NORTHWESTERN POLYTECHNIC

DEPARTMENT OF SCIENCE

COURSE OUTLINE – FALL 2025

BI1070 A2 – INTRODUCTION TO CELL BIOLOGY 3 (3-1-3)

105 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:	Dr. Shauna Henley, PhD	**PHONE:**	780-539-2439
OFFICE:	J215	**E-MAIL:**	SHenley@nwpolytech.ca

OFFICE HOURS: As posted on office door.

CALENDAR DESCRIPTION: All life functions are based on cells, and this course will provide an introduction to cell structure and function. Major topics will include the origin of life, the development of prokaryotic and eukaryotic cell lineage, energy conversions, the compartmentalization of biochemical functions within a cell and communication from cell to cell. The genetic control of cell activities is examined through methods of molecular genetic analysis and their application in genetic engineering and biotechnology.

PREREQUISITE(S)/COREQUISITE: Biology 30 and Chemistry 30

TEXT/RESOURCE MATERIALS:

1. "Biology" by Campbell *et al.* (3rd (2020) or 4th (2025) Canadian Edition), Benjamin Cummings Publishing Company.
2. University of Alberta, Biology 1070 Laboratory Manual 2025/2026.

DELIVERY MODE(S):

Lectures – Mon & Wed, 8:30 – 9:50
Labs – L1 Wed, 2:30 – 5:20
L2 Fri, 2:30 – 5:20
Seminars – S1 Mon, 11:30 – 12:20
S2 Fri, 10:00 – 10:50

*****Note: recording of lectures will <u>not</u> be permitted**

LEARNING OUTCOMES:

1. To gain an understanding of the structures and functions of basic components of prokaryotic and eukaryotic cells.
2. To gain a knowledge of the cellular components underlying cell movement and cell division.
3. To understand the flow of energy and information in cells and apply this knowledge to cell biology.
4. To develop the ability to design, analyze and report the findings of scientific experiments.
5. To foster critical thinking skills.

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.transferalberta.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: Midterm Exam – 20%
Final exam – 35%
Laboratory – 35%
Seminar – 10%

The midterm exam will be held in class on **Wednesday, October 15th.** The final exam will be cumulative and will take place during the scheduled exam period. Failure to write the

midterm or exam will result in a grade of zero unless appropriate documentation is provided.

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:

	Topics	Required Text Readings (pages) 4th edition	3rd edition
1.	Introduction to BI 1070		
2.	Chemistry Review	30-44, 62-92	32-45, 63-93
3.	Classification of Organisms	10-12, 597-598, 627-630	11-12, 602-604, 617-624
4.	Cell Membranes	137-152	136-151
5.	Prokaryotic Cell Structure	617-623	607-613
6.	Cell structure – Organelles	107-122	107-123
7.	Cytoskeleton and Molecular Motors	122-127	123-127
8.	Cell walls and Extracellular Matrix	128-131	128-131
9.	Biological Order and Energy	156-173	155-173
10.	Glycolysis & Anaerobic Metabolism	176-182, 192-194	176-183,192-94
11.	Citric Acid Cycle (Kreb's Cycle)	183-185	183-185
12.	Electron Transport Systems	186-191	186-191
13.	Chloroplasts and Photosynthesis	199-209	199-208
14.	Photosynthesis - Light Reactions	209-213	208-213
15.	Calvin Cycle and Photorespiration	213-217	213-219
16.	Bacterial Cell Growth	256-257, 621-625	254-255, 612-15
17.	Cell Division, Mitosis, Meiosis	249-256, 258-264 277-284	246-254, 256-63 272-280
18.	DNA Chemistry	336-342	334-340
19.	The Eukaryotic Nucleus	352-354	350-353
20.	DNA Replication	342-352	340-349

21.	Genes, mRNA and Proteins	357-364	355-362
22.	Transcription and RNA Processing	364-369	362-367
23.	Regulation of Transcription	388-402	385-398
24.	Translation	369-383	367-379
25.	Viruses, Phages, Viroids, and Prions	423-440	419-436

STUDENT RESPONSIBILITIES: Students are expected to attend **all** classes, seminars and laboratory sessions. All assignments must be completed in full and handed in by the date specified.

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/polytechnic-leadership/policies-directory

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