self-Reported Absence are not met, students will need to provide a Student Medical Certificate if the absence is medical, or provide appropriate documentation if there are compassionate grounds for the absence in question. Students are encouraged to contact their Faculty academic counselling office to obtain more information about the relevant documentation.

Students should also note that individual instructors are not permitted to receive documentation
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directly from a student, whether in support of an application for consideration on medical grounds, or for other reasons. All documentation required for absences that are not covered by the Self-Reported Absence Policy must be submitted to the Academic Counselling office of a student’s Home Faculty.

For Western University policy on Consideration for Student Absence, see Policy on Academic Consideration for Student Absences - Undergraduate Students in First Entry Programs and for the Student Medical Certificate (SMC), see: http://www.uwo.ca/univsec/pdf/academic_policies/appeals/medicalform.pdf.

Religious Accommodation
Students should consult the University's list of recognized religious holidays, and should give reasonable notice in writing, prior to the holiday, to the Instructor and an Academic Counsellor if their course requirements will be affected by a religious observance. Additional information is given in the Western Multicultural Calendar.

Use of Recordings:
Any remote learning sessions applied for this course will be recorded. The data captured during these recordings may include your image, voice recordings, chat logs and personal identifiers (name displayed on the screen). The recordings may be used for educational purposes related to this course, including evaluations. The recordings may be disclosed to other individuals under special circumstances. Please contact the instructor if you have any concerns related to session recordings.

Participants in any online lessons we may have in this course are not permitted to record the sessions, except where recording is an approved accommodation, or the participant has the prior written permission of the instructor.

Conduct:
Some components of this course may involve online interactions. We do not presently plan to have any online sessions, but if due to COVID-19 protocol, we are required to move the class back online, then proper online behaviors need to be adhered to as now will be described. To ensure the best experience for both you and your classmates, please honour the following rules of etiquette:

- please “arrive” to online events on time
- please use your computer and/or laptop if possible (as opposed to a cell phone or tablet)
- ensure that you are in a private location to protect the confidentiality of discussions in the event that a class discussion deals with sensitive material
- to minimize background noise, and ensure the privacy of housemates, kindly mute your microphone for the entire class until you are invited to speak, unless directed otherwise
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- [suggested for classes larger than 30 students] In order to give us optimum bandwidth and web quality, please turn off your video camera for the entire class unless you are invited to speak, or unless advised otherwise by the instructor.
- [suggested for cases where video is used] please be prepared to turn your video camera off at the instructor's request if the internet connection becomes unstable.
- unless invited by your instructor, do not share your screen in the meeting.

The course instructor will act as moderator for the class and will deal with any questions from participants. To participate please consider the following:

- if you wish to speak, use the “raise hand” function and wait for the instructor to acknowledge you before beginning your comment or question
- remember to unmute your microphone and turn on your video camera before speaking
- self-identify when speaking.
- remember to mute your mic and turn off your video camera after speaking (unless directed otherwise)

General considerations of “netiquette”:

- Keep in mind the different cultural and linguistic backgrounds of the students in the course.
- Be courteous toward the instructor, your colleagues, and authors whose work you are discussing.
- Be respectful of the diversity of viewpoints that you will encounter in the class and in your readings. The exchange of diverse ideas and opinions is part of the scholarly environment.
- Be professional and scholarly in all online postings. Cite the ideas of others appropriately.

Note that disruptive behaviour of any type during online classes, including inappropriate use of the chat function, is unacceptable. Students found guilty of Zoom-bombing a class or of other serious online offenses may be subject to disciplinary measures under the Code of Student Conduct.

**Contingency plan for an in-person class pivoting to 100% online learning:**

In the event of a COVID-19 resurgence during the course that necessitates the course delivery moving away from face-to-face interaction, all remaining course content will be delivered entirely online, either synchronously (i.e., at the times indicated in the timetable) or asynchronously (e.g., posted on OWL for students to view at their convenience). The grading scheme will not change. Any remaining assessments will also be conducted online as determined by the course instructor.

