PHYSICS
Science
Engineering Physics
203-BZE-05 (all sections)
Fall 2019

Teacher	Andrew Stewart 7A.24, local 4024, anstewart@dawsoncollege.qc.ca
Pre-requisites	Mechanics (203-NYA-05)
Co-requisites	Calculus II (201-NYB-05)
Ponderation	3-2-3 (3 hours of lecture, 2 hours of labs, and 3 hours of work outside class per week)
Course objectives	The objectives are to analyze different physical situations and phenomena of interest to engineers and scientists using the fundamental laws of mechanics and to use computers to model various phenomena and to gather data in pertinent experiments. This course is designed to provide students with an enhanced background in mechanics. Detailed information regarding the objectives and standards for this course and the specific performance criteria is available at https://www.dawsoncollege.qc.ca/physics/program-documents/science/.
Course competencies	This course will allow the student to partially achieve the competency: 00UV: Apply the experimental method in a scientific field. 1. Represent various situations, drawing upon relevant concepts, laws and principles of science. 2. Solve problems using a method proper to science. 3. Apply techniques of experimentation or validation specific to science.
Evaluation	The Institutional Student Evaluation Policy (ISEP) is designed to promote equitable and effective evalua-

Attendance & participation

Although class attendance is not compulsory, students should make every effort to attend all classes. In the event that a class is missed, the student is responsible for all material covered or assigned during that class. **Attendance during laboratory experiments and for class tests is however compulsory.** In the rare event that a student for valid reason (*e.g.* due to an intensive course, illness, *etc.*) is or anticipates to be absent during a laboratory experiment or for a class test, the student **must**, where possible, inform the teacher and provide the necessary documents before the absence or, at the latest, on the day of their return. If the absence is excused, students will have the opportunity to complete the assessment.

All other assessments (readings, quizzes, lab activities, *etc.*) missed due to absence are:

- assigned a grade of zero where the absence is not excused;
- given zero weight in the calculation of the final grade where the absence is excused.

For additional information regarding attendance, students should refer to the Institutional Student Evaluation Policy (ISEP section IV-C).

Literacy standards

It is expected that students will be able to comprehend the course material and express themselves appropriately as a normal part of their academic performance in the course. Marks may be deducted for inadequate communication skills.

Laboratory work

Experimentation is an essential part of science. Students will be expected to perform experiments and report on their results. Your teacher will provide you with instructions for lab experiments and activities (there is no manual to purchase). **Students must be present during the entire lab activity to receive credit.**

Student conduct

Everyone has the right to a safe and non-violent environment. Students are obliged to conduct themselves as stated in the Student Code of Conduct and in the ISEP section on the roles and responsibilities of students (ISEP section II-D). Disruptions or excessive noise will not be tolerated. Students who do not comply with these rules will be asked to leave the class and may be referred to Student's Services for disciplinary action. **Mutual respect is the key to a harmonious learning environment.**

Academic integrity

Cheating, copying, or any other form of academic dishonesty will not be tolerated. Students should acquaint themselves with the policy of the College on plagiarism and cheating. According to ISEP, the teacher is required to report to the Sector Dean all cases of cheating and plagiarism affecting a student's grade (ISEP section V-C). The usual penalty for the first instance of cheating will be a grade of zero for the piece of work in question to all parties involved (under certain circumstances, even a first offence may be penalized by failure in the course). A second offence may result in the failure of the course. Students should note that using someone else's laboratory data without authorization from the student and the teacher is cheating.

Intensive course conflicts

If a student is attending an intensive course, the student must inform the teacher, within the first two weeks of class, of the specific dates of any anticipated absences.

Policy on religious observance

Students observing religious holidays must inform their teachers, in writing, as prescribed in the ISEP Policy on Religious Observances, no later than the end of the second week of the impacted semester or term. This applies both to the semester or term, as well as to any final examination period. (ISEP Section IV-D) Please refer to the academic calendar for the exact dates. Forms for this purpose are available from your teacher. Your teacher will inform you of any modifications to planned course activities resulting from the teacher's own religious commitments.

Course content

The material to be covered is contained in the following chapters and sections of the texts.

Weeks	Topics	Pages
1	Intro to structural mechanics	From *Coursepack* p. 4{32
2	Trusses, frames and machines	p. 33{56
3	Static equilibrium in 3D	p. 57{72
4	Internal loads and stresses	p. 73{92
5	Axial strain	p. 96{107
6	Shear force and bending moment diagrams	p. 115{131
7	Bending and shearing stresses in beams	p. 132{159
8	Properties of a system of particles; centre of mass	From *University Physics, OpenStax* Ch. 9, sections 1{6
9-12	Rotational dynamics of a rigid body	Ch 10 all sections, Ch 11 sections 1{3
13	Intro to uid mechanics: density, pressure, forces	Ch. 14 sections 1, 2
14	Buoyancy	Ch. 14 section 4
15	Fluid dynamics	Ch. 14 sections 5, 6

Comprehensive examination

Second-year students can opt to complete the independent study portion of their comprehensive examination in this course. (This option is not available in continuing education courses.) The project will be evaluated on pass or fail basis independently from the course grade.