

Grande Prairie Regional College  
Department of Science

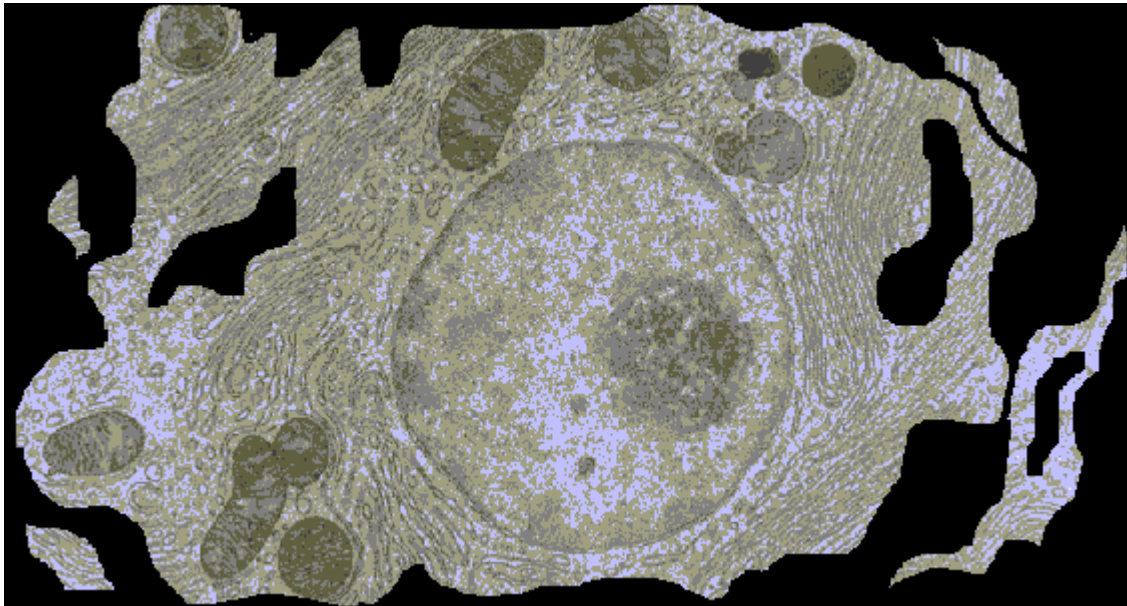
# Course Outline

## Winter 2010-2011

### BI 1070 A3

### Introduction to Cell Biology

### (3-1-3)



Instructor:

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Course Description:	This course provides an introduction to cell structure and function. Major topics include the molecules and structures that comprise prokaryotic and eukaryotic cells, the mechanisms by which energy is harvested and used by cells, how cells reproduce, and how information is stored and used within a cell via the processes of DNA replication, transcription and translation.
Course Goals:	<p>Successful completion of this course will enable students to:</p> <ol style="list-style-type: none"> <li>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.</li> <li>2. Apply knowledge of laboratory skills and techniques to generate data and conduct analyses of that data.</li> <li>3. Demonstrate written communication skills in laboratory reports.</li> </ol>
Text books:	<p>“Biology” by Campbell and Reece (8<sup>th</sup> edition)  Benjamin Cummings Publishing Company  <i>This text is available at G.P.R.C. Bookstore</i>  <i>The 6<sup>th</sup> Edition (2002) or 7<sup>th</sup> Edition (2005) of this text are also acceptable but there are differences between the material covered by the various editions.</i></p> <p>Biology 1070 Laboratory Manual  G.P.R.C. / University of Alberta  <i>You must purchase the latest version of this Lab. Manual. It will be available from G.P.R.C. Bookstore.</i></p> <p>Student Workbook  Benjamin Cummings Publishing Company  <i>This book is useful but IS NOT a required text. Limited numbers are available at G.P.R.C. Bookstore</i></p>
Supplements:	<p>Copies of the Lecture Powerpoint presentations will be available as handouts. They can be downloaded from the BI 1070 Moodle page.</p> <p>Mastering Biology Web site  Students can gain access to this resource using the Student Access Kit provided with the text book. The Study Area of this site provides many useful tools including animations, videos and practice quizzes.</p>
Office Hours:	Times that I am available to students will be posted on my office door, although any student is welcome to drop in to my office at other times. Students may also make appointments at times that are convenient to both of us.

Course Schedule:	Classes	Mondays & Wednesdays	1000-1120 Room D308
	Labs:	L1 Thursdays L2 Fridays L3 Wednesdays	1430-1720 (J126) or 1430-1720 (J130) or 1430-1720 (J126)
	Seminars:	S1 Tuesdays S2 Fridays S3 Fridays	1130-1220 (J201) or 1130-1220 (J203) or 0830-0920 (E305)
Course Assessment:	Lab. Quizzes	7.5%	
	Lab. Reports	7.5%	
	Lab. Exam	20%	
	Seminar	10%	
	Mid-term Exam	20%	
	Final Exam	35%	

Details of assessments associated with laboratory exercises will be provided during the first lab of the semester.

Mid-term Exam will be scheduled during a normal class period approximately half way through the course and will consist primarily of multiple-choice questions.

The Final Exam will be scheduled by Registration during the official exam period. It will consist primarily of multiple