

DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING***SE 3351 – Software Process & Project Management*****Course Outline Fall/Winter 2026-27****COURSE DESCRIPTION:**

This course introduces the principles, methods, and tools used to manage software projects and improve software development processes. Students will examine the complete software project lifecycle, including project initiation, planning, estimation, scheduling, risk management, team coordination, quality assurance, monitoring, and project closure. The course explores both traditional and Agile approaches to software project management and considers how contemporary practices, including DevOps and AI-assisted software development, are influencing software processes. Through practical activities and a team-based project, students will apply project and process management techniques to realistic software development scenarios.

ACADEMIC CALENDAR: Project Management and Software Process life cycles. Includes detailed analysis of components of each process. Metrics, tools and related standards associated with those components. Integration into a complete software project planning including software effort, scheduling and cost estimation, software quality management, and software risk management.

https://www.westerncalendar.uwo.ca/Courses.cfm?CourseAcadCalendarID=MAIN_015927_1&Sele

PREREQUISITES: SE 2203A/B, SE 2250A/B or ECE 3390A/B, Mathematics 2151A/B or Mathematics 2155A, SE 2205A/B or Computer Science 2210A/B.

Unless you have either the requisites for this course or written special permission from your Dean to enroll in it, you will be removed from this course and it will be deleted from your record.

ANTIREQUISITES: Computer Science 3377A/B.

CEAB ACADEMIC UNITS: Engineering Science 100%.

INSTRUCTOR INFORMATION:

Name:

Office/Office Hours:

Phone:

Email:

CONTACT HOURS:

Timetable information is available at <https://draftmyschedule.uwo.ca/>.

LECTURE:	
Tutorial:	

RECOMMENDED TEXTBOOKS:

The following material will be used to create the course content:

- Gregory M. Horine, Asad E. Haque "Project Management Professional (PMP)® Cert Guide" ([Amazon Link](#))
- Jennifer Greene, Andrew Stellman, "Head First PMP: A Learner's Companion to Passing the Project Management Professional Exam" ([Amazon Link](#))
- Robert K. Wysocki, "Effective Project Management: Traditional, Agile, Extreme, Hybrid" ([Amazon Link](#))
- Gustavo Vinueza MBA (Author), Prasad Kodukula PhD "The Project Management AI Handbook: Leveraging Generative Tools in Waterfall and Agile Environments" ([Amazon Link](#))
- Vijay Kanabar, Jason Wong "The AI Revolution in Project Management: Elevating Productivity with Generative AI" ([Amazon Link](#))

OTHER RECOMMENDED RESOURCES/REFERENCES: Course notes and supplementary material will be available on the Course Web site.

GENERAL LEARNING OBJECTIVES (CEAB GRADUATE ATTRIBUTES)

Knowledge Base		Engineering Tools	D	Impact on Society	
Problem Analysis	A	Individual & Teamwork		Ethics and Equity	
Investigation		Communication	D	Economics and Project Mgmt.	
Design		Professionalism		Life-Long Learning	

Notation: x represents the content level code as defined by the CEAB. blank = not applicable; I = introduced (introductory); D = developed (intermediate) and A = applied (advanced).

Rating: I – The instructor will introduce the topic at the level required. It is not necessary for the student to have seen the material before. D – There may be a reminder or review, but the student is expected to have seen and been tested on the material before taking the course. A – It is expected that the student can apply the knowledge without prompting (e. g. no review).

COURSE MATERIALS: Weekly content and guides for the tutorials will be available on the course OWL site.

COURSE TOPICS AND SPECIFIC LEARNING OUTCOMES:

The following table summarizes the course learning outcomes along with CEAB GAIs where the GAIs in bold indicate ones to be measured and reported annually.

