

PHYSICS
Science
Remedial Activities for Secondary V Physics
203-001-50 (all sections)
Fall 2017

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| Pre-requisites | High School Physics 553-504 (grade less than 70%), or High School Sec IV Science 558-404 or 402, or Physical Science 436 or CEGEP 982-003-50 |
| Co-requisites | Remedial Activities for Sec V Mathematics (201-015-50) |
| Ponderation | 3-2-3 (3 hours of lecture, 2 hours of labs, and 3 hours of work outside class per week) |
| Course objectives | This course is a prerequisite for Mechanics (203-NYA-05), the first physics course in the Science Program. It aims at developing the basic knowledge and skills needed to succeed in Mechanics and in the Science Program. It also provides an opportunity for students to develop problem-solving skills. |
| Course competencies | To exhibit an understanding of basic physics principles through analysis of phenomena in mechanics and geometric optics and to demonstrate preparedness for College level studies in Science. Elements of the Competency: <ol style="list-style-type: none">1. Knowledge<ul style="list-style-type: none">• To state the principles and laws of physics dealt with in this course.• To state precise definitions of the physical quantities presented in this course, including proper SI units.2. Problem-solving skills<ul style="list-style-type: none">• To represent a physical situation by means of appropriate diagrams.• To solve problems in an organized, methodical fashion, showing all work and explaining each step.• To solve problems involving several main steps.• To solve problems involving more than one principle or law.• To display a certain facility in employing mathematical techniques to solve physics problems:<ul style="list-style-type: none">– construction of appropriate mathematical representations of physical situations manipulation of vectors, both graphically and analytically, in two dimensions;– set up and solution of algebraic equations and systems of equations;– manipulation of trigonometric, logarithmic and exponential functions;– construction and interpretation of graphs, including slopes, areas, intercepts and intersection points;– competent use of a scientific calculator.3. Communication<ul style="list-style-type: none">• participate actively and articulately in class discussions and activities.• To present answers to numerical problems in complete sentences.• To explain simple phenomena from daily life, sports and technology:<ul style="list-style-type: none">– in terms of the principles and laws presented in this course;– in a few paragraphs;– logically and coherently;– in grammatical English. |

4. Laboratory Work

- To follow a detailed, written laboratory protocol with sufficient care to obtain reliable data.
- To work effectively as part of a lab group of two or three students.
- To present data in an organized way, using graphs and tables as appropriate.
- To analyze the data as directed in the lab protocol, and draw reasonable conclusions based on the results obtained.
- To submit a written laboratory report for each experiment in conformity with the course standards for lab reports, and on time.

5. Attitudes and behaviors

- To show curiosity about and interest in the study of physics and its applications.
- To have a serious and organized approach to college studies:
 - regular attendance;
 - participation in class and labs;
 - keeping up to date in courses, meeting deadlines for work;
 - seeking help and advice as appropriate, to master material, to improve study skills and to plan academic career;
 - setting priorities and managing time effectively;
 - scrupulous academic honesty.

Evaluation

The Institutional Student Evaluation Policy (ISEP) is designed to promote equitable and effective evaluation of student learning and is therefore a crucial policy to read and understand. The policy describes the rights and obligations of students, faculty, departments, programs, and the College administration with regard to evaluation in all your courses, including grade reviews and resolution of academic grievance. ISEP is available on the Dawson website.

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

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| Assignments, quizzes and class tests [†] | 50% | 30% |
| Laboratory activities | 20% | 20% |
| Final examination | 30% | 50% |

[†]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.**

Important note: To advance in the ESP or DSP programs, students must obtain a final grade of at least 70%.

Reference materials

1. **Physics, Remedial Activities for Secondary V Physics (with Mastering Physics), 203-001-50.** This custom textbook is available at the Dawson College Bookstore (it has a light bulb on the cover) and includes an access code for the online homework system. The book consists of chapters taken from **College Physics: A Strategic Approach, 4th edition**, by Randall D. Knight, Brian Jones, and Stuart Field published by Pearson Education (2016) .
2. **Library copies:** Copies of the textbook are available on reserve in the Dawson Library (as are similar textbooks by Serway & Jewitt, *etc.*)

Teaching methods

The material will be presented using a mix of active learning activities, lectures, in-class problem solving, laboratory experiments and demonstrations. Laboratory periods will be used for experiments as well as class tests and lectures.

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 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 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 text.

| Weeks | Topics | Chapter & Section |
|-------|--------------------------------------|-------------------|
| 1 | Course introduction and math review | – |
| 2 | Representing motion | Ch.1: 1–6 |
| 2–4 | Motion in one dimension | Ch.2: 1–7 |
| 4–5 | Vectors and motion in two dimensions | Ch.3: 1–4, 6–8 |
| 6 | Forces and Newton's laws of motion | Ch.4: 1–7 |
| 7–8 | Applying Newton's laws | Ch.5: 1–8 |
| 9–10 | Energy and work | Ch.10: 1–6, 8 |
| 11–14 | Ray optics | Ch.18: 1–7 |
| 15 | Optical instruments | Ch.19: 1–2 |

**Questions
outside class**

- All regular day program teachers will be available in their respective offices to their students during posted office hours. In the first week, your teacher will inform you of their schedule and will post it outside their office.
- Room 7A.1 is the physics study room. At scheduled times, a teacher or peer tutor will be on duty there to answer your questions. The schedule of teachers and peer tutors will be posted outside of 7A.1 in the 2nd or 3rd week of term.