



# PHYSICS Science Mechanics

203-NYA-05 (all sections)  
Summer 2017

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<b>Teachers</b>	Jeremie Choquette 7A.18, local 4476, j.choquette@dawsoncollege.qc.ca (Cont'Ed)
<b>Pre-requisites</b>	Sec. V Physics 504, Mathematics 506 (or equivalent)
<b>Co-requisites</b>	Calculus I (201-NYA-05)
<b>Ponderation</b>	6.8-3.4-6.8 (6 hours 50 min of lecture, 3 hours 25 min of labs, and 6 hours 50 min of work outside class per week)
<b>Course objectives</b>	<p>The role of this course in the program is two-fold. First, it presents the basic principles of mechanics { kinematics, dynamics, and the three conservation laws (energy, momentum and angular momentum) { which are essential to the study of all the natural sciences. Second, it provides an opportunity for students to develop problem solving skills.</p> <p>The laws and concepts introduced in this course are the foundation of our scientific view of the world. Ideas about force, motion, energy and momentum arise again and again in all the sciences and in daily life. Understanding them is essential to the education of a scientist or an engineer. In every physics, chemistry, geology and even biology course at college and university, concepts such as energy and momentum, first learned in mechanics, will be generalized, broadened, deepened and applied.</p> <p>Detailed information regarding the objectives and standards for this course and the specific performance criteria is available at <a href="https://www.dawsoncollege.qc.ca/physics/program-documents/science/">https://www.dawsoncollege.qc.ca/physics/program-documents/science/</a>.</p>
<b>Course competencies</b>	<p>This course will allow the student to fully achieve the competency:</p> <p>OOOR: To analyze different physical situations and phenomena in terms of the fundamental principles of classical mechanics.</p> <ol style="list-style-type: none"><li>1. To describe the translational and rotational motion of objects.</li><li>2. To apply the concepts and laws of dynamics to the analysis of the motion of objects.</li><li>3. To carry out calculations of work, power and energy in simple situations.</li><li>4. To apply the conservation principles of mechanics.</li><li>5. To verify experimentally some of the laws and principles of mechanics.</li></ol> <p>This course also contributes to the partial achievement the competency:</p> <p>OOUU: To apply what the students have learned to one or more subjects in the sciences.</p> <ol style="list-style-type: none"><li>1. To identify the scientific aspects of a given topic from an interdisciplinary perspective</li><li>2. To transfer what they have learned to situations requiring the contribution of more than one discipline</li><li>3. To apply systematically an experimental method</li><li>4. To solve problems</li><li>5. To use data processing technologies</li><li>6. To reason with rigor</li><li>7. To communicate clearly and precisely</li><li>8. To show evidence of independent learning in the choice of documentation or laboratory instruments</li><li>9. To work as members of a team</li><li>10. To make connections between science, technology and the evolution of society</li><li>11. To identify the underlying values underlying their treatment of a topic</li><li>12. To place scientific concepts used in a historical context</li><li>13. To show attitudes appropriate for scientific work</li><li>14. To apply acquired knowledge and skills to new situations</li></ol>

## Evaluation

There are two grading schemes. **Your final grade will be the higher of the two schemes.**

Assignments, quizzes and class tests <sup>y</sup>	50%	30%
Laboratory activities	20%	20%
Final examination	30%	50%

<sup>y</sup>Your teacher will provide a detailed breakdown of these components and a tentative test schedule during the first week of class.

In order to pass the course, students must show a basic understanding of the course material at the level covered in the lectures and in the lab. This is achieved by attaining a final grade of at least 60%, calculated according to the evaluation scheme above. **Note: course work not submitted by the due date may be penalized at the teacher's discretion.**

#### Reference materials

1. **Physics for Scientists and Engineers (with Enhanced WebAssign) by Serway & Jewett,**

**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 who intend to observe religious holidays must inform their teachers in writing as prescribed in the ISEP Policy on Religious Observance (ISEP Section IV-D), within the first two weeks of the semester. Forms for this purpose are available from your teacher. Your teacher will inform you of any modifications