



**PHYSICS**  
**Science**  
**Electricity & Magnetism**  
203-NYB-05 (all sections)  
Fall 2018

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<b>Teachers</b>	<b>Sameer Bhatnagar</b> 7A.14, local 4010, sbhatnagar@dawsoncollege.qc.ca <b>Jamileh Naidj</b> 7B.19, local 4154, jnaidj@dawsoncollege.qc.ca <b>Rim Dib</b> 7B.19, local 4153, rdi b@dawsoncollege.qc.ca <b>Manuel Toharia</b> 7B.21, local 4017, mtohari a@dawsoncollege.qc.ca <b>Emmanuel Thibau</b> 7B.19, local 4236, ethi bau@dawsoncollege.qc.ca (Cont'Ed)
<b>Pre-requisites</b>	Mechanics (203-NYA-05), Calculus I (201-NYA-05)
<b>Co-requisites</b>	Calculus II (201-NYB-05)
<b>Ponderation</b>	3-2-3 (3 hours of lecture, 2 hours of labs, and 3 hours of work outside class per week)
<b>Course objectives</b>	<p>The aim of this course is to analyze different physical situations and phenomena in terms of the fundamental laws of electricity and magnetism. This includes an analysis of: physical situations involving static electric charge, direct current circuits, magnetic fields and magnetic induction, alternating current circuits as well as experimental verification of some of the laws of electricity and magnetism.</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>

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, 9th edition** or **Physics for Scientists and Engineers (with Mastering Physics) by Knight, 4th edition**. Custom packages for Dawson College NYB are available at the bookstore which include an access code for the online homework system. Your teacher will tell you which textbook will be used in your section.
2. **Library copies:** Copies of the textbook are available on reserve in the Dawson Library.

**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 &**

**Policy on religious observance**

Students who intend to observe religious holidays must inform their teachers, in writing, within the first two weeks of the semester as prescribed in the ISEP Policy on Religious Observances. (ISEP, Section IV D). This includes any religious holidays that occur during the final exam period. 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 **Physics for Scientists and Engineers by Serway & Jewett, 9th edition.**

Weeks	Topics	Chapter & Section
1{3	Electric fields	Ch.23: 1{7
3{4	Gauss's law	Ch.24: 1{4
4{6	Electric potential	Ch.25: 1{6 (7 & 8 optional)
7{8	Capacitance and dielectrics	Ch.26: 1{4 (5, 6 & 7 optional)
8{9	Current and resistance	Ch.27: 1, 2, 4{6 (3 optional)
9{10	Direct-current circuits	Ch.28: 1{5
11{12	Magnetic fields	Ch.29: 1{4 (5 & 6 optional)
12{13	Sources of the magnetic field	Ch.30: 1{5 (6 optional)
13{14	Faraday's law	Ch.31: 1{5 (6 optional)
15	Inductance	Ch.32: 1, 2 (3{5 optional)
	Alternating-current circuits (time permitting)	Ch.33: 1{9

The material to be covered is contained in the following chapters and sections of **Physics for Scientists and Engineers by Knight, 4th edition.**

Weeks	Topics	Chapter & Section
1	Electric charges and forces	Ch.22: 1{5
2{4	The electric field	Ch.23: 1{6 (7 optional)
5	Gauss' law	Ch.24: 1{6
6{7	The electric potential	Ch.25: 1, 2, 4{7 (3 optional)
7{8	Potential and field	Ch.26: 1{6 (7 optional)
9	Current and resistance	Ch.27: 1{5
10{11	Fundamentals of circuits	Ch.28: 1{9
12{14	The magnetic field	Ch.29: 1{8 (9 & 10 optional)
15	Electromagnetic induction	Ch.30: 1{5 (6{8 optional)
	AC circuits (time permitting)	Ch.32

**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.