Course Topics and Specific Learning Objectives	CEAB GAI
1: Introduction to Software Development Processes and Modern Methodologies At the end of this unit, the students will be able to:	
1.1. Define the phases of the Software Development Life Cycle (SDLC) and explain their significance in software projects.	
1.2. Describe the core principles of Agile, Scrum, Lean, and Kanban methodologies.	
1.3. Differentiate between traditional (e.g., Waterfall) and modern (e.g., Agile) methodologies in terms of flexibility, efficiency, and collaboration.	
1.4. Illustrate how different methodologies can be applied to various software projects.	
1.5. Identify factors that influence the selection of a methodology for a specific project scenario.	PA1, EMP1
1.6. Compare the strengths and weaknesses of traditional and modern methodologies.	PA1
2: Practical Implementation of Modern Software Development Practices At the end of this unit, the students will be able to:	
2.1. Scrum Framework:	
2.1.1. Understand the Scrum framework by examining its roles (Product Owner, Scrum Master, Development Team), events (Sprint Planning, Daily Standups, Sprint Review, Sprint Retrospective), and artifacts (Product Backlog, Sprint Backlog, Increment).	CS1
2.1.2. Demonstrate the application of Scrum through practical exercises that simulate realworld software development projects.	PA1
2.2. Kanban and Lean Software Development:	
2.2.1. Explore the principles of Kanban as a Lean method, including workflow visualization, limiting work-in-progress (WIP), and managing flow.	CS1
2.2.2. Discuss how Kanban complements Lean principles in optimizing workflows, minimizing waste, and improving service delivery.	
2.3. DevOps and Continuous Integration/Delivery:	
2.3.1. Explain DevOps's cultural and technical practices that enable seamless collaboration between development and operations teams.	CS1
2.3.2. Evaluate the impact of DevOps practices on project delivery speed and software	

quality.	
2.3.3. Discuss the tools and techniques used to automate software integration, testing, and deployment processes, emphasizing the importance of continuous delivery in modern software development.	
3: Introduction to Project Management At the end of this unit, the students will be able to:	
3.1. Describe the foundational concepts of project management, including the project life cycle and the role of the project manager and Project Management Office (PMO).	CS1
3.2. Classify different organization types (structured, functional, matrix) and explain their impact on project management.	
3.3. Explain the stages of the project lifecycle and the relationship between Process Groups and Knowledge Areas.	
3.4. Discuss the five Project Process Groups—initiating, Planning, Executing, Monitoring and Controlling, and Closing—and analyze how they interact throughout the project lifecycle.	PA1
3.5. Discuss the application of different Knowledge Areas within the various Process Groups.	CS3
4: Project Initiation Phase At the end of this unit, the students will be able to:	
4.1. Explain project selection methods to determine the most suitable projects.	PA1
4.2. Strategic Planning and Project Selection: Analyze strategic goals and identify potential projects that align with organizational objectives.	PA1
4.3. Methods for Selecting Projects: Evaluate various project selection methods and apply them to prioritize potential projects.	EPM1
4.4. Developing a Project Charter: Create a project charter to formally initiate the project, defining the project's purpose, objectives, and stakeholders.	CS3
4.5. Identifying Stakeholders: Identify all project stakeholders, analyzing their interests and influence to determine their potential impact on the project.	
5: Project Planning Phase At the end of this unit, the students will be able to:	
5.1. Project Integration/Scope Planning	
5.1.1. Developing a Project Management Plan: Design a comprehensive project management plan that integrates all aspects of the project, ensuring alignment with organizational goals.	
5.1.2. Planning Scope Management: Develop a scope management plan that defines how the project scope will be defined, validated, and controlled.	
5.1.3. Collecting Requirements: Gather and document stakeholder requirements to ensure the project meets their needs.	
5.1.4. Defining Scope: Clearly articulate the project scope, specifying the work that will be performed and the deliverables that will be produced.	
5.1.5. Creating the Work Breakdown Structure: Decompose the project scope into smaller, manageable components to facilitate planning, execution, and control.	ET1
5.2. Project Schedule Planning	
5.2.1. Planning Schedule Management: Formulate a schedule management plan that outlines how the project schedule will be developed, monitored, and controlled.	EPM2

