

MME 4492a “PRODUCTION MANAGEMENT FOR ENGINEERS”**COURSE OUTLINE - 2025-2026****CALENDAR
DESCRIPTION:**

This course examines lean production principles and practices adopted by world-class manufacturers. Topics include: continuous improvement; total quality management; statistical process control; setup reduction; total productive maintenance; just-in-time and pull production; group technology; cellular manufacturing; standard operations; level production scheduling; process balancing; supply chain management; activity based costing; agile manufacturing.

**COURSE
INFORMATION:**

Instructor:	Dr. J.E. Makaran, P.Eng. SEB 3095 Email: jmakaran@uwo.ca
Lectures:	See Draft My Schedule
Office Hours:	By appointment

Students must use their Western (@uwo.ca) email addresses when contacting the instructor, and use appropriate / agreed upon forms of address as well as e-mail etiquette.

PREREQUISITES

Successful completion of the third year of Mechanical and Materials Engineering, Mechatronics Systems Engineering, Integrated Engineer, or by special permission from the course instructor.

Unless you have either the prerequisites 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. This decision may not be appealed. You will receive no adjustment to your fees if you are dropped from a course for failing to have the necessary prerequisites.

**ACCREDITATION
UNITS:**

Engineering Science 30%, Engineering Design 40%, Complementary Studies 30%

TOPICS:

- Fundamental principles of lean production
 - Continuous process improvement
 - Value added and waste elimination
 - Total quality management
- Elements of lean production
 - Small-lot production
 - Setup-time reduction
 - Maintaining and improving equipment
 - Pull production systems
 - Focused factories and group technology
 - Workcells and cellular manufacturing
 - Standard operations
- Quality and statistical process control
 - This topic will be supported through the use of Minitab.

- Production planning and control
 - Scheduling for smooth flow
 - Synchronizing and balancing processes
 - Planning and control in pull production
- Beyond the production system
 - Managing the supply chain
 - Activity based costing
 - Performance measurement
- Agile manufacturing and virtual enterprises

**LEARNING
OUTCOMES:**

The Mechanical and Materials Engineering Program has been accredited by Canadian Engineering Accreditation Board (CEAB) of Engineers Canada. Accredited programs provide the academic requirements for licensure as a professional engineer in Canada. Western Engineering has defined indicators of the 12 Graduate Attributes (GAs) that the CEAB expects graduating engineering students to demonstrate. The connections between course learning outcomes and [Western Engineering's GA Indicators](#) are identified below.

Upon successful completion of this course, students will be able to

- Describe and explain the principles of lean production. KB3
- Compare and contrast lean production methods with traditional methods. KB3
- Apply the interrelated elements of lean production in an integrated context. EPM1, EPM4, IES1
- Design or improve a manufacturing process based on the principles of lean production. CS3, EPM1, EPM4, IES1

The above topics and outline are subject to adjustments and changes as needed.

CONTACT HOURS:

3 lecture hours per week, half course

TEXTBOOK:

Nicholas, John M., Lean production for competitive advantage: a comprehensive guide to lean methodologies and management practices, Second Edition, CRC Press, 2018. An electronic copy of the text may be obtained through the Western University Bookstore through the following link: https://bookstore.uwo.ca/textbook-search?campus=UWO&term=W2025A&courses%5B0%5D=001_UW/MM E4492A

REFERENCES:

Wilson, Lonnie, How to Implement Lean Production, Second Edition, McGraw Hill, 2015

Course material may refer to additional references as required

**TECHNICAL
REQUIREMENTS:**

Students will be expected to have a computer that is capable of running the entire MS Office set of software (including but not limited to; Excel, Powerpoint, Project, Visio, and Word) as well as Minitab Software.

UNITS:

S.I. Units will be predominately used, however, English units may also be used.

EVALUATION:

Assessment Type	Material Covered	Tentative Date	Weight
Test 1	Weeks 1 - 5	Week of October 7th	25 %
Test 2	Weeks 5 - 10	Week of November 11th	25 %
Test 3	Cumulative	TBD, Final Exam Period Term 1	45 %
Attendance and Classroom Demeanour	N/A	Ongoing	5 %

A non-programmable calculator will be permitted for all tests.

Participation marks shall be awarded based upon class attendance, punctuality, attentiveness during class, and e-mail etiquette.

COURSE POLICIES

The following course-specific policies will be enforced throughout the course:

Term Tests and Final Examination

- To pass the course, you must have completed at least 2 evaluations.
- Failing to achieve a grade of 50% on the final examination component of the course will result in an automatic course failure.
- Term tests and the final examination will be delivered in-person.
- There will be material overlap between successive evaluations.
- Only non-programmable calculators will be allowed during tests.
- Some formulas will be provided during tests.
- Term tests will be 2 hours long and will be submitted at the end of the allotted time.
- The final exam will take place during the December examination period and delivered in person. Its timing will be announced in advance.
- The final exam will be 3 hours long and will be submitted at the end of the allotted time.

Missed Tests and Examinations

- A mark of 0% will be assigned to students who have missed a term test or the final examination **without** academic consideration.
- **No make-up test** will be offered to those who miss a term test with academic consideration. If you miss one test with academic consideration, there will be no supplemental available to you and the weight of the missing test will be transferred to the final exam.
- Students are required to contact the instructor of the course for any other circumstances.

REPEATING STUDENTS:

Students who have failed an Engineering course (i.e. < 50%) must repeat all components of the course. No special permissions will be granted enabling a student to retain test marks from previous years.

CLASSROOM DEMEANOR:

The instructor is committed to providing a respectful learning environment for all students involved in this course. This is a collective responsibility of the instructor and students, and therefore students partaking in this course agree to abide by this criterion.

- Arrive to class on time
- 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 course activities. Cite the ideas of others appropriately.
- Use your computer and/or laptop if possible (as opposed to a cell phone or tablet)
- Maintain focus on the class material during lectures.
- Use of the Internet for other than course related activities is discouraged.

Attendance will be taken during lectures and will factor into your final course grade.

Note that disruptive behaviour of any type during classes or laboratories, is unacceptable. Depending on the severity, the actions may be subject to disciplinary measures under the Code of Student Conduct. Examples of disruptive behaviour, depending upon the circumstances includes, but is not limited to:

- Late class arrival
- Disrespectful communication with Teaching Assistants, Colleagues, and Professor
- Side conversations during the lecture not related to course material
- Cell-phone usage / texting during lectures.
- Laptop usage for activities unrelated to the course.

USE OF RECORDINGS: Participants 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.

NOTICES:

Students are responsible for checking their Western email and notices posted on OWL/Brightspace (<http://owl.uwo.ca>) for news and updates. This is the primary method by which information will be disseminated to all students in the class.

If students need assistance with the course OWL/Brightspace site, they can seek support on the OWL/Brightspace Help page. Alternatively, they can contact the Western Technology Services Helpdesk. They can be contacted by phone at 519-661-3800 or ext. 83800.

General Faculty / University Policies

In the event of contradictions between course-specific policies above and general Faculty / University policies described below, please contact your course instructor for clarification.

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 Associate Dean Academic (after due warning has been given). On the recommendation of the Department concerned, and with the permission of the Associate Dean Academic, the student will be debarred from taking the regular examination in the course.

Missed/Late Accommodation Policy 1. Students missing a test/assignment/lab or examination you will report the absence by submitting an Academic Consideration Request form through [STUDENT ABSENCE PORTAL](#).

2. Documentation must be provided as soon as possible.

Exam Accommodation 1. If you are unable to write a final examination, report your absence using the Academic Consideration Request Form through [STUDENT ABSENCE PORTAL](#).

2. Be prepared to provide the Undergraduate Services Office with supporting documentation (below for information on documentation) the next day, or as soon as possible (in cases where students are hospitalized). The following circumstances are not considered grounds for missing a final examination or requesting special examinations: common cold, headache, sleeping in, misreading timetable and travel arrangements.

3. In order to receive permission to write a Special Examination, you must obtain the approval of the Chair of the Department and the Associate Dean and in order to apply you must submit an Academic Consideration Request Form through [STUDENT ABSENCE PORTAL](#).

PLEASE NOTE: It is the student's responsibility to check the date, time and location of the Special Examination.

Late Assignments 1. Advise the instructor if you are having problems completing the assignment on time (prior to the due date of the assignment).

2. Be prepared to submit the Academic Consideration Request Form and provide documentation if requested by the instructor (see below for information on documentation).
3. If you are granted an extension, establish a due date. The approval of the Chair of your Department (or the Assistant Dean, First Year Studies, if you are in first year) is not required if assignments will be completed prior to the last day of classes.
4. Some courses may have built-in flexibility for assignment deadlines or the total number of assignments that will be graded. See course-specific policies for details.
5. Extensions beyond the end of classes must have the consent of the instructor, the department Chair and the Associate Dean, Undergraduate Studies. Documentation is mandatory.

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

Medical Accommodation

1. The Academic Consideration Request Form is available through the [STUDENT ABSENCE PORTAL](#).
2. Requests for academic consideration must include the following components:
 - a. Indication of the course(s) and assessment(s) affected by the request
 - b. Medical note, and
 - c. Additional supporting documentation as relevant
3. Requests for academic consideration without a medical note or other supporting documentation may be accepted once per term, per course.
4. Undocumented absences cannot be used for examinations scheduled by the Office of the Registrar during official examination periods (including take-home final exams and December mid-year exams for full courses) and practical laboratory and performance tests typically scheduled in the last week of the term. Undocumented absences also cannot be used for the “designated assessment” in each course. When flexibility in assessment exists and is clearly stated on the course outline, both undocumented absences and academic consideration requests with documentation may be denied.
5. **Students must request academic consideration as soon as possible and no later than 48 hours after the missed assessment.**
6. Once the request and supporting documents have been received and reviewed, appropriate academic consideration, if granted, shall be

determined by the instructor in consultation with the academic advisor, in a manner consistent with the course outline.

Academic consideration may include extension of deadlines, waiver of attendance requirements for classes/labs/tutorials, or re-weighting of course requirements. Some forms of academic consideration, such as arranging Special Examinations, assigning a grade of Incomplete, or granting late withdrawals without academic penalty, may only be granted by the Academic Advising office of the Faculty of Registration.

7. 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.
8. 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.

**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. However, the use of GenAI tools in any assignment or contribution during the course will have to be disclosed, as a resource.

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.

Use of English Policy

In accordance with Senate and Faculty Policy, students may be penalized up to 10% of the marks on all assignments, tests, and examinations for improper use of English. Additionally, poorly written work except for the final examination may be returned without grading. If resubmission of the work is permitted, it may be graded with marks deducted for poor English and/or late submission.

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](#) and providing compassionate support to anyone who has gone through these traumatic events. If you have experienced gender-based or sexual violence (either recently or in the past), you will find information about support services for survivors, including emergency contacts, [here](#). To connect with a case manager or set up an appointment, please contact support@uwo.ca.

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](#)

Note: These instructions apply to all students registered in the Faculty of Engineering regardless of whether the courses are offered by the Faculty of Engineering or other faculties in the University.

Add Deadlines:

First term half course (i.e. “A” or “F”)

September 12, 2025

Drop Deadlines:

First term half course without penalty (i.e. “A” or “F”)

December 1, 2025

Contact Information:

Undergraduate Services Office:

SEB 2097

Phone: 519-661-2130

E-mail: engugrad@uwo.ca

Mechanical Engineering:

SEB 3002

Phone: 519-661-4122

E-mail: mmeundergraduate@uwo.ca

Chemical & Green Process Engineering:

TEB 477

Phone: 519-661-2131

E-mail: cbeugrad@uwo.ca

Civil Engineering:

SEB 3005

Phone: 519-661-2139

E-mail: civil@uwo.ca

Computer, Electrical, Mechatronic Systems & Software Engineering TEB 279

Phone: 519-661-3758

E-mail: eceugrad@uwo.ca

Integrated Engineering

ACEB 2410

Phone: 519-661-6725

E-mail: engceli@uwo.ca

Office of the Registrar/Student Central

WSSB 1120

Phone: 519-661-2100