

# The University of Western Ontario

## Engineering Planning and Project Management

EngSci 9510 Department of Civil and Environmental Engineering

### Course Outline – Intersession 2015

---

**Instructor:** Kevin McGuire, M. Eng., P. Eng., PMP

**Description:**

*This graduate level course is an introduction to the most widely accepted project management practices in the workforce today. It is based upon the guide published by the Project Management Institute known as “The Project Management Body of Knowledge” – or PMBOK. Project Management lends itself to being taught properly in either one of two ways. It can either be analyzed sequentially across the five phases of a project (initiating, planning, executing, monitoring and controlling, and closing) or it can be decomposed into its 12 areas of necessary expertise for the professional practitioner and then imparted. We choose this second approach. We do so for several reasons, not least of which is that this is in keeping generally with the order in which most scholarly works tackle the subject. The course content will be primarily lecture and discussion based although hybrid interactive content materials – notably the “serious game” Sharkworld™ where students will compete for Project Management supremacy in the classroom. (This “game” may be previewed online at [Sharkworld.nl](http://Sharkworld.nl)) Materials will be stored in Owl Sakai for post lecture access. Assignments will be a mix of individual and group efforts.*

**Course Goals:** The course is intended to reveal and develop project management best practices. The student will learn the industrially accepted techniques associated with the management of time, cost, and scope in order to achieve total project stakeholder satisfaction. In absence of formal project management training, professionals in the work place can and do successfully run projects. The goal in this course is to expose the class to the most efficient, and widely recognized, project management practices and in so doing greatly increase their likelihood of managing successful projects during their careers. The expected outcome will be to develop workforce ready minds that easily integrate into any corporate culture. It is intended that the acquisition of skills developed in this course will prepare the student for pursuing the designation Project Management Professional, or at the very least, prepare the student to more effectively contribute to project type work.

**Course Objectives:** At the completion of this course, the students will be able to:

- Apply themselves and foster in others an appreciation for project management best practices in the carrying out of academic scientific research.
- Clearly communicate the difference between a process and a project and thereby know when to apply project management practices.



# The University of Western Ontario

- Attain familiarity and confidence with the management of integration, cost, time, scope, quality, human resources, risk, and communication on projects.
- Understand and practice the commonly accepted professional standards of project management.
- Articulate a knowledge of, and understand what activities are required during project initiating, planning, executing, controlling, and closing.
- Apply themselves and foster in others an appreciation for project management best practices in the work place.
- Understand what is expected of them from a professional project manager.
- Understand the roles and responsibilities of a professional project manager.

## Course Content:

### 1) Introduction

- The Knack
- The Argument for Formally Studying Project Management
- The Definition of a Project
- Contrasting the Role of the Manager with the Role of the PM
- The Triple Constraint
- The Five Phases of a Project
- Project Stakeholders
- The History of Project Management
- The Future of Project Management
- The Project Management Body of Knowledge and PMI
- Project Management in London Ontario
- The Role of the Project Manager
- Enterprise Environmental Factors

### 2) Project Life Cycle and Organization

- Organizational Cultures and Structures
  - i. Projectized
  - ii. Strong Matrix
  - iii. Weak Matrix
  - iv. Composite
  - v. Functional
  - vi. Balanced
- Project Selection Methods
- Project Delivery Methods
  - i. Design/Bid/Build projects (EPCM)
  - ii. Design / Build (EPC)
  - iii. Mega Project Management Challenges
  - iv. Public Private Partnerships (P3)



# The University of Western Ontario

## 3) Project Management Processes

- Project Management Phase Diagram
- Project Management Process Groups
  - v. Initiating
  - vi. Planning
  - vii. Executing
  - viii. Monitoring and controlling
  - ix. Closing
- Project Management Methodology Refinements at Specific Companies
- Project, Program, Portfolio Management

## 4) Project Integration Management

- Project charters - Development and Application
- Teamwork
- Virtual Teams
- Performance Reporting
- Coaching, Rewarding, and Recognition
- Integrated Change Control – Change Orders