5.2.2. Defining Activities: Identify and document the specific actions needed to produce the project deliverables.	
5.2.3. Sequencing Activities: Organize project activities in a logical sequence, determining the order in which they should be performed.	
5.2.4. Estimating Activity Durations: Predict the time required to complete each activity, using appropriate estimation techniques.	
5.2.5. Developing the Schedule: Construct a project schedule that aligns with the project timeline and resource availability.	ET1, LL1, LL2
5.3. Project Cost Planning	
5.3.1. Planning Cost Management: Design a cost management plan that establishes how project costs will be estimated, budgeted, and controlled.	ET1, EPM1
5.3.2. Estimating Costs: Assess and approximate the financial resources required to complete project activities.	
5.3.3. Determining Budget: Aggregate estimated costs to develop a project budget, setting a cost baseline for monitoring and control.	
5.4. Project Quality/Resource/Communications Planning	
5.4.1. Planning Quality Management: Develop a quality management plan that specifies the quality standards and processes that will guide the project.	
5.4.2. Planning Resource Management: Create a resource management plan that outlines how project resources (human, material, equipment) will be identified, acquired, and managed.	ET1
5.4.3. Estimating Activity Resources: Assess the type and quantity of resources needed to perform each project activity.	
5.4.4. Planning Communications Management: Design a communications management plan that defines how project information will be distributed, stored, and retrieved.	
5.5. Project Risk Planning	
5.5.1. Planning Risk Management: Develop a risk management plan that outlines how risks will be identified, assessed, and managed throughout the project.	EPM3
5.5.2. Identifying Risks: Recognize potential risks that could impact the project, documenting their characteristics and potential effects.	EPM3
5.5.3. Performing Qualitative Risk Analysis: Prioritize risks based on their likelihood and impact, focusing on those that require immediate attention.	EPM3
5.5.4. Performing Quantitative Risk Analysis: Conduct a numerical analysis of risks, determining their potential impact on project objectives.	EPM3
5.5.5. Planning Risk Responses: Formulate risk response strategies, selecting actions that will mitigate or exploit risks to benefit the project.	CS2
5.6. Project Procurement/Stakeholder Planning	
5.6.1. Planning Procurement Management: Develop a procurement management plan that outlines how project procurements will be planned, conducted, and controlled.	
5.6.2. Planning Stakeholder Engagement: Develop a stakeholder engagement plan that outlines strategies for interacting with stakeholders throughout the project.	
6: Project Execution Phase At the end of this unit, the students will be able to:	
6.1. Project Integration/Quality/Resource Execution	

