



PHYSICS
Diagnostic Imaging
Physics of Radiology
203-BXB-05 (Sections 1 & 2)
Fall 2019

Teacher	Michelle Baryliuk 7A.24, local 4022, mraimbert@dawsoncollege.qc.ca
Pre-requisites	Mathematics 564-506 or 565-506 or Mathematics 526; Science 558-404 or 558-402 or Physical Science 436
Co-requisites	Basic Radiographic Imaging (142-BYB-03)
Ponderation	3-2-3 (3 hours of lecture, 2 hours of labs, and 3 hours of work outside class per week)
Course objectives	<p>The aim of this course is to analyze the physical phenomena related to physical imaging (005A). This includes a review of mathematics pertinent to the course; understanding of basic mechanics (emphasizing force, energy, power and conservation laws), structure of matter and modern physics, electricity and magnetism (in more detail), DC and AC devices, production and properties of x-rays, x-ray system components and their functions, and interaction of x-rays with matter.</p> <p>Detailed information regarding the objectives and standards for the competencies related to this course and the specific performance criteria is tt9.9626 Tf 80.809 0 2692385-2-3</p>

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

**Course
content**

The material to be covered is contained in the following chapters and sections of the text.

Weeks	Topics	Chapters & Sections
1{15	Math review and essential concepts of radiologic science	Ch.1: All sections
1	The structure of matter	Ch.2: up to radioactivity
2	X-ray production	Ch.7: All sections
3	Radioactivity and Types of ionizing radiation	Ch.2
4	Electromagnetic energy	Ch.3: All sections
5	X-ray emission	Ch.8: All sections
6	X-ray interaction with matter	Ch.9: All sections
7{9	Electricity, magnetism, and electromagnetism	Ch.4: All sections
10{12	The x-ray imaging system	Ch.5: All sections
13{14	The x-ray tube	