COURSE OUTLINE – FALL 2014 DAWSON COLLEGE – PHYSICS DEPARTMENT
PHYSICS 203-BXB-05 - 03 PHYSICS OF RADIATION ONCOLOGY

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Prerequisites: Physical Science 436 or equivalent, Math 536 or equivalent

Ponderation: 3-2-3

Textbook: College Physics by Serway and Vuille (9th ed) (If you pick up a second-hand copy of College Physics by Serway and Vuille(8th ed) it is not much different, and I will indicate the problem numbers in both editions for assignments, and refer to both editions in the Reading Guides.) The bookstore will not be stocking the book. (The new 10th edition hard cover is ≈ $185.) You can get the e-book for about $108 on line, or check whether any second or third year students are selling used copies.

Objectives: This is a general physics course, covering topics in mechanics, electricity and modern physics, intended to provide a foundation for further studies in Radiation Oncology.
Since students may enter the radio-oncology program from high school with only a fourth year course in Physical Science as science background, or be adult students, who last studied physics some years before enrolling in the program, the course presents the basic physics concepts and skills necessary for the successful completion of many of the program objectives, especially those concerning the generation of radiation and its interaction with matter. Specifically, by the end of the course, students will be able to

E7.1: Explain the structure of matter
E7.2: Explain radioactive decay

The study of physics also contributes to building analytical problem solving skills, critical thinking, and mathematical skills needed in the other components of the program.

Course Content: This is a list of topics to be covered in this course and an approximate timeframe.

Topic	**Chapters**
Mathematical Review	Chapter 1
Kinematics and Vectors	Chapter 2 and 3
Dynamics	Chapter 4
Work, energy and power	Chapter 5
Momentum and Collisions	Chapter 6
Circular Motion and Gravity	Chapter 7

TEST1 – Mechanics - Week 6 (Probable date Wednesday, October 1)

Coulomb's Law, E-Field, Potential	Chapters 15 and 16
Current and Resistance	Chapter 17
Direct Current Circuits	Chapter 18
Magnetism and electromagnetism	Chapters 19 and 20
Alternating current and electromagnetic waves	Chapter 21

Test 2 – E&M – Week 10 (Probable date Wednesday, November 5)

Relativity	Chapter 26
Quantum Physics	Chapter 27
Atomic Physics	Chapter 28
Radioactivity and Nuclear Physics	Chapter 29

Test 3 – Modern Physics – Week 15 (Probable date Wednesday December 3)

Evaluation Scheme and Schedule: 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.

Laboratory Work: During the term students will perform experiments for which written laboratory reports will be required. Reports are due one week after the experiment is done. Marks may be deducted for late reports.

Grading Scheme:	Class tests (3)	40%
	Quizzes/homework	10%
	Laboratory reports	20%
	Final Exam	30%

Class tests will be scheduled at about the 6th, the 10th and the 15th weeks of the term.
The final exam will count for 50% and the class tests and quizzes/homework for 30% in any case where this results in a higher grade for the student. An overall grade of 60% is required to pass the course.
Note that, in this course, there is a compulsory final exam, which will be scheduled by the College in the official exam period -Tuesday, December 10 to Thursday, December 19 (with "snow days" Dec 20, 23 and 24). Students must write the final exam at the appointed time except in case of unforeseen emergency such as illness or accident (supported by documentation). Please do not schedule trips, jobs etc during this period. The final exam schedule will be posted on Tuesday, October 15.

Teaching Methods: This course will be presented in a series of lectures, laboratory experiments and demonstrations. Laboratory periods in which no experiments are scheduled will be used for lectures, problem solving sessions, tutorials and tests.

For Questions Outside of Class:

1. My office hours are posted on the bulletin board next to my office door. Please come by with any questions or concerns about the course.

2. Room 7A.1 is a physics study room. A teacher or peer tutor will be on duty there to answer your questions the best part of each day. The schedule of teachers and tutors will be posted on the door of 7A.1.

3. There is a conference for this course on First Class Client. I will use it to answer questions, post classroom announcements, problem solutions, etc. It provides e-mail, chat and other functions. Students can obtain free downloadable software by going to the website: http://place.dawsoncollege.qc.ca and clicking on the link. There is also an instruction manual available at that Website for installing and using the software. Your user ID should be first initial, family name. E.g. John Smith would have user ID jsmith. Your initial password is your student number. Change it after you log in.

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Attendance: Although no points are awarded in the grading scheme of the course for attendance, it is essential to attend all classes. In the event that a class is missed, the student is responsible for finding out what material was covered or assigned during that class and catching up. This course moves very quickly due to the great breadth of material to be learned, so it is important to keep up to date in your work.

Attendance at laboratory experiments and tests is compulsory. If for reasons of illness or other serious problems, you have to miss a lab or a test, you should contact me as soon as possible to explain your absence and to arrange to make up the missed test or lab.

Students should refer to the Institutional Student Evaluation Policy (Section III-C) regarding attendance.

Literacy: It is expected that students will be able to comprehend course material and express themselves appropriately in English as a normal part of their academic performance in the course. Marks may be deducted for inadequate use of language. Accommodations will be made for students in ESL courses.

Homework and tests will contain questions requiring short written answers as well as numerical questions. Lab reports will require clear and logical written explanations and conclusions.

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. (see 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 else's laboratory data without authorization from the student and the teacher is cheating.

Student Obligations: 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.

Religious Holidays: Students who expect to miss classes or labs for religious holidays **must** inform their teacher in writing within the first two weeks of the semester as per the Institutional Student Evaluation Policy (ISEP Section III-C). . 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.

Intensive Courses: Students who expect to miss classes or labs because of intensive courses **must** inform their teacher in writing within the first two weeks of the semester as per the Institutional Student Evaluation Policy.