6.1.1. Directing and Managing Project Work: Execute and oversee project activities, ensuring that work is performed according to the project management plan.	
6.1.2. Managing Project Knowledge: Capture and apply project knowledge to enhance project performance and support continuous improvement.	
6.1.3. Managing Quality: Implement quality management activities, ensuring that project deliverables meet the required quality standards.	
6.1.4. Acquiring Resources: Secure the necessary resources for project execution, negotiating with suppliers and stakeholders as needed.	EPM2
6.1.5. Developing the Project Team: Enhance team performance through training, teambuilding activities, and conflict resolution strategies.	
6.1.6. Managing the Project Team: Supervise team performance, providing feedback, resolving conflicts, and adapting to team dynamics to achieve project goals.	
6.2. Project Communications/Risk/Procurement/Stakeholder Execution	
6.2.1. Managing Communications: Execute communication activities, ensuring that project stakeholders receive timely and accurate information.	CS2
6.2.2. Implementing Risk Responses: Carry out risk response strategies, ensuring that identified risks are effectively managed.	EPM3
6.2.3. Conducting Procurements: Implement the procurement plan by soliciting bids, evaluating proposals, and awarding contracts.	CS3
6.2.4. Managing Stakeholder Engagement: Execute the stakeholder engagement plan, fostering relationships and ensuring that stakeholders are appropriately involved in project activities.	CS2
7: Project Monitoring and Controlling Phase At the end of this unit, the students will be able to:	
7.1. Project Integration/Scope/Schedule/Cost Monitoring & Control - 1	
7.1.1. Monitoring and Controlling Project Work: Assess project progress against the plan, identifying variances and implementing corrective actions.	
7.1.2. Performing Integrated Change Control: Evaluate and manage changes to project scope, schedule, and costs, ensuring that changes are integrated effectively.	EPM4
7.1.3. Validating Scope: Review and accept completed deliverables to ensure they meet the defined scope and quality standards.	
7.1.4. Controlling Scope: Monitor project scope and manage changes to the scope baseline, ensuring the project remains on track.	
7.1.5. Controlling the Schedule: Track project progress, adjusting the schedule as necessary to accommodate changes and keep the project on track.	
7.1.6. Controlling Costs: Monitor project expenditures against the cost baseline, implementing corrective measures to manage cost variances.	EPM2
7.2. Project Integration/Scope/Schedule/Cost Monitoring & Control - 2	
7.2.1. Controlling Quality: Inspect and verify project deliverables to ensure they meet quality standards and identify areas for improvement.	
7.2.2. Controlling Resources: Monitor resource utilization, ensuring that resources are used efficiently and effectively throughout the project.	
7.2.3. Monitoring Communications: Evaluate communication effectiveness, adjusting the communication strategy as necessary to meet stakeholder needs.	
7.2.4. Monitoring Risks: Continuously monitor risk exposure, assessing the effectiveness of risk responses and identifying new risks as they arise.	EPM3

7.2.5. Controlling Procurements: Oversee procurement activities, ensuring that contracted work is performed as agreed and that contracts are properly closed.	
7.2.6. Monitoring Stakeholder Engagement: Assess the effectiveness of stakeholder engagement strategies, making adjustments as necessary to maintain positive stakeholder relationships.	EPM3, EPM4
8: Project Closing Phase At the end of this unit, the students will be able to:	
Closing Projects or Phases: Finalize all project activities, ensuring that project deliverables are completed and formally accepted.	

EVALUATION:

Name	% Worth
In-Class Activities	5%
Project Assignments	25%
Tutorials	20%
Midterm Exam	25%
Final Exam	25%

Note that the dates listed above are **tentative** and may be adjusted if needed. Marks will be assigned on the basis of method of analysis and presentation, correctness of solution, clarity and neatness.

COURSE POLICIES:

- Evaluation items with a weight less than 10% will **not be accommodated**.
- **In order to pass the course a student is required to have at least 50% in each of the evaluation categories with weight $\geq 10\%$, otherwise the student will receive a final grade of 48%.**
- Students Seeking academic consideration for the midterm exam will be required to provide formal supporting documentation. A Make-up exam will be scheduled for students after they're granted academic consideration.
- Lab and project assignments will be acceptable 72 hours after the due date without penalty to accommodate for any potential emergencies. Accommodations needed for more than 72 hours will require supporting documentation.
- **Please do not treat the 72-hour flexibility period as an automatic extension to the deadline. Only use it for emergencies; otherwise, you may risk losing the grade of that assignment, as emergencies that occur after the due date will not be considered accommodations.**
- Accommodations are granted for individual students, not for groups. If one group member was granted accommodation, the rest of the group is still required to submit partial work on the due date, stating the responsibilities of each group member and missing only the work of the accommodated student, with the possibility of submitting an amendment to include the accommodated student's work according to their accommodation. Consult with the instructor if you're in doubt regarding your group assignments before the due date to clarify what's required in your case.
- **Some lectures might be video recorded using the cameras located in the back of the classroom, if you don't want to be on camera, please take a seat in an area outside of the frame.**

FACULTY OF ENGINEERING POLICIES:

Students must familiarize themselves with the policies of the Faculty of Engineering
<https://www.eng.uwo.ca/electrical//pdf/2025-UG-Policy-and-Procedures.pdf>

Faculty of Engineering Policies and Procedures-Undergraduate

Absence/Late Accommodation Policy

Students must familiarize themselves with the University Policy on Academic Consideration – Undergraduate Students in First Entry Programs posted on the Academic Calendar:

https://www.uwo.ca/univsec/pdf/academic_policies/appeals/academic_consideration_Sep24.pdf

This policy does not apply to requests for Academic Consideration submitted for attempted or completed work, whether online or in person. The policy also does not apply to students experiencing longer-term impacts on their academic responsibilities. These students should consult [Accessible Education](#).