## 5) Project Scope Management

- Writing a Scope Statement
- Taxonomy and Project Management
- Creating a Work Breakdown Structure
- Estimating Work Durations
- Scope Verification

## 6) Project Time Management

- Scheduling Logic - resource availability etc.
- Network Diagrams
- Gantt Charts
- Monte Carlo Method
- Other Probabilistic Methods in Scheduling
- Milestone and Task Timeline Distribution
- Crashing

## 7) Project Cost Management

- Engineering Consulting Firms
  - i. Structure
  - x. Overheads
  - xi. Billing Rates and Utilization Targets
- Determine the Budget
- Cash flow and Revenue Generation
- Progress Billing and Statements of Value
- The Project Spending Curve



# The University of Western Ontario

- Task Progress Evaluation
  - Earned Value Analysis
  - Dealing with Sunk Costs
  - Dealing with the Project Management Office
  - Forecasting
- 8) Project Quality Management
- Quality Plan
  - Quality Assurance
  - Quality Control
  - BIM Models (Dr. Shokry Rashwan guest lecture)
- 9) Project Human Resources Management
- Classical Negotiation Methods
  - Training staff
  - Assignment and reassignment
  - Resource Leveling
  - Maslow's Hierarchy of Needs
  - Myers-Briggs personality Types
  - Emotional Intelligence
  - Goals and Accountability
- 10) Project Communications Management
- Conflict Resolution Strategies
  - Project Communication Matrix
  - Communication Models
  - Effective Meetings
  - Effective Information distribution
  - Effective Communication
  - Robert's Rules
- 11) Project Risk Management
- Stakeholder Risk
  - Qualitative Risk Responses
  - Quantitative Risk Responses
- 12) Project Procurement Management
- Bid Documents
  - The Basic Elements of a contract - review
  - Types of Contracts and the distribution of Risk
  - Sample Construction contract
  - Bonding and Insurance
  - Analysis of Bids and Award of Contracts
  - Tendering and Contract Execution
  - Common Law Benchmarks regarding Construction Contracts
  - Supreme Court of Canada Decisions Regarding Tendering Practices



# The University of Western Ontario

## 13) Final Examination

### Tentative Class Schedule Section 001

Date	Time	Hours
Monday, May 11, 2013	7:00 pm - 10:00 pm	3
Monday, May 25, 2013	7:00 pm - 10:00 pm	3
Tuesday, May 26, 2013	7:00 pm - 10:00 pm	3
Monday, June 1, 2013	7:00 pm - 10:00 pm	3
Monday, June 8, 2013	7:00 pm - 10:00 pm	3
Monday, June 15, 2013	7:00 pm - 10:00 pm	3
Monday, June 22, 2013	7:00 pm - 10:00 pm	3
Monday, June 29, 2013	7:00 pm - 10:00 pm	3
Tuesday, July 7, 2013	6:00 pm - 9:00 pm	2
Total Teaching Hours		26

**EXAM**

### Tentative Class Schedule Section 002

Date	Time	Hours
Thursday, May 14, 2013	7:00 pm - 10:00 pm	3
Thursday, May 21, 2013	7:00 pm - 10:00 pm	3
Thursday, May 28, 2013	7:00 pm - 10:00 pm	3
Thursday, June 4, 2013	7:00 pm - 10:00 pm	3
Thursday, June 11, 2013	7:00 pm - 10:00 pm	3
Thursday, June 18, 2013	7:00 pm - 10:00 pm	3
Thursday, June 25, 2013	7:00 pm - 10:00 pm	3
Thursday, July 2, 2013	7:00 pm - 10:00 pm	3
Tuesday, July 7, 2013	6:00 pm - 9:00 pm	2
Total Teaching Hours		26

**EXAM**



# The University of Western Ontario

## Tentative Class Schedule Section 003

Date	Time	Hours	
Wednesday, May 13, 2013	7:00 pm - 10:00 pm	3	
Wednesday, May 20, 2013	7:00 pm - 10:00 pm	3	
Wednesday, May 27, 2013	7:00 pm - 10:00 pm	3	
Wednesday, June 3, 2013	7:00 pm - 10:00 pm	3	
Wednesday, June 10, 2013	7:00 pm - 10:00 pm	3	
Wednesday, June 17, 2013	7:00 pm - 10:00 pm	3	
Wednesday, June 24, 2013	7:00 pm - 10:00 pm	3	
Tuesday, June 30, 2013	7:00 pm - 10:00 pm	3	
Tuesday, July 7, 2013	6:00 pm - 9:00 pm	2	<b>EXAM</b>
Total Teaching Hours		26	

