

**DEPARTMENT OF SCIENCE**

**COURSE OUTLINE – WINTER 2024**

**BI2010 A3 – CELLULAR BIOLOGY (3-0-0)**

**45 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, **PHONE:** 780-539-2439  
PhD

**OFFICE:** J215 **E-MAIL:** [SHenley@nwpolytech.ca](mailto:SHenley@nwpolytech.ca)

**OFFICE**

**HOURS:** As posted on office door.

**CALENDAR DESCRIPTION:** The structure and functional dissection of a eukaryotic cell with emphasis on the techniques of modern cell biology. Detection of specific molecules at the ultrastructural level; plasma membrane structure and function; cytoskeletal involvement in intracellular transport, mitosis and cytokinesis; the endomembrane system, protein targeting, exocytosis and endocytosis; nuclear structure and function; cell cycle control and cancer.

**PREREQUISITE(S)/COREQUISITE:** BI1070 and one 1000-level chemistry

## **REQUIRED TEXT/RESOURCE MATERIALS:**

“The World of the Cell” by Becker *et al.* (8<sup>th</sup> edition, 2012 or 9<sup>th</sup> edition, 2015) Benjamin Cummings Publishing Company.

**DELIVERY MODE:** Lectures – Wednesday & Friday, 1:00 – 2:20

**\*\*\*Note: recording of lectures will not be permitted.**

## **LEARNING OUTCOMES:**

1. To demonstrate knowledge of the techniques used in cell biology.
2. To demonstrate understanding of the structure and function of eukaryotic organelles.
3. 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 I – 20%  
Midterm II – 20%  
Online quizzes – 10%  
Assignment – 10%  
Final Exam – 40%

Midterms I and II will be non-cumulative and held during class on **Friday, February 2<sup>nd</sup>** and **Friday, March 15<sup>th</sup>**, respectively. There will be 4 online quizzes (worth 2.5% each), held during the weeks of **January 24-30, February 14-20, March 6-12** and **April 3-9**. The assignment will be due on **April 5<sup>th</sup>**. The final exam will be cumulative and will take place during the scheduled exam period.

**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**

**8<sup>th</sup> edition**

**9<sup>th</sup> edition**

1. Introduction to BI 2010		
2. A preview of the cell	1-14, A1-A26	1-18, A19-A24
3. The macromolecules of the cell	41-71, 25-7, 32-36	42-71, 31-33, 36-39
4. Cells and Organelles	78-99	80-99
5. Membranes	156-89	152-81
6. Membrane transport	194-216	185-209
7. The nucleus	536-45	454-60
8. The cell cycle, DNA replication & mitosis	549-64, 571-89	465-81, 714-38
9. Transcription	645-75	499-531
10. Protein synthesis and sorting	679-705	535-66
11. Mitochondria & chloroplasts	254-8, 293-7	243-9, 283-7
12. Endomembrane system & peroxisomes	324-60	314-47
13. Cytoskeletal systems	422-44	351-75
14. Cellular movement	449-74	377-402
15. Beyond the cell	477, 481-97	405-28
16. Signal transduction	372-89, 392-400, 406-12, 591-4	664-81, 684-94, 698-704, 740-3
17. Cancer cells	758-91	778-810

**STUDENT RESPONSIBILITIES:** Students are expected to attend **all** classes and complete all readings. Failure to write a quiz or exam will result in a grade of zero unless appropriate documentation is provided.

## **STATEMENT ON PLAGIARISM AND CHEATING:**

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.