



**DEPARTMENT of SCIENCE**

**COURSE OUTLINE – WINTER 2016**

**BI1070 (A3): Introduction to Cell Biology – 3 (3-1-3) 105 Hours for 15 Weeks**

**INSTRUCTOR:** Dr. Sean Irwin, Ph.D.      **PHONE:** (780) 539-2860

**OFFICE:** J221      **E-MAIL:** [sirwin@gprc.ab.ca](mailto:sirwin@gprc.ab.ca)

**OFFICE HOURS:** Tues. and Thurs. 10 – 11:20 am; Wed. 1 – 2:20 pm

**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 compartmentation 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.

Notes: BI1070 and BI1080 can be taken in either order.

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

**REQUIRED TEXT/RESOURCE MATERIALS:**

“Biology” by Campbell *et al.* (Canadian ed., 2014 or 9th ed., 2011) Benjamin Cummings Publishing Company.

“Biology on the Cutting Edge” Edited by Gillies and Hewitt (2011), Pearson Canada Publishing Company.

Biology 1070 Laboratory Manual, University of Alberta 2015/16

**DELIVERY MODE(S):**

Lectures –	Mon. and Wed. 10 – 11:20, Rm. J201
Labs -	L1 Tues. 2:30 – 5:20, Rm. J126
	L2 Wed. 2:30 – 5:20, Rm. J126
Seminars -	S1 Fri. 10:00 – 10:50, Rm. J227
	S2 Fri. 11:30 – 12:20, Rm. J227

**COURSE OBJECTIVES:**

1. Apply knowledge of the structure of molecules and cells to explain how energy, matter, and information moves within and between cells of eukaryotes and prokaryotes.
2. Apply knowledge of laboratory skills and techniques to generate data and conduct analyses of that data.
3. Demonstrate written communication skills in laboratory reports.

### LEARNING OUTCOMES:

Upon successful completion of this course a student will have a working knowledge of the biological basis of cell structure and function.

### TRANSFERABILITY:

Transfer: UA, UC, UL, AU, AF, CU, GMU, KUC

**\*Warning:** Although we strive to make the transferability information in this document up-to-date and accurate, **the student has the final responsibility for ensuring the transferability of this course to Alberta Colleges and Universities.** Please consult the Alberta Transfer Guide for more information. You may check to ensure the transferability of this course at Alberta Transfer Guide main page <http://www.transferalberta.ca> or, if you do not want to navigate through few links, at <http://alis.alberta.ca/ps/tsp/ta/tbi/onlineresearch.html?SearchMode=S&step=2>

**\*\* 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**

<b>EVALUATIONS:</b>	Midterm Exam	- 20%
	Final Exam	- 35%
	Laboratory	- 35%
	Seminars	- 10%

### 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	90-100	C+	2.3	67-69
A	4.0	85-89	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:

**BI1070 A3: Winter term 2016, 45 hours in 15 weeks.**

Topics	Required Text Readings (pages)	
	Can. edition	9th edition
1. Introduction to BI 1070		
2. Chemistry Review	35-46, 65 - 96	32-42, 58-89
3. Classification of Organisms	12-14, 589-91, 605-13	12-14, 551-3, 566-73
4. Cell Membranes	135-149	125-139
5. Prokaryotic Cell Structure	595-99	556-559
6. Cell structure – Organelles	108-122	98-111
7. Cytoskeleton and Molecular Motors	122-128	112-118
8. Cell walls and Extracellular Matrix	128-131	118-121
9. Biological Order and Energy	153-70	142-60
10. Glycolysis & Anaerobic Metabolism	173-9, 188-90	163-9, 177-80
11. Citric Acid Cycle (Kreb's Cycle)	179-82	170-2
12. Electron Transport Systems	183-88	172-77
Midterm	Wednesday, February 25th	
13. Chloroplasts and Photosynthesis	196-205	184-193
14. Photosynthesis - Light Reactions	206-10	193-97
15. Calvin Cycle and Photorespiration	210-216	198-203
16. Bacterial Cell Growth	251-52, 599-603	236-37, 560-64
17. Eucaryotic Cell Division and Mitosis	243-59	228-36, 238-43
18. DNA Chemistry	329-34	305-10
19. The Eukaryotic Nucleus	344-46	320-22
20. DNA Replication	334-43	311-19
21. Genes, mRNA and Proteins	349-56	325-331
22. Transcription and RNA Processing	356-60	331-335
23. Regulation of Transcription	377-82	351-56
24. Translation	361-68	337-44
25. Viruses, Phages, Viroids, and Prions	410-24	381-94

## STUDENT RESPONSIBILITIES:

Students are responsible for the course material presented in lectures and assigned readings.

## STATEMENT ON PLAGIARISM AND CHEATING:

Cheating and plagiarism will not be tolerated and there will be penalties. For a more precise definition of plagiarism and its consequences, refer to the Student Conduct section of the College Admission Guide at <http://www.gprc.ab.ca/programs/calendar/> or the College Policy on Student Misconduct: Plagiarism and Cheating at <http://www.gprc.ab.ca/about/administration/policies/>

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