Students missing a test/assignment/lab or examination will report the absence by submitting Academic Consideration Request form through [STUDENT ABSENCE PORTAL](#).

- All requests for Academic Consideration must be made within 48 hours after the assessment date or submission deadline. Academic consideration may include extension of deadlines, waiver of attendance requirements for classes/labs/tutorials, or re-weighting of course requirements.
- An instructor may deny academic consideration for any assessment that is not required in the calculation of the final grade (e.g., “8 of 10 quizzes”). Assessment flexibility must be indicated on the course outline.
- An instructor may deny academic consideration relating to the timeframe submission of work where there is already flexibility in the submission timeframe (e.g., 72-hour submission window). This assessment flexibility must be indicated on the course outline.
- All Academic Consideration requests must include supporting documentation; however, recognizing that formal documentation may not be available in some extenuating circumstances, the policy allows students to make one Academic Consideration request without supporting documentation per course. Some assessments are excluded from this policy. Please refer to the course outline to determine if documentation is required.
- Requests without supporting documentation are limited to one per term per course.
- Please note that examinations scheduled during official examination periods always require official supporting documentation.
- If a student mistakenly submits their one allowed Academic Consideration request without supporting documentation for the assessments listed above that do not require academic consideration, the request cannot be recalled and reapplied. This privilege is forfeited.

An undocumented absence is only valid for a 24-hour period, from midnight on the day specified to midnight of the following day. An appropriate use of an undocumented absence would be for an in-class assessment that takes place

that day. Where the time given to complete the assessment is longer than 24 hours, an undocumented absence will not cover a student for the full time given to complete the assessment, and flexibility considerations in submitting the assessment will override the undocumented absence.

NOTE: Forged notes and certificates will be dealt with severely. To submit a forged document is a scholastic offence (see below).

It is the student's responsibility to check the date, time and location of the [Special Examination](#).

Religious Accommodation

When scheduling unavoidably conflicts with religious holidays, which (a) require an absence from the University or (b) prohibit or require certain activities (i.e., activities that would make it impossible for the student to satisfy the academic requirements scheduled on the day(s) involved), no student will be penalized for absence because of religious reasons, and alternative means will be sought for satisfying the academic requirements involved. If a suitable arrangement cannot be worked out between the student and instructor involved, they should consult the appropriate Department Chair and, if necessary, the student's Dean.

It is the responsibility of such students to inform themselves concerning the work done in classes from which they are absent and to take appropriate action.

Academic Integrity

In the Faculty of Engineering, we encourage students to create a culture of honesty, trust, fairness, respect, responsibility, and courage, befitting the professional degree you are pursuing.

Please visit [Academic Integrity Western Engineering](#) for more information

Academic Offences

Plagiarism means using another's work without giving credit. The university has rules against plagiarism and other scholastic offences. Western Engineering has a zero-tolerance policy on plagiarism. The minimum penalty is zero on the course work and a repeat offence will earn you zero on the course. A third offence may lead to expulsion from the university.

[Scholastic Discipline for Undergraduate Students & Cheating, Plagiarism and Unauthorized Collaboration: What Students Need to Know](#)

Students must write their reports, essays and assignments in their own words. Whenever students take an idea or a passage from another author, they must acknowledge their debt both by using quotation marks where appropriate and by proper referencing such as footnotes or citations. University policy states that cheating, including plagiarism, is a scholastic offence. The commission of a scholastic offence is attended by academic penalties, which might include expulsion from the program. If you are caught cheating, there will be no second warning.

