FLEMING

Course Outline

Course Title:	Physics for Technology		
Course Number:	SCIE141	**Approval Date:**	2024/12/16
Course Hours:	45 hours	**Academic Year:**	2024
Academic School:	School of Trades & Technology		

Faculty:	Larry Lee - Larry.Lee@flemingcollege.ca
Program Co-ordinator or Equivalent:	Warren Cottrell - Warren.Cottrell@flemingcollege.ca
Dean (or Chair):	Allison MacGregor - Allison.MacGregor@flemingcollege.ca

Course Description

This is a study of the physics underlying the principles of motion, mechanics, light and sound . The analysis and modelling of these phenomena's are done using the appropriate mathematical techniques computer software and the laboratory experiments.

Prerequisites: None.

Corequisites: None.

Course Delivery Type

Face to face.

All course hours are delivered in person at the delivery location specified on the academic timetable.

Learning Outcomes

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

1. Learn and apply the basic laws of physics.
2. Apply observation skills while reviewing experiments in a virtual setting.
3. Use technology in solving computational more difficult problems allowing students to focus on concepts.
4. Explain the importance of the application of physics in engineering, science, and technology.
5. Use mathematics to describe and manipulate abstract concepts in physics.
6. Explain and apply the physical principles and concepts governing mechanics.

7. Explain and apply the physical principles and concepts governing fluids.
8. Explain and apply the physical principles and concepts governing electromagnetic waves.
9. Identify and apply physics principles as required to solve problems typically found in industry.

Learning Resources

College Physics, OpenStax, https://openstax.org/details/books/college-physics
Class Slides, Notes Assignments, Links uploaded on D2L

Costs for learning resources can be found on the Campus Store website, using the links below, or by visiting the Campus Store location at your campus.

- Sutherland: https://www.bkstr.com/sfleming-sutherlandstore/home
- Frost: https://www.bkstr.com/sfleming-froststore/home

Assessment Summary

Assessment Task	Percentage
Labs	15%
Quizzes	20%
Assignments	15%
Tests	50%

Student Success: Policies and Procedures

Mutually, faculty and learners will support and adhere to college Academic Regulations, and Student Rights and Responsibilities. The following policies and guidelines have been developed to support the learning process.

Please click on the link for information about:

- Academic Integrity (2-201A)
  (https://department.flemingcollege.ca/hr/attachment/7750/download)
- Accessibility for Persons with Disabilities (3-341)
  (https://department.flemingcollege.ca/hr/attachment/5619/download)
- Grading and Academic Standing (2-201C)
  (https://department.flemingcollege.ca/hr/attachment/7752/download)
- Guidelines for Professional Practice: Students and Faculty
  (https://flemingcollege.ca/PDF/guidelines-for-professional-practice-students-faculty.pdf)
- Student Rights and Responsibilities (5-506)
  (https://department.flemingcollege.ca/hr/attachment/269/download)

If you will need academic accommodations (for example if you have a learning disability, mental health condition such as anxiety or depression or if you had an IEP in high school), please contact the Accessible Education Services (AES) department (https://department.flemingcollege.ca/aes/) to meet with a counsellor.

Alternate accessible formats of learning resources and materials will be provided, on request.

Program Standards

The **Ministry of Colleges and Universities** oversees the development and the review of standards for programs of instruction. The **Ministry of Labour Training and Skills Development** oversees the development and the review of standards for programs of instruction for Apprenticeship training in the province of Ontario. Each college is required to ensure that its programs and program delivery are consistent with these standards, and must assist students to achieve these essential outcomes.

This course contributes to Program Standards as defined by the Ministry of Colleges and Universities (MCU). Program standards apply to all similar programs of instruction offered by colleges across the province. Each program standard for a postsecondary program includes the following elements:

- **Vocational standards** (the vocationally specific learning outcomes which apply to the program of instruction in question);
- **Essential employability skills** (the essential employability skills learning outcomes which apply to all programs of instruction); and
- **General education requirement** (the requirement for general education in postsecondary programs of instruction that contribute to the development of citizens who are conscious of the diversity, complexity and richness of the human experience; and, the society in which they live and work).

Collectively, these elements outline the essential skills and knowledge that a student must reliably demonstrate in order to graduate from the program. For further information on the standards for your program, follow the MCU link (www.tcu.gov.on.ca/pepg/audiences/colleges/progstan/).

