

PHYSICS
Analytical Chemistry
Physics for Technology I
203-921-DW (all sections)
Winter 2014

Teacher	Basim Assaf 7A.14, local 1756, physicsone@gmail.com						
Pre-requisites	High School Sec IV Science 558-404 or 402, or Physical Science 436 or CEGEP 982-003-50						
Co-requisites	None						
Ponderation	2-3-3 (2 hours of lecture, 3 hours of labs, and 3 hours of work outside class per week)						
Course objectives	This is the first course for students in the Analytical Chemistry program. The primary aim of the course is to acquaint students with the basic concepts of electrical measurement, DC and AC circuits, and basic principles of electronics in order to identify electronic components and to understand schematic diagrams of equipment used in chemical analysis, as specified in the manufacturer's technical manuals.						
Course competencies	<p>This course will allow the student to fully achieve the competency:</p> <p>O1DR: To understand how equipment operates.</p> <ol style="list-style-type: none"> 1. To interpret the schematic of equipment. 2. To describe the operation of simple electric circuits. 3. To identify electronic components of equipment. <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"> 1. To transfer what they have learned to situations requiring the contribution of more than one discipline 2. To apply systematically an experimental method 3. To solve problems dealing with basic electric circuits 4. To work as members of a team 5. To make connections between physics, chemistry and technology 6. To apply acquired knowledge and skills to new situations 						
Evaluation	<p>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.</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;">Assignments</td><td style="text-align: right;">10%</td></tr> <tr> <td>Laboratory activities and projects[†]</td><td style="text-align: right;">30%</td></tr> <tr> <td>Class tests</td><td style="text-align: right;">60%</td></tr> </table> <p>[†]Your teacher will provide a detailed breakdown of these components and a tentative test schedule during the first week of class.</p> <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.</p> <p>Additionally, students must perform all lab activities to pass the course.</p>	Assignments	10%	Laboratory activities and projects [†]	30%	Class tests	60%
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Reference materials	<ol style="list-style-type: none"> 1. College Physics by Serway, Faughn & Vuille, 8th edition, Brooks Cole. 2. College Physics by Urone, Thomson Publishing. 3. Additional notes supplied by instructor. 						

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 at laboratory experiments and tests is compulsory. Students must write the tests at the scheduled times except for unforeseen emergencies confirmed by proper documents. For additional information students should refer to the Institutional Student Evaluation Policy (ISEP section III-C) regarding attendance.
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). Information about lab report formats is available in the Science Student Handbook which is available on FirstClass (see folder in 'student info' conference). 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 students grade (ISEP section IV-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 elses 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 III-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 as well as the pdf files available to the students from the instructor.

Weeks	Topics	Chapter & Section
1-2	Work and energy, kinetic energy, potential energy, energy transfer, power	Ch.x: x-x
3-4	Coulomb's law, electric field, electric potential	Ch.x: x-x
5-6	Capacitance, Ohm's law, resistivity, light bulbs	Ch.x: x-x
7-8	Kirchhoff's laws, series and parallel circuits, open and short circuits, power	Ch.x: x-x
9-10	RC circuits, the magnetic force, mass spectroscopy, inductance, solenoids	Ch.x: x-x
11	AC circuits and resonance	Ch.x: x-x
12-13	Electronic components: semiconductors, diodes, rectifiers, LED diodes, transistors	Ch.x: x-x
14-15	Transistor amplifier, oscillator, operational amplifier, solid state devices and logic circuits	Ch.x: x-x

The lab work is an integral part of the course. Ten labs will be performed and will be taken from the following topics: electric field, Ohm's law, series and parallel resistors, Kirchhoff's laws, RC circuits, resistivity, AC circuits, the diode rectifier, the transistor amplifier, oscillators, the operational amplifier, identification of components and schematic diagrams. Students might also be asked to work on group projects to be completed by the end of the semester.

**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 a 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.
- Many teachers in the Science Program – including those from the Physics Department – will communicate with their students via FirstClass. This software allows teachers and students to share information, use email and much more. You can download the necessary (free) software at the following website:

<http://www.place.dawsoncollege.qc.ca>

An instruction manual is available at this website that details how to install and use the software. Also note that a FirstClass app is available for iPhone/iPad, Android, and BlackBerry.