**Online Proctoring Notice:**

Presently, the instructor has no plans to use online proctoring of any kind. However, in the
event that changes, the following notes cover the range of solutions the instructor might employ to best assess the students in CEE 3348a for the 2021 school year:

1. If using Proctortrack or alternative remote proctoring solution only:
Tests and examinations in this course will be conducted using the remote proctoring service, Proctortrack. By taking this course, you are consenting to the use of this software and acknowledge that you will be required to provide personal information (including some biometric data) and the session will be recorded. More information about this remote proctoring service is available in the Online Proctoring Guidelines at the following link: https://www.uwo.ca/univsec/pdf/onlineproctorguidelines.pdf.
Completion of this course will require you to have a reliable internet connection and a device that meets the technical requirements for this service. Information about the technical requirements are available at the following link: https://www.proctortrack.com/tech-requirements/.

2. If using Zoom Only:
Tests and examinations in this course will be conducted using Zoom. You will be required to keep your camera on for the entire session, hold up your student card for identification purposes, and share your screen with the invigilator if asked to do so at any time during the exam. The exam session will not be recorded. *
More information about the use of Zoom for exam invigilation is available in the Online Proctoring Guidelines at the following link: https://www.uwo.ca/univsec/pdf/onlineproctorguidelines.pdf.
Completion of this course will require you to have a reliable internet connection and a device that meets the system requirements for Zoom. Information about the system requirements are available at the following link: https://support.zoom.us/hc/en-us.

* Please note that Zoom servers are located outside Canada. If you would prefer to use only your first name or a nickname to login to Zoom, please discuss this with your instructor in advance of the test or examination.

3. If using both Zoom and Proctortrack or alternative remote proctoring solution:
Tests and examinations in this course will be conducted using both Zoom and the remote proctoring service, Proctortrack.
When Zoom is used for exam invigilation, you will be required to keep your camera on for the entire session, hold up your student card for identification purposes, and share your screen with the invigilator if asked to do so at any time during the exam. The exam session using Zoom will not be recorded. *
Proctortrack will require you to provide personal information (including some biometric data). The session will be recorded. By taking this course, you are consenting to the use of this software. More information about remote proctoring is available in the Online Proctoring Guidelines at the following link: https://www.uwo.ca/univsec/pdf/onlineproctorguidelines.pdf.
Completion of this course will require you to have a reliable internet connection and a device that meets the system and technical requirements for both Zoom and Proctortrack. Information about the system and technical requirements are available at the following links: https://www.proctortrack.com/tech-requirements/, https://support.zoom.us/hc/en-us.

* Please note that Zoom servers are located outside Canada. If you would prefer to use only your first name or a nickname to login to Zoom, please discuss this with your instructor in advance of the test or examination.

**Notice:**
Students are responsible for regularly checking their email (at least thrice weekly as mentioned above), course website (https://owl.uwo.ca) and notices posted outside the Civil and Environmental Engineering Department Office.

**Consultation:**
Students are encouraged to discuss problems with their teaching assistant and/or the Instructor in tutorial sessions. Office hours will be arranged for the students to meet with the Instructor and teaching assistants. Other individual consultation can be arranged by appointment with the instructor. These meetings may be held in ACEB 3478, but more likely will be held online via Zoom.

The document “INSTRUCTIONS FOR STUDENTS UNABLE TO WRITE TESTS OR EXAMINATIONS OR SUBMIT ASSIGNMENTS AS SCHEDULED” is part of this course outline.

**Document control:**

Rev 00 - document in native format is kept with Kevin McGuire P. Eng. Revisions to this document can be undertaken by the instructors or CEE leadership. Posting of this document to the Owl site will be the responsibility of the instructors. Submitted to CEE undergraduate chair for approval August 27th, 2021.

Rev 01 - document in native format is kept with Kevin McGuire P. Eng. Revisions to this document can be undertaken by the instructors or CEE leadership. Posting of this document to the Owl site will be the responsibility of the instructors. Submitted to CEE undergraduate chair for approval September 3rd, 2021. The final exam has been changed to in person.