COURSE OUTLINES (SYLLABI) FOR UNDERGRADUATE COURSES
(To be posted no later than the first day of class in the term a course is given)

1. General Course Information

Course Information
Software Project Management
CS3377B & SCI3377B
Term 1219
Class number
(Unless advised otherwise) Online during Lockdown and "Red" community status.
Synchronously instructed online in Zoom - Wednesdays 7 pm to 10 pm

List of Prerequisites

CROSS-LISTED WITH SCIENCE 3377B.
REQUISITES: Prerequisite(s): Computer Science 2212A/B/Y
ANTIREQUISITES: Science 3377A/B, SE 3351A/B.

Unless you have either the requisites for this course or written special permission from your Dean to enroll in it, you may be removed from this course and it will be deleted from your record. This decision may not be appealed. You will receive no adjustment to your fees in the event that you are dropped from a course for failing to have the necessary prerequisites.

2. Instructor Information

Kevin Lawrence McGuire, P. Eng., PMP
Lecturer
Kmcgui5@uwo.ca

Students must use their Western (@uwo.ca) email addresses when contacting their instructors. All student emails will get a reply. Replies from the instructor may take in the worst case up to 48 hours.

The instructor will be available to meet every evening for ½-1 hour after each lecture either in the classroom, in Zoom, 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 at kmcgui5@uwo.ca. 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. 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.

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

3. Course Description/Syllabus

Calendar abstract: The software development life cycle; resourcing, scheduling and estimating techniques for software project management; project management organizational concerns, including project economic analysis, human resources, proposal development, risk management, software implementation, and technology-strategic alignment.

Detailed description: This under-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 multi-media and interactive content materials may be included. Course materials will be stored in Owl Sakai for both pre and post lecture access. Assignments will be a mix of individual and group efforts. Students may be responsible for purchasing serious gaming license(s), or project raw materials not exceeding $25.

Course Content:

1) Introduction
   - 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

➢ Public Private Partnerships (P3)

➢ Project Management Phase Diagram

➢ Project Management Process Groups

  i. Initiating

  ii. Planning

  iii. Executing

  iv. Monitoring and controlling

  v. Closing

3) Project Scope Management & LEAN Project Management

➢ Writing a Scope Statement

➢ Taxonomy and Project Management

➢ Creating a Work Breakdown Structure

➢ Estimating Work Durations

➢ Scope Verification

➢ LEAN, waste, and value

4) Project Time Management

➢ Proposal and Plan Documents for Computer Science Projects

➢ Scheduling Logic - resource availability etc.

➢ Network Diagrams

➢ Network Ladders to Compress Computer Science Coding Projects

➢ Gantt Charts

➢ Monte Carlo Method

➢ Other Probabilistic Methods in Scheduling

➢ Milestone and Task Timeline Distribution

➢ Crashing

5) Project Cost Management

➢ I.T. Consulting Firms

  i. Structure

  vi. Overheads

  vii. Billing Rates and Utilization Targets

➢ Determine the Budget

➢ Cash flow and Revenue Generation

➢ Progress Billing and Statements of Value

➢ The Project Spending Curve

➢ Task Progress Evaluation

➢ Earned Value Analysis

➢ Deliverable Properties for Software Earned Value Analysis

➢ Dealing with Sunk Costs

➢ Dealing with the Project Management Office

> ➢ Forecasting

6) Project Risk Management
> ➢ Stakeholder Risk
> ➢ Qualitative Risk Responses
> ➢ Quantitative Risk Responses
> ➢ DFMEA / PFMEA
> ➢ Cost Benefit Ratio Calculations

7) Project Integration Management
> ➢ Project charters - Development and Application
> ➢ Teamwork
> ➢ Virtual Teams
> ➢ Performance Reporting
> ➢ Coaching, Rewarding, and Recognition
> ➢ Integrated Change Control – Change Orders