## Texts & References:

Project Management - Gray and Larson 5<sup>th</sup> Edition  
Project Management Body of Knowledge (PMBOK) 5<sup>th</sup> edition

## Evaluation:

Assignments (4):	20%
Sharkworld Major Assignment	15%
Group Case Study	15%
Final Examination	50%
<b>Total</b>	<b>100%</b>

## Notes on assignments (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 cite all references from other sources
- Must be in paragraph format
- Must be double-spaced, and typewritten



# The University of Western Ontario

## Grading:

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

## Policy on Cheating and Academic Misconduct:

Academic honesty is a cornerstone of conduct at The University of Western Ontario. We cannot have freedom of expression without integrity. Students are responsible for understanding the nature of and avoiding the occurrence of plagiarism and other academic offences; please refer to the section on "Scholastic Offences" in the current University Academic Calendar, or on the web at <http://www.westerncalendar.uwo.ca>. Such offences include plagiarism, cheating on an examination, submitting false or fraudulent assignments or credentials, impersonating a candidate, or submitting for credit in any course any academic work for which credit has previously been obtained or is being sought in another course in this University or elsewhere (without the knowledge and approval of the instructor to whom the work is submitted). If you are caught cheating there will be no second warning. Academic penalties will be applied up to and possibly including expulsion from the program.

## How often will the instructor communicate with me?

The instructor will be available to meet every evening for ½-1 hour after each lecture either in the classroom or in assigned office space. Any student may raise any issue at this time without the need for an appointment. Students will note the published schedule included herein. Supplemental arranged meetings are possible, but may require several days advance co-ordination.

The instructor will also be available via e-mail, the address for which he will distribute either in the first lecture or shortly thereafter via Owl Sakai. 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 Owl Sakai chats with the instructor by sending an e-mail or arranging a time.

The students will not typically have text or telephone access to the instructor although this can be arranged if the necessity arises.



# The University of Western Ontario

## **How do I hand in assignments?**

All assignments will be submitted electronically through Owl Sakai using the assignment drop box in the course area. Failure to meet deadlines without the instructor's written permission will result in a reduction of marks. Assignments received after the due date will be reduced 5% per day (including weekends). Except in exceptional circumstances, approved by the instructor before the due date, assignments more than one week late will not be accepted and a mark of 0% will be assigned.

It is the student's responsibility to ensure that all assignments forwarded to the instructor arrive on time.

## **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.

## **Attendance**

Any student, who in the opinion of the instructor, is absent too frequently from class or laboratory periods in any course, 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 examination in the course.

## **Conduct**

Students are expected to arrive at lectures on time, and to conduct themselves during class in a professional and respectful manner that is not disruptive to others.

## **Sickness and Other Problems**

Students should immediately consult with the instructor or Department Chair if they have any problems that could affect their performance in the course. Where appropriate, the problems should be documented. The student should seek advice from the instructor or Department Chair immediately regarding how best to deal with the problem. Failure to notify the instructor or Department Chair immediately (or as soon as possible thereafter) will have a negative affect on any appeal.

## **Owl Sakai Help - Who to contact**

### **1) Application Problems**

If you have problems with an application on this system please call the Help Desk at **(519) 661-2111 extension 83800**.

### **2) ITS Help Page: [Owl Help and Support](#)**





# *The University of Western Ontario*

## **Confidentiality and University Indemnification**

The University of Western Ontario, Kevin McGuire (your instructor), and your classmates take no responsibility for the confidentiality of information that you present in any educational context, such as online, in-class or in your submissions or postings.

It is up to you, the student, to ensure that you are not breaching any confidentiality situations with any information you present including those which might pertain to ongoing research of which you are a part of or have been a part of in the past.