Detail Plan

Term:	2025 Spring
Faculty:	Larry Lee - Larry.Lee@flemingcollege.ca Blane Bell - blane.bell@flemingcollege.ca
Program Co-ordinator or Equivalent:	Warren Cottrell - Warren.Cottrell@flemingcollege.ca
Dean (or Chair):	Allison MacGregor - Allison.MacGregor@flemingcollege.ca

Learning Plan

Wks/Hrs Units	Topics, Resources, Learning, Activities	Learning Outcomes	Assessment
Week 1	Course Introduction and Math Review	1,3,4,5,6	
Week 2	One-Dimensional Kinematics	1,3,4,5,6	Lab Exercise 1 Assignment 1
Week 3	Two-Dimensional Kinematics	1,2,3,4,5,6	Quiz 1 Lab Exercise 2
Week 4	Forces and Newton's Laws of Motion	1,3,4,5,6,9	Quiz 2 Assignment 2
Week 5	Further Applications of Newton's Laws	1,2,3,4,5,6,9	Quiz 3 Lab Exercise 3
Week 6	Motors and Torque	1,3,4,5,6,9	Quiz 4 Assignment 3
Week 7	Work, Energy and Energy Resources	1,2,5,6	Midterm Exam
Week 8	Independent Study Week		
Week 9	Work, Energy and Simple Machines	1,3,4,5,6,9	Quiz 5
Week 10	Basic Linear Momentum and Collisions	1,2,3,4,5,6	Quiz 6 Lab Exercise 4 Assignment 3
Week 11	Fluid Mechanics	1,4,5,6,9	Quiz 7
Week 12	Fluid Mechanics	1,3,4,5,7,9	Quiz 8 Lab Exercise 5
Week 13	Oscillatory Motion and Waves	1,3,4,5,7,8	Quiz 9 Assignment 4
Week 14	Electromagnetic Waves	1,3,5,7,9	Quiz 10
Week 15	Final Exam Review	1,3,4,5,6,7,8	Final Exam

Assessment Requirements

Assessment Task	Date/Weeks	Course Learning Outcome	Percentage
3-5 Lab Exercise Reports typically due 1 week after lab is performed	Week 2,3,5,10,12	1-9	20%
Mid term exam	Week 7	1,4,5,6	20%
Final Exam	Week 15	1,5,6,7,8,9	30%
Assignments with more complex problems. Detailed calculations shown and submitted to dropbox.	Week 2,4,6,10,13	1,3,5,6,7,8,9	10%
Quizzes covering readings and lectures. Concept/quick calculations.	Weeks 3,4,5,6 Weeks 9,10,11,12,13,14	1,3,5,6,7,8,9	20%

Exemption Contact

Warren Cottrell, warren.cottrell@flemingcollege.ca

Prior Learning and Assessment and Recognition (PLAR)

PLAR uses tools to help learners reflect on, identify, articulate, and demonstrate past learning which has been acquired through study, work and other life experiences and which is not recognized through formal transfer of credit mechanisms. PLAR options include authentic assessment activities designed by faculty that may include challenge exams, portfolio presentations, interviews, and written assignments. Learners may also be encouraged and supported to design an individual documentation package that would meet the learning requirements of the course. Any student who wishes to have any prior learning acquired through life and work experience assessed, so as to translate it into a college credit, may initiate the process by applying through the Registrar's office. For more information please click on the following link: http://flemingcollege.ca/admissions/prior-learning-assessment-and-recognition

Course Specific Policies and Procedures

It is the responsibility of the student to retain this course outline for future reference. Course outlines may be required to support applications for advanced standing and credit transfer to other educational institutions, portfolio development, PLAR and accreditation with professional associations.

Synchronous sessions may be recorded. As a result, your image, voice, name, personal views and opinions, and course work may be collected under legal authority of section 2 of the Ontario Colleges of Applied Arts and Technology Act, 2002. This information will be used for the purpose of supporting student learning. Any questions about this collection can be directed to the Privacy and Policy Officer at freedomofinformation@flemingcollege.ca or by mail to 599 Brealey Drive, Peterborough, ON K9J 7B1.

1. Academic integrity is essential and will be controlled according to Academic Regulations Policy 2-201
2. Students are expected to have all required course resources and attend all classes, labs, or other class activities. Students who are absent should obtain any missed work from a classmate who was present.
3. All assignments are due as outlined. Assignments submitted late will be receive a grade penalty. 10% per day up to 3 days, then mark of zero given. No make ups are typically allowed.
4. Lab reports are typically due one week after the lab is performed. Lab reports submitted late will have 10% per day up to 3 days, then mark of zero given., No make ups are typically allowed.
5. Quizzes must be completed by deadline and mark of zero will be given if deadline is missed, with no opportunity to make up.
6. The instructor reserves the right to modify the course content and sequence while meeting course outcomes. This may be due to time constraints (or other) and will be discussed with class prior to change.