

PHYSICS
Complementary
Astronomy
203-BWT-03
Fall 2019

Teachers	Rim Dib 7B.19, local 4153, rdib@dawsoncollege.qc.ca
Pre-requisites	None
Co-requisites	None
Ponderation	3-0-3 (3 hours of lecture and 3 hours of work outside class per week)

Course objectives The objective of this course is to enable students to understand the general nature of current issues in science and technology and to explain some of these issues. To this end, students should learn how to characterize typical scientific thought processes and methods, illustrate how science and technology are complementary, explain the context and stages involved in some scientific and technological discoveries, and to deduce various consequences and questions arising from certain recent scientific and technological developments.

Course competencies This course will allow the student to partially achieve the competency:
000X: Explain the general nature of science and technology and some of the major contemporary scientific or technological issues.

1. Describe scientific thinking and the standard scientific method.
2. Demonstrate how science and technology are complementary.
3. Explain the context and the stages related to several scientific and technological discoveries.
4. Deduce different consequences and questions resulting from certain recent scientific and technological developments.

At the conclusion of the course, each student will be able to produce a 750-word paper giving a written commentary presenting a scientific discovery or technological breakthrough.

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.

Quizzes	60%
Course work and homework [†]	25%
Term project	15%

[†]Your teacher will provide a detailed breakdown of these components during the first week of class.

Important Notes:

- **If the student receives a grade less than 60% in the term project, the maximum course grade they will be granted is 55%.**
- At the end of every episode (approx. 2 weeks) there will be a quiz on the material in that episode. Dates for the quizzes will be announced at least one class in advance.
- On a regular basis, students will be asked to complete small in-class or homework assignments and activities.
- The due dates for the term project (including elements that may be required before the final project is due) will be specified by your teacher in the first full week of classes.
- Course work not submitted by the due date may be penalized at the teacher's discretion.

In order to pass the course an average grade of 60% is required, calculated according to the evaluation scheme above.

Required materials	<ul style="list-style-type: none"> • Calculator Sharp EL-501 XGB-WH (the one available at the bookstore) or any other scientific calculator approved by your teacher. • There is no required textbook for this course
Teaching methods	The material will be presented using a combination of lectures and in-class problem solving.
Attendance & participation	<p>In order to be successful, students are strongly encouraged to attend all classes and students are expected to participate actively in classroom discussions. Students should arrive on time for the lectures so as not to miss any part of the movie clips shown - these are central to the understanding of the course material. In the event that a class is missed, the student is responsible for all material covered or assigned during that class. Students who do not have prior permission from the teacher must write the complete assignments and quizzes as scheduled, except in the case of unforeseen emergencies (proper documents may be required for verification).</p> <p>On a regular basis, students will be asked to complete small assignments in class which will be marked for the in-class assignment marks. These small assignments can only be completed in class so attendance is important.</p> <p>At the end of every theme (approx. 2 weeks) there will be a quiz on the material in that theme. Students must write the quizzes 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.</p>
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 observing religious holidays must inform their teachers, in writing, as prescribed in the ISEP Policy on Religious Observances, no later than the end of the second week of the impacted semester or term. This applies both to the semester or term, as well as to any final examination period. (ISEP Section IV-D) 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**

This course is modular, divided into episodes that can last 1-4 weeks depending on topic complexity and class interest. There will be a quiz at the end of each episode. The following topics can be covered in class:

- Intro: The scale of things. The Universe is HUGE. What does it mean to think like a scientist?
- Backyard astronomy: A tour of what you can observe and basic observation techniques. Become a proper amateur astronomer.
- Evolution of astronomy: from the Greek astronomers to the Heliocentric revolution of the Renaissance.
- Gravity: Orbits, Tides, and Rocket Science!
- Motion of the Earth: Time, Seasons and Eclipses.
- Anatomy of our Solar System: The Sun and the Planets.
- The nature of light, and how it can be used to study the Stars.
- To the stars, part I: The Star Detective. What can we learn from a dot of light?
- To the stars, part II: The evolution of stars, from birth to death, black holes, and the search of extrasolar planets.
- Galaxies: The Milky Way and beyond.
- Cosmology: From the Big Bang to the End of Time.

While there is no laboratory component in this course, experimental verification of physical reality is a key aspect of science and as such some class activities will occasionally involve experimental measurements and the analysis of data collected in the class or acquired from film clips. No lab reports will be required for this course. There is also the possibility of a field trip to the Planetarium, and an evening observation session with a telescope.