FLEMING

Course Outline

Course Title:	Introduction to College Physics		
Course Number:	SCIE156	**Approval Date:**	2025/8/27
Course Hours:	45 hours	**Academic Year:**	2025
Academic School:	School of General Arts & Sciences		
Program Co-ordinator or Equivalent:	Alex Berger - Alex.Berger@flemingcollege.ca		
Dean (or Chair):	Emily Root - Emily.Root@flemingcollege.ca		
Academic Planning and Operations Department:	Felicia Pavey - Felicia.Pavey@flemingcollege.ca		

Course Description

In this one semester course, students will be introduced to the basic concepts of physics. Topics explored include kinematics and Newton's laws of motion; kinds of forces & their applications (dynamics); work, power, and energy, including energy conservation and transformations; heat transfer, temperature, and thermodynamics; fluid mechanics; properties of mechanical waves; and the fundamentals of electricity and magnetism. Students will enhance their understanding of physics through problem-solving, simulations and scientific investigations, both independently and as part of a group.

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. Apply unit factor method for conversions involving metric and imperial units.
2. Perform calculations using vectors.

3. Use vectors to solve practical problems in physics.
4. Solve kinematic problems in one dimension.
5. Apply Newton's laws of motion to investigate problems involving force and gravitation.
6. Recognize and solve problems involving work, energy and power.
7. Recognize and solve problems involving law of conservation of energy.
8. Explain transfer of heat.
9. Describe the properties of mechanical waves.

Learning Resources

Required Resources

- **D2L Course Page and Fleming College email:** The course page on Desire2Learn (D2L) contains notes for the course, links to online quizzes, announcements and other important course materials. Along with your Fleming College email, it is an important method of communication for this course.
  You should visit the course page and check your Fleming College email REGULARLY (multiple times a week), so you do not miss important information or due dates.
  Use your Fleming College email to contact your professor, as email from other addresses may not be received.

- **Textbook (Open Source):** Urone, P.P. & Hinrichs, R. (2022). *College Physics - 2nd Edition.* USA: OpenStax. Link: **https://openstax.org/details/books/college-physics-2e**
  This is a FREE resource available through the link above. You may also download it digitally or for printing.
  Additional open-source (*free*) resources may be posted on the course page.

- **Scientific Calculator** (*from a previous MATH course* - Sharp EL-531X model recommended)
  Graphing, programmable, and Wi-Fi enabled calculators are **not permitted** for use during assessments. Other electronic devices (*e.g.* laptops, cellphones, smartwatches, etc.) are **not to be accessed** during an assessment.
  Calculators and other resources **may not** be shared during a test or exam. Students are responsible for knowing how to operate their calculator independently on assessments.

- It may be helpful, but not necessary, to have a **printer**. Printers are also available on-campus.

- Your professor will inform you in advance of any other materials you may need for this course.

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
Assignments	50%
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 Fall
Program Co-ordinator or Equivalent:	Alex Berger - Alex.Berger@flemingcollege.ca
Dean (or Chair):	Emily Root - Emily.Root@flemingcollege.ca
Academic Planning and Operations Department:	Felicia Pavey - Felicia.Pavey@flemingcollege.ca

Learning Plan

Wks/Hrs Units	Topics, Resources, Learning, Activities	Learning Outcomes	Assessment
Vectors and Kinematics Module (about 15 hrs.)	Math Skills Review Vectors Uniform Motion in One Dimension Free-Falling Bodies	1-4	Activities (Labs/Simulations) Homework **MODULE TEST**
Dynamics and Energy Module (about 15 hrs.)	Force and Newton's Laws of Motion Friction Work, Energy & Power Conservation of Energy	1-3, 5-7	Activities (Labs/Simulations) Homework **MODULE TEST**
Heat Energy and Waves Module (about 15 hrs.)	Energy, Heat & Temperature Energy Forms, Phase Changes Heat Transfer Waves & Properties	1-3, 8, 9	Activities (Labs/Simulations) Homework **MODULE TEST**