All required papers may be subject to submission for textual similarity review to commercial plagiarism detection software under license to the University for the detection of plagiarism. All papers submitted will be included as source documents on 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>). Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, in the

relevant section of the Academic Handbook:

http://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf

Faculty of Engineering AI Policy

The use of generative Artificial Intelligence (GenAI) tools won't be discouraged in the Faculty of Engineering. As we pride ourselves on building the future we can't hide from the use of GenAI tools to contribute to the understanding of the course materials. Please refer to the course outline for the GenAI policy related to each course.

GenAI tools use won't be permitted in any type of examination or other assessments where the faculty have prohibited their use. If use of GenAI tools is detected by the instructor in these instances, academic offences penalties might be imposed against the student.

Accessibility

Western is committed to achieving barrier free accessibility for persons with disabilities studying, visiting and working at Western. As part of this commitment, there are a variety of services, groups and committees on campus devoted to promoting accessibility and to ensuring that individuals have equitable access to services and facilities. To help provide the best experience to all members of the campus community, please visit the [Accessibility Western University](#) for information on accessibility-related resources available at Western.

Students with disabilities may arrange for academic accommodation at Western. For a more detailed explanation, please visit [Academic Support & Engagement - Academic Accommodation](#).

Inclusivity, Diversity, and Respect

The Faculty of Engineering at Western University is committed to creating equitable and inclusive learning environments that value diverse perspectives and experiences. We recognize that university courses often marginalize students based on social identity characteristics such as, but not limited to, Indigeneity, race, ethnicity, nationality, ability, gender identity, gender expression, sexuality, age, language, religion, and socioeconomic status. Understanding this, we strive to facilitate equitable experiences and inclusion within the classroom by respecting and integrating multiple ways of knowing, being, and doing. Please visit the [Office of Equity, Diversity and Inclusion](#).

Health and Well-Being

[Health & Wellness Services – Students](#) - Offers appointment-based medical clinic for all registered part-time and full-time students.

[Mental Health Support](#) - Provides professional and confidential services, free of charge, to students needing assistance to meet their personal, social and academic goals. Services include consultation, referral, groups and workshops, as well as brief, change-oriented psychotherapy.

[Crisis Support](#) - For immediate assistance, please visit Thames Hall Room 2170 or call 519-661-3030. The crisis clinic operates between 11:00 am - 4:30 pm. For after-hours crisis support, click [here](#).

[Gender-Based Violence and Survivor Support](#) - "Western is committed to reducing incidents of gender-based and sexual violence (GBSV) and providing compassionate support to anyone who is going through or has gone through these traumatic events. If you are experiencing or have experienced GBSV (either recently or in the past), you will find information about support services for survivors, including emergency contacts at the following website: https://www.uwo.ca/health/student_support/survivor_support/gethelp.html To connect with a case manager or set up an appointment, please contact support@uwo.ca.

Important Contacts

[Engineering Undergraduate Services](#)

[Department of Electrical and Computer Engineering](#)

Important Links

- [WESTERN ACADEMIC CALENDAR](#)
- [ACADEMIC RIGHTS AND RESPONSIBILITIES](#)
- [ENGINEERING PROGRESSION REQUIREMENTS AND ACADEMIC REGULATIONS](#)
- [UNIVERSITY STUDENTS' COUNCIL \(USC\) - SERVICES](#)
- [IMPORTANT DATES AND DEADLINES](#)
- [ACADEMIC CONSIDERATION FOR MEDICAL ILLNESS - UNDERGRADUATE STUDENTS](#)
- [ACCOMMODATIONS FOR RELIGIOUS HOLIDAYS](#)
- [SCHEDULING OF ASSIGNMENTS, TESTS, AND EXAMINATIONS](#)
- [STUDENT FORMS](#)
- [OFFICE OF THE REGISTRAR](#)
- [RETENTION OF ELECTRONIC VERSION OF COURSE OUTLINES \(SYLLABI\)](#)
- [ACADEMIC APPEALS](#)
- [STUDENT ABSENCE PORTAL](#)