8) Project Human Resources Management
> ➢ Classic Negotiation Methods
> ➢ Training staff
> ➢ Assignment and reassignment
> ➢ Resource Leveling
> ➢ Maslow's Hierarchy of Needs
> ➢ Myers-Briggs personality Types
> ➢ Emotional Intelligence
> ➢ Goals and Accountability

9) Project Communications Management
> ➢ Conflict Resolution Strategies
> ➢ Project Communication Matrix
> ➢ Communication Models
> ➢ Effective Meetings
> ➢ Effective Information distribution
> ➢ Effective Communication
> ➢ Robert's Rules

10) Special Topics in Project Management 1
> ➢ **Pharmaceutical and Biomedical Project Management**
>   i. Project Leadership for Biomedical Industries
>   ii. Development of Medical Devices, Components, and their Integration
>   iii. Drug Developments
>   iv. Not for Profit Drug Developments
>   v. Effective technology transfers
>   vi. Clinical Trials and Project Management
> ➢ **Project Planning and Management for Ecological Restoration**
>   i. Project Planning

      ii.   Project Design

     iii.   Project Implementation

     iv.   Project Aftercare

11) Special Topics in Project Management 2

- **Project Management for Research**
  i. Definition of PM for Research
  ii. Grad school vs pre-Grad school education
  iii. Choosing your Research topic
  iv. Choosing your advisor and committee
  v. Formulating Research Questions
  vi. Scheduling and Research
  vii. Managing your Research advisor
- **Project Management for Successful Data projects**
  i. Data Project types and considerations
  ii. Evaluating and Selecting Data Management Solutions
  iii. Interface design
  iv. Ensuring Data Integrity
  v. Privacy

12) Agile Project Management

- Light and Heavy Software Development Techniques
- Methodologies
- SCRUM
- Discussion – SWOT as we remove PM features
- 12 Principles
- Roadmap
- Roles

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 of all types – construction, information technology, manufacturing, etc. 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.
- ➢ Apply themselves and foster in others an appreciation for project management best practices in the work place.
- ➢ Clearly communicate the difference between a process and a project and thereby know when to apply project management practices.
- ➢ 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.
- ➢ Understand what is expected of them from a professional project manager.
- ➢ Understand the roles and responsibilities of a professional project manager.

4. Course Materials

Texts & References:

1. Project Management - Gray and Larson 8th Edition - Mandatory to purchase ISBN978-1-260-57043-4. Electronic versions are available from McGraw Hill.
2. Project Management Body of Knowledge (PMBOK) 6th edition – suggested for purchase – explore the possibility of low cost / no cost internet download if ethically obtainable.

Students should check OWL (http://owl.uwo.ca) on a regular basis for news and updates. This is the primary method by which information will be disseminated to all students in the class. Students are responsible for checking OWL on a regular basis.

5. Methods of Evaluation

Evaluation and approximate dates:

Assignments (6): Mar 20,	60%	Jan 23, Feb 6, Feb 18 (@6 pm), Mar 11,
		Apr 3, 2022
Final Exam	30%	TBD
Participation/Contribution/Discussion	10%	10 Sunday evenings at midnight
Total	**100%**	

Please note that only scientific calculators with demonstrably empty memories may be applied during mid terms and finals. No other electronics will be allowed.

Please note that discussion activities may be carried out in either compare or Owl forums. Both are tools available down the left hand side of the Owl site in our course. Location of your weekly discussion contribution will be communicated to you in class.

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All evaluations dates above are tentative.

6. Accommodation and Accessibility

If you are unable to meet a course requirement due to illness or other serious circumstances, you must seek approval for the absence as soon as possible. Approval can be granted either through a self-reporting of absence or via the Dean's Office/Academic Counselling unit of your Home Faculty. If you are a Science student, the Academic Counselling Office of the Faculty of Science is located in NCB 280, and can be contacted at scibmsac@uwo.ca.

For further information, please consult the university's policy on academic consideration for student absences:
https://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_illness.pdf

Also, a link to the Office of the Registrar page on Academic Considerations might also be useful:
https://registrar.uwo.ca/academics/academic_considerations.html

Missed assignments with valid excuses will result in retiming of submission.