Assessment Requirements

Assessment Task	Date/Weeks	Course Learning Outcome	Percentage
Homework Assignments Individual electronic assessments to practice applying understanding and problem solving skills to both concept and calculation based questions. More information will be provided in class and on D2L.	Ongoing/All Semester	All	20%
Activities (Labs/Simulations) Students will engage in both group and individual activities investigating physics concepts through hands-on lab experiments and online computer simulations. More information will be provided in class and on D2L.	Ongoing/All Semester	All	30%
Module TESTS Individual, closed-book, timed evaluations (3) on material covered in each Module. More detailed information will be provided in advance (in class and on D2L).	End of Module	All	50%

More details about assessments, due dates, format, etc. will be provided by your professor in class and/or through D2L.

Students are expected to attend classes with the section they are registered in, and follow instructions from their professor.

In order to meet the needs of the student group, the course schedule/topics may change. Any changes will be discussed with the class, and a revised learning sequence will be posted.

Final grades in this course are assigned based on the level of academic achievement which corresponds to the assessment components as cited in this course outline. **NO additional assessments** (*extra-credit/make-up assignments or tests*) will be offered.

Students are encouraged to keep all assessments as well as a record of their grades.

Artificial Intelligence (AI) Statement

NO USE. Use of generative AI tools (like ChatGPT) is not permitted in this course.

It is the responsibility of students to maintain a history of records and supporting documentation to demonstrate their efforts in all academic submissions, even if submission of these is not part of the final academic deliverable.

Exemption Contact

Information about the Transfer Credit process can be accessed through your myCampus Portal under the Registrar's Office and Resources Tabs or by contacting the Transfer Credit Coordinator, (transfercredit@flemingcollege.ca) in the Registrar's Office.

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.

The following expectations regarding student academic responsibilities were compiled in consultation with mathematics/science faculty and appear in all mathematics outlines.

Your success in this course will be directly related to your regular class attendance, out-of-class practice and study.

- **Student Attendance:** Students are expected to attend all in-person classes each week, with their calculators and prepared to take notes. Students are solely responsible for catching up on course work when absent. Individual professors will provide more specific expectations for attendance early in the semester.

- **Student Lateness:** Students who are late to class are a disruption to their classmates and have a negative impact on the learning environment. Your professor will share their policies with you early in the semester.

Late entry into a class session may be denied due to safety reasons.

- **Activity Guidelines**: Additional information about any equipment needed/used, safety instructions & protocols, etc. will be provided in advance of the class. You are required to adhere to the procedure given and any instructions given by your professor. Violations will result in your removal from the activity.

- **Due Dates/Missed Assessments**: Please refer to the *Class Absence Policy* (https://department.flemingcollege.ca/policies-procedures/academic-affairs/) Unapproved missed tests, homework, activities or other assessments will be given a grade of ZERO.
  Students are required to follow course norms for submission requirements, **including neatness and legibility**; alternate forms of submission will not be accepted/graded. Technical difficulties will not be a permissible reason for missing an assessment.
  All assessments will be the student's **OWN INDEPENDENT WORK**, without the aid of online information, electronic assistance (AI), non-permitted resources, and/or fellow classmates (or others), unless permitted to do so by their professor. **The Internet, videos, apps, cellphones or other electronics are NOT permitted for use or accessible during assessments.**

- **Academic Integrity:** Each student has the responsibility to support academic integrity. The principle of academic honesty requires that all work submitted for evaluation is the original, unassisted work of the student.
  Breaches of academic integrity such as: *cheating; plagiarism; falsifying/making up data; sharing test resources/information; copying, purchasing or collaborating on work (except faculty-approved group projects) or otherwise submitting work that is not your own*, etc. will be dealt with according to the College Academic Integrity Policy (Operating Procedure #2-201A). Full details of the policy, procedure, types of violations, and forms can be found at: https://department.flemingcollege.ca/policies-procedures/academic-affairs/

- **Help with Course Material**: Students may arrange for a tutor and/or attend math drop-in help sessions through **Tutoring and Academic Skills** (https://library.flemingcollege.ca/tutoring).
  Your professor is also available outside of class for help with the course material, and will provide details of their contact & meeting preferences early in the semester.