

DEPARTMENT OF ACADEMIC UPGRADING

COURSE OUTLINE – Fall 2024

SC 0100 (A2): Science and Society – 5 (5-0-0) 75 Hours for 15 Weeks

Northwestern Polytechnic acknowledges that our campuses are located on Treaty 8 territory, the ancestral and present-day home to many diverse First Nations, Metis, and Inuit people. We are grateful to work, live and learn on the traditional territory of Duncan's First Nation, Horse Lake First Nation and Sturgeon Lake Cree Nation, who are the original caretakers of this land.

We acknowledge the history of this land and we are thankful for the opportunity to walk together in friendship, where we will encourage and promote positive change for present and future generations.

INSTRUCTOR: Maiya Sears
OFFICE: C405
OFFICE HOURS: By appointment

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CALENDAR DESCRIPTION: This course is meant to increase the pre-high school student's understanding of connections between science, technology and society. You will be introduced to basic ideas about science, technology, biology, chemistry, physics, ecology, scientific method, along with related social issues.

PREREQUISITE(S):

- Complete 1 of the following:
 - Complete the following:
 - MA0081 - Basic Mathematics II (5)
 - MA0091 placement test

COREQUISITE:

- Concurrently enrolled in:
 - EN0090 – Basic English III (5)

REQUIRED TEXT/RESOURCE MATERIALS: Non-programmable calculator (a TI-30XIIS or similar model is a good choice for this and future courses).

DELIVERY MODE(S):

- On-campus (attend on-campus, in-person) – This type of course will be delivered on campus in a specific location which will be indicated on the student timetable. Students are expected to fully attend in person.
- In-person classroom instruction with labs to incorporate hands-on learning experience. Materials will be delivered as lecture-style presentations supplemented with practice problems, discussion, and review questions.

LEARNING OUTCOMES: *Students will...*

Unit A: Biological Diversity

- investigate and interpret diversity among species and within species, and describe how diversity contributes to species survival
- investigate the nature of reproductive processes and their role in transmitting species characteristics
- describe, in general terms, the role of genetic materials in the continuity and variation of species characteristics; investigate and interpret related technologies
- identify impacts of human action on species survival and variation within species, and analyze related issues for personal and public decision making

Unit B: Environmental Chemistry

- investigate and describe, in general terms, the role of different substances in the environment in supporting or harming humans and other living things
- identify processes for measuring the quantity of different substances in the environment and for monitoring air and water quality
- analyze and evaluate mechanisms affecting the distribution of potentially harmful substances within an environment

Unit C: Electrical Principles and Technologies

- investigate and interpret the use of devices to convert various forms of energy to electrical energy, and electrical energy to other forms of energy
- describe technologies for transfer and control of electrical energy
- identify and estimate energy inputs and outputs for example devices and systems, and evaluate the efficiency of energy conversions
- describe and discuss the societal and environmental implications of the use of electrical energy

Unit D: Space Exploration (if time permits)

- investigate and describe ways that human understanding of Earth and space has depended on technological development
- identify problems in developing technologies for space exploration, describe technologies developed for life in space, and explain the scientific principles involved
- describe and interpret the science of optical and radio telescopes, space remote sensing technologies.
- identify issues and opportunities arising from the application of space technology, identify alternatives involved, and analyze implications.

Note: We will NOT be covering *Unit E: Matter and Chemical Change* because those topics are covered again, in much greater detail, in SC0110.

TRANSFERABILITY:

Please consult the Alberta Transfer Guide for more information. You may check to ensure the transferability of this course at the Alberta Transfer Guide main page <http://www.transferralberta.alberta.ca>.

** Grade of D or D+ may not be acceptable for transfer to other post-secondary institutions. **Students are cautioned that it is their responsibility to contact the receiving institutions to ensure transferability.**

EVALUATIONS: Course final grade will be based on the following components:

Unit Tests (equal weighting)	45%	
Labs	10%	Late penalty 10% per day for up to 4 days.
Assignments, Quizzes	15%	Late penalty 10% per day for up to 4 days.
Final Exam (Cumulative)	30%	

Note that there will not be a unit exam for the final unit (Space Exploration), as it will instead be tested in the final exam if the material is covered in time.

No electronics are permitted in exams other than non-programmable calculators (when necessary). All tests and exams MUST be written at the scheduled times unless PRIOR arrangements have been made with the instructor. A missed test (exam) will result in a score of ZERO. Only in very specific cases may a student be given an opportunity to make up a missed exam (student will be presented with a different version of the exam). Doctor, lawyer or police

documentation may be required. The final exam is 3 hours long and is scheduled by the registrar's office during NWP exam weeks. Do not book a vacation in this time period.

Attendance is compulsory in all labs. Missed labs result in a score of zero. If you are late and have missed the lab safety discussion, you may be excluded from participating in the lab and will receive a mark of zero. There are NO make-up labs. Lab reports/assignments will be due one week after the lab has been completed at the start of that day's class. Late assignments will result in a penalty of 10% per day for up to 4 days. Assignments over four days late will not be graded without prior approval. Download the lab sheets and complete the pre-lab assignment, if required, before the lab period. Data tables are completed during the lab and analysis and questions after the lab.

GRADING CRITERIA:

Please note that most universities will not accept your course for transfer credit **IF** your grade is less than C-.

Alpha Grade	4-point Equivalent	Percentage Guidelines	Alpha Grade	4-point Equivalent	Percentage Guidelines
A+	4.0	95-100	C+	2.3	67-69
A	4.0	85-94	C	2.0	63-66
A-	3.7	80-84	C-	1.7	60-62
B+	3.3	77-79	D+	1.3	55-59
B	3.0	73-76	D	1.0	50-54
B-	2.7	70-72	F	0.0	00-49

COURSE SCHEDULE/TENTATIVE TIMELINE: Both exams and labs will be delivered in class on 80-minute lecture days to allow sufficient time for completion. All dates and deadlines are tentative and based on the instructor's discretion and learners' needs.

Unit A Exam
Unit B Exam
Unit C Exam
Final Exam

October 7
October 30
December 2
December 12-19

STUDENT RESPONSIBILITIES: Refer to Northwestern Polytechnic's Policy on *Student Rights and Responsibilities* at <https://www.nwpolytech.ca/about/administration/policies/fetch.php?ID=69>

The Academic Upgrading Department is an adult education environment. Students are expected to show respect for each other, as well as faculty and staff. Students are expected to participate fully in achieving their educational goals. This includes regularly attending and remaining in class, keeping technology use relevant to the class, and engaging purposefully with classroom and lab activities. Any questions, concerns, or appointment requests for the instructor should be communicated by email.

Acceptable Use of AI Policy

The use of generative artificial intelligence (AI) tools, such as ChatGPT, is NOT permitted for exams, quizzes, or laboratory assignments in this course and doing so will be considered as academic misconduct. For take-home assignments, AI tools may be used to help generate ideas and direct your learning on a given topic. However, students are advised to do their own research and must at least verify the information presented by AI tools. Directly copying answers from AI results is unacceptable and will be considered plagiarism. Students are responsible for ensuring their information is accurate, written in their own words, and cited from a reliable source. Any generative AI tools used must always be cited.

STATEMENT ON ACADEMIC MISCONDUCT:

Academic Misconduct will not be tolerated. For a more precise definition of academic misconduct and its consequences, refer to the Student Rights and Responsibilities policy available at <https://www.nwpolytech.ca/about/administration/policies/index.html>.

****Note:** all Academic and Administrative policies are available on the same page.