

MME 2213B – Engineering Dynamics

COURSE OUTLINE – 2024-2025

CALENDAR DESCRIPTION:	Topics include rectilinear, angular and curvilinear motion; kinetics of particles; translation, rotation and general planar motion of rigid bodies; rigid bodies in three-dimensional free motion; force methods for solving kinetics of rigid bodies, energy and momentum methods for solving kinetics of rigid bodies.
COURSE INFORMATION:	Instructor: Professor Thomas Jenkyn, PhD, PEng Email: tjenkyn@uwo.ca Lectures/tutorials/labs: See Draft My Schedule
CONSULTATION HOURS:	TBD
PREREQUISITES:	ES1022A/B/Y
PRE- or COREQUISITES:	NMM 2270A/B or the former Applied Mathematics 2270A/B
ANTIREQUISITES:	MSE 2213A/B
ACCREDITATION UNITS:	Engineering Science 50%, Science 50%
TOPICS:	<ul style="list-style-type: none">• Kinematics of particles• Kinetics of particles• Plane kinematics of rigid bodies• Plane kinetics of rigid bodies• Three-dimensional kinematics and kinetics of rigid bodies

**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:

1. develop a working knowledge of basic dynamics (KB1, KB2, KB3);
2. identify problems where the tools from kinematics (PA1, PA2), dynamics (PA1, PA2), energy and momentum can be used (PA3);
3. analyze simple dynamic systems (KB2, PA2, IN1).

CONTACT HOURS: 3 lecture hours, 2 tutorial hours, 0.5 course.

TEXTBOOK: Beer FP, Johnston ER, Cornwell PJ and Self BP. Vector Mechanics for Engineers – Dynamics. 12th ed. McGraw Hill, 2018. ISBN: 9781259977305. Available from publisher: <https://www.mheducation.com/>

Students are welcome to purchase second-hand or earlier editions of this textbook. Editions 9, 10, 11 are acceptable; all assignments are based on edition 12.

UNITS: SI will be used, however, Imperial units may be introduced through examples as required.

EVALUATION: The final grade is calculated as follows:

Homework assignments (6 total), each worth 5%	30%
Assignment 1: due January 17 th	
Assignment 2: due January 31 st	
Assignment 3: due February 14 th	
Assignment 4: due March 7 th	
Assignment 5: due March 21 st	
Assignment 6: due April 4 th	
Midterm examination (2 hours)	30%
In the week of February 24 th (tentatively)	
Final examination (3 hours)	40%
The final examination will be scheduled during the final exam period. If a mark of 50% or greater is not obtained on the final examination, then the student cannot receive a final mark of greater than 48%.	

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

Assignments: Late assignments will not be marked without academic consideration. Students who receive academic consideration must contact the instructor immediately to discuss their new deadline.

Midterm examination: This will be a 2-hour long, in-person, closed book examination scheduled during regular tutorial time. The student will be provided with a formula sheet. Formula sheet will be shared prior to the exam time for study.

The midterm is the designated assessment for this course, and so requests for

academic consideration without supporting documentation will be denied. A student who misses the midterm without academic consideration will receive a zero mark for the midterm, unless the instructor gives special permission, based on circumstances, to write a make-up exam or have the value of the midterm transferred to the final exam. A student who misses the midterm with academic consideration can write a make-up exam or have the value of the midterm transferred to the final exam.

If cheating during the exam is suspected, the Associate Chair-Undergraduate will investigate and determine the appropriate consequences. This may be to receive a zero mark for the midterm.

Final examination: This will be a 3-hour long, in-person, closed book examination scheduled during the final examination period at the end of term. The student will be provided with a formula sheet. Formula sheets will be shared prior to the exam time for study.

If cheating during the exam is suspected, the Associate Chair-Undergraduate will investigate and determine the appropriate consequences. This may be to receive a zero mark for the final exam and a mark of no more than 48% for the entire course.