Accommodations less than 10% in weight will be managed by the professor.
If you miss the Final Exam, please contact your faculty's Academic Counselling Office as soon as you are able to do so. They will assess your eligibility to write the Special Exam (the name given by the university to a makeup Final Exam).

You may also be eligible to write the Special Exam if you are in a "Multiple Exam Situation" (see http://www.registrar.uwo.ca/examinations/exam_schedule.html).

7. Academic Policies

The website for Registrarial Services is http://www.registrar.uwo.ca.

In accordance with policy, http://www.uwo.ca/its/identity/activatenonstudent.html,
the centrally administered e-mail account provided to students will be considered the individual's official university e-mail address. It is the responsibility of the account holder to ensure that e-mail received from the University at his/her official university address is attended to in a timely manner.

Phones are forbidden to be applied on exams or tests. Students may apply any type of calculator so long as they can demonstrate empty memory prior to the test/exam, or at any other point during the assessment.

Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following Web site:
http://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf.

All required papers may be subject to submission for textual similarity review to the commercial plagiarism detection software under license to the University for the detection of plagiarism. All papers submitted for such checking will be included as source documents in the reference database for the purpose of detecting plagiarism of papers subsequently submitted to the system. Use of the service is subject to the licensing agreement, currently between The University of Western Ontario and Turnitin.com (http://www.turnitin.com).

Computer-marked multiple-choice tests and exams may be subject to submission for similarity review by software that will check for unusual coincidences in answer patterns that may indicate cheating.

8. Support Services

Please contact the course instructor if you require lecture or printed material in an alternate format or if any other arrangements can make this course more accessible to you. You may also wish to contact Student Accessibility Services (SAS) at 661-2147 if you have any questions regarding accommodations.

The policy on Accommodation for Students with Disabilities can be found here:
https://www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic%20Accommodation_disabiliti es.pdf

The policy on Accommodation for Religious Holidays can be found here:
http://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_religious.pdf

Learning-skills counsellors at the Student Development Centre (http://www.sdc.uwo.ca) are ready to help you improve your learning skills. They offer presentations on strategies for improving time management, multiple-choice exam preparation/writing, textbook reading, and more. Individual support is offered throughout the Fall/Winter terms in the drop-in Learning Help Centre, and year-round through individual counselling.

Students who are in emotional/mental distress should refer to Mental Health@Western (http://www.health.uwo.ca/mental_health) for a complete list of options about how to obtain help.

Additional student-run support services are offered by the USC, http://westernusc.ca/services.

9. Technical Requirements

1. Functional, consistent internet connection
2. Hardware capable of taking advantage of all features of Owl and zoom – a laptop for example.
3. The ability to apply Pro Track on your laptop for assessment purposes if deemed necessary by instructor, and to do so without disabling antivirus programs, applying new drives, etc.
4. The ability to download and participate in application of the peer review tool "ComPAIR", a UBC created tool applied at Western, but not supported by the ITRC.

10. COVID-19 Considerations

Although the intent is for this course to be delivered in-person to the extent possible, the changing COVID-19 landscape may necessitate some or all of the course to be delivered 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), as deemed most appropriate by the instructor. The grading scheme will **not** change. Any assessments affected will be conducted online as determined by the course instructor.

When deemed necessary, tests and examinations in this course will be conducted using a remote proctoring service. By taking this course, you are consenting to the use of this software and acknowledging that you will be required to provide personal information (including some biometric data) and that the session will be recorded. Completion of this course will require you to have a reliable internet connection and a device that meets the technical requirements for this service. More information about this remote proctoring service, including technical requirements, is available on Western's Remote Proctoring website at: https://remoteproctoring.uwo.ca.

Some means of ensuring that grades can be unambiguously traced to the student is important in order to maintain the value of our degrees and external confidence in our standards. In some courses, term papers may be sufficient, but for many courses in Science, as may be the case in this course, this could mean proctoring, whether in person or online. For instructors planning to use remote proctoring (i.e., Proctortrack), support for the transition is available from Exam Central.