



John Abbott College
Environmental Science and Technology

Program:	Pathways, Transitions	Instructor:	Prof. Jana Simandl
Course Number:	105-003-RE	Office:	Home
Ponderation:	4-1-3	Contact by	MIO
Prerequisite	Sec. IV Science*	Office hours:	M 14:30-15:30,
Semester:	Fall 2020		T & Th 11:30-12:30
Lectures:	Online	T & Th 10:00-11:30 + multi purpose M 13:30-14:30	
Labs (2 hours):	Online	M 8:30-10:30 & 10:30-12:30 depending on section	
Competency:	01PT		

A. Introduction and Objectives:

This course is designed for those who have taken either *Secondary IV Science and Technology or Applied Science and Technology but have not completed either:

- Secondary IV Environmental Science and Technology, or
- Secondary IV Science and the Environment

Students passing this course can take Chemistry 001 or Physics 001 courses in the future.

B. Course Content:

This course introduces chemistry, biology and physics, and follows the Quebec Science Guidelines. It covers the properties of matter, the periodic table, chemical changes and nuclear transformation, the laws of electricity and magnetism, transformations of energy and an introduction to genetics.

In keeping with the Quebec high school exit profile, students must demonstrate mastery of the following competency 01PT: *Analyze genetic phenomena, the behaviour of matter and the transformation of energy by using scientific principles..* This will be achieved in this course by addressing the following elements:

- Explain the properties of matter based on its representations and the periodic table
- Solve problems involving chemical changes and nuclear transformations
- Solve problems by using the laws of electricity and electromagnetism
- Solve problems involving the transformation of energy
- Describe the characteristics related to genetics
- Verify, using the experimental approach, several scientific laws and principles

Competency Code: 01PT

<i>Performance</i>	<i>Standard</i>
Statement of the Competency	
Analyze genetic phenomena, the behaviour of matter and the transformation of energy by using scientific principles.	
Elements of the Competency	Performance Criteria
1. Explain the properties of matter based on its representations and the periodic table.	1. Accurate description of the simplified atomic model (Rutherford-Bohr-Chadwick) 2. Accurate use of the concept of mole (Avogadro's number) 3. Correct identification of the periodicity of physical and chemical properties based on the periodic table

2. Solve problems involving chemical changes and nuclear transformations.	<ol style="list-style-type: none"> 1. Accurate calculation of concentrations (mole/L) 2. Correct identification of the oxidation reaction 3. Accurate determination of the molecular formula for salts 4. Accurate calculation of the quantities of matter involved in a reaction 5. Proper identification of the nature of a chemical bond (ionic or covalent) 6. Proper identification of the endothermic or exothermic character of a reaction 7. Correct description of the biogeochemical phosphorus cycle 8. Proper description of isotopes and nuclear phenomena (fission, fusion and radioactivity)
3. Solve problems by using the laws of electricity and electromagnetism.	<ol style="list-style-type: none"> 1. Appropriate use of Kirchhoff's laws (series, parallel or mixed circuits) 2. Accurate calculation of equivalent resistances 3. Correct use of Coulomb's law 4. Appropriate description of the magnetic field of a solenoid
4. Solve problems involving the transformation of energy.	<ol style="list-style-type: none"> 1. Accurate definition of the concepts of heat, temperature, mass, weight, force, effective force, work and energy (kinetic, potential and heat) 2. Appropriate use of the relationship between mass and weight 3. Appropriate use of the relationship between work, force and travel 4. Appropriate use of the relationship between work and energy 5. Appropriate use of the relationship between potential energy, mass, gravitational constant and travel 6. Appropriate use of the relationship between kinematic energy, mass and velocity 7. Appropriate use of the relationship between heat energy, specific heat capacity, mass and temperature variation
5. Describe the basic characteristics related to genetics.	<ol style="list-style-type: none"> 1. Proper definition of the vocabulary associated with genetics (gene, allele, gamete, genotype and phenotype, homozygote and heterozygote, dominance and recessivity) 2. Accurate description of genetic phenomena (heredity, cross-breeding) 3. Accurate description of the stages of protein synthesis (transcription, translation)
6. Verify, using the experimental approach, several scientific laws and principles.	<ol style="list-style-type: none"> 1. Appropriate implementation of an experimental procedure 2. Accurate interpretation of results 3. Appropriate communication of results

C. Course Information:

Given the current pandemic situation, lectures and laboratories will be held on-line using Teams. Assignments and Quizzes will be mostly administered through Omnivox Lea and Moodle sites for this course. Students may be directed to various sites for supplemental information as needed.

At the present time, the term tests and final exam are scheduled to take place on-site at John Abbott College.

Lectures: 60 hours

Two 1 1/2-hour lectures per week and one 1 hour class. There will be three unit tests, covering approximately one third of the course each. In addition, there will be quizzes and assignments throughout the term. Also, preparation for up-coming laboratory sessions may be discussed during lecture time.

Laboratory Sessions: 30 hours

In general, one two-hour laboratory session per week. Some weeks, the session will be subdivided into two one-hour sessions to allow more personal attention. These sessions will be demonstrated on-line by the instructor. Students are strongly encouraged to simultaneously perform the activities. As much as possible, readily available materials will be used. These sessions will include practice in the basic aspects of experimentation and the scientific method. An additional opportunity for hands-on experimentation will be provided by the project. Attendance at all laboratory sessions is obligatory. Instructions and/or data sheets for laboratory exercises will be posted.

D. Evaluation:

Assessment		Date	Elements of Competency
3 Unit Tests - 8% each	24%	~Week of Sept 21 ~Week of Oct 26 ~Week of Nov 23	First five elements of competency listed in the order seen in class
Labs	20%	Weekly	6
Assignments, quizzes, notes, project	26%	TBA	All
Final exam	30%	During Final Exam Period: Dec 11-22	All

Please note:

- If a student passes the laboratory portion of the course, a grade of 60% or more on the final exam will guarantee a pass in the course.
- If the final exam mark is greater than the lowest of the three unit tests, then the final exam mark replaces the lowest of the unit test marks
- Late work will not be accepted without a valid reason.
- Students must be available to write their final exam during the Exam Period (Dec 11 - Dec 22) Please be aware that the final exam schedule is set by the college and published later in the term.
- The final evaluation for this course includes the Final Exam (30%) and the Laboratories (20%).

E. Required Materials and Course Costs:

- a) On-line access for classes and laboratories. Access to a printer.
- b) Calculator: scientific model required (non-programmable)
- c) Recommended: Three-ring binder and dividers to organize course material

F. Departmental Policies:

- a) Regular attendance is expected. If lectures are missed, it is the responsibility of the student to cover the material missed and to be aware of any announcements made concerning assignments, quizzes, tests or changes to the laboratory schedule.
- b) Students must attend the laboratory session in which they are officially registered.
- c) There will be no make-up tests, quizzes, or laboratory periods. If you miss an evaluation session or deadline due to illness, you must notify your instructor as soon as possible. If a test is missed for a valid reason, then the final exam mark may be used as a basis for a substitute for the missed test mark.
- d) Periodically there will be workshops held during the laboratory period. Attendance is required. Quizzes or assignments may be given during these workshops.
- e) ***Cell phones should be closed and packed away during all course activities.***
- f)

G. College Policies:

[Policy No. 7- IPESA, Institutional Policy on the Evaluation of Student Achievement](http://departments.johnabbott.qc.ca/wp-content/uploads/2017/08/Policy-7-IPESA.pdf)

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- a) Changes to Evaluation Plan in Course Outline (Article 5.3).
All changes to evaluation plan in the course outline must have documented unanimous consent from the regularly attending students affected by the change(s) before submission.
- b) Evaluation (Article 6)
Teachers should evaluate and enter grades for a sufficient number of assessments in Gradebook in order that the College may advise DEC students of their progress by mid semester as per the ACADEMIC PROCEDURE: Academic Progress by Mid Semester.
- c) Religious Holidays (Article 3.2)
Students who wish to miss classes in order to observe religious holidays must inform their teacher of their intent, in writing, within the first two weeks of the semester.
- d) Student Rights and Responsibilities (Article 3.2 and Article 3.3)
It is the responsibility of students to keep a copy of all assessed material returned to them and/or all digital work submitted to the teacher for at least four (4) weeks past the grade submission deadline (See current Academic Calendar) in the event that they request a Final Grade Review (Refer to Article 8) .
Students have the right to receive graded evaluations, for regular day division courses, within two weeks after the due date or exam/test date, except in extenuating circumstances. A maximum of three (3) weeks may apply in certain circumstances (ex. major essays) if approved by the department and stated on the course outline.
- e) Cheating and Plagiarism (Article 9)
Cheating and plagiarism are serious infractions against academic integrity which is highly valued at the College; they are unacceptable at John Abbott College. Students are expected to conduct themselves accordingly and must be responsible for all of their actions.
 - College definition of Cheating:
Cheating means any dishonest or deceptive practice relative to examinations, tests, quizzes, lab assignments, research papers or other forms of evaluation tasks. Cheating includes, but is not

restricted to, making use of or being in possession of unauthorized material or devices and/or obtaining or providing unauthorized assistance in writing examinations, papers or any other evaluation task and submitting the same work in more than one course without the teacher's permission. It is incumbent upon the department through the teacher to ensure students are forewarned about unauthorized material, devices or practices that are not permitted.

- **College definition of Plagiarism:**

Plagiarism is a form of cheating. It includes copying or paraphrasing (expressing the ideas of someone else in one's own words), of another person's work or the use of another person's work or ideas without acknowledgement of its source. Plagiarism can be from any source including books, magazines, electronic or photographic media or another student's paper or work.

H. Proviso:

Due to the COVID-19 health crisis, attendance policies may need to be adjusted by your teacher. The normal attendance expectations are listed above. Your teacher will inform you of any modifications as needed. Please note that attendance continues to be extremely important for your learning, but your teacher may need to define it in different terms based on the way your course is delivered during the fall semester.

Please note that course outlines may be modified if health authorities change the access allowed on-site.

In addition to LEA, Teams, and Moodle, additional software may be used for the submission of essays and projects or for testing. Further details will be provided if applicable.

Classes on Teams may be recorded by your teacher and subsequently posted on Teams to help for study purposes only. If you do not wish to be part of the recording, please let your teacher know that you wish to not make use of your camera, microphone or chat during recorded segments. Any material produced as part of this course, including, but not limited to any pre-recorded or live video is strictly protected by copyright, intellectual property rights and image rights, regardless of the medium used. It is strictly forbidden to copy, redistribute, republish, store in any way, retransmit or modify this material. Any contravention of these conditions of use may be subject to sanction(s) by John Abbott College.