

**Western University**  
***Department of Mechanical & Materials Engineering***

**MME 4492B “PRODUCTION MANAGEMENT FOR ENGINEERS”**

**COURSE OUTLINE - 2020-2021**

***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.  
Email: jmakaran@uwo.ca

Lectures: Wed 6:30 PM-9:30PM

Office Hours: By appointment

***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
- 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:**

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

- Describe and explain the principles of lean production.
- Compare and contrast lean production methods with traditional methods.
- Apply the interrelated elements of lean production in an integrated context.
- Design a manufacturing enterprise based on the principles of lean production.

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

**CONTACT HOURS:**

3 lecture hours per week, half course

**TEXT:**

Nicholas, John M., Lean production for competitive advantage: a comprehensive guide to lean methodologies and management practices, Second Edition, CRC Press, 2018.

**TUTORIAL:**

Students will work on weekly assignments and group project during tutorial time.

**REFERENCES:**

T.B.A.

**UNITS:**

S.I.

**EVALUATION:**

In addition to examinations and participation grades, students will be evaluated on a project.

Students will work in teams to design a lean production system for a hypothetical manufacturing company. Each team will prepare a written report.

| Description  | Weight | Dates                        |
|--|--------|------------------------------|
| Midterm  | 30%    | During week 6                |
| Group project<br>To be Assigned on:<br>January 20 <sup>th</sup> , 2021 | 20%    | TBA                          |
| Final Examination  | 40%    | TBA (same time as MME 9519B) |
| Participation During Synchronous Sessions                              | 10%    | Ongoing                      |

The penalty for late assignments will be 10% per day late, and assignments that are more than 3 days late will not be marked and will receive a grade of zero.

If a student is excused from writing a midterm or quiz for legitimate reasons, and with the approval of the Department Chair, the weighting of the final examination can be adjusted accordingly.

Absences from examinations due to non-academic reasons shall result in a grade of zero.

Textbook, course notes and calculators will be permitted in the final examination. Final exam will be written at same time as MME 9519B. Students who have failed

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an Engineering course (i.e.<50%) must repeat all components of the course. No special permissions will be granted enabling a student to retain laboratory, assignment or test marks from previous years. Previously completed assignments and laboratories cannot be resubmitted for grading by the student in subsequent years.

**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 improper use of English. Additionally, poorly 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/or late submission.

**COURSE POLICIES**

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

**Computer Requirements**

All students are to ensure that they have a functional camera and microphone connected to their computer (irrespective of Windows or Mac-based). These two accessories will be required for the midterm test, final exam as well as when asking questions during synchronous/live sessions or when working on labs and in-tutorial exercises.

Tests and examinations in this course will be conducted using Zoom. By taking this course, you are consenting to the use of this software and acknowledge that you will be required to provide personal information and 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.

If technical issues will prevent a student from successfully completing and submitting examinations, the official guidelines from Associate Dean's Office, Undergraduate Affairs will be followed. Options to be considered will include but without being limited to oral examination or make-up examination in the special examination period.

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 laboratory, assignment or test marks from previous years. Previously completed assignments and laboratories cannot be resubmitted for grading by the student in subsequent 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.

Components of this course will involve online interactions. To ensure the best experience for both you and your classmates, please honour the following rules of etiquette:

- Please “arrive” to class on time

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- 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 or personal material
  - To minimize background noise, kindly mute your microphone for the entire class until you are invited to speak, unless directed otherwise
  - 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
  - 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. “Flaming” is never appropriate.
- 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.

***USE OF  
RECORDINGS:***

**All of the remote learning sessions 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 will 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.

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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.

**ATTENDANCE:**

Any student, who, in the opinion of the instructor, is absent too frequently from synchronous sessions 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.

**CHEATING:**

**Cheating is stealing.** Engineering is a profession with a code of ethics. Students are expected to behave in a manner consistent with the PEO Code of Ethics. University policy states that cheating, including plagiarism, is a scholastic offense. 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 (see Scholastic Offence Policy in the Western Calendar). If cheating during any course evaluation is suspected, the student will be required to participate in a one-on-one oral evaluation with the instructor. The mark obtained in the oral evaluation will supersede the one obtained during the written quiz/exam. If the student denies his/her participation in the oral evaluation, the quiz/exam will be automatically graded with zero and further academic penalties for scholastic offences will be applied.

Students must write their essays and assignments in their own words. Whenever students take an idea, or a passage of text from another author, they must acknowledge their debt both by using quotation marks where appropriate and by proper referencing such as footnotes or citations. Plagiarism is a major academic offence. Scholastic offences are taken seriously and attended by academic penalties which may include expulsion from the program. 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\\_grad.pdf](http://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_grad.pdf)

**ACCOMMODATIONS:**

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.

Missed labs or evaluations without accommodation shall result in a mark of zero for that lab or evaluation. Missed evaluations with an accommodation shall be completed by the student within a timeframe determined by the course instructor. The missed evaluation may not be identical to the missed evaluation at the discretion of the course instructor, however, will require the student to demonstrate competence in the same course outcomes as the missed evaluation.

Students should also note that individual instructors are not permitted to receive documentation 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](http://www.uwo.ca/univsec/pdf/academic_policies/appeals/medicalform.pdf).

**NOTICES:**

Students are responsible for regularly checking their Western email and notices posted on OWL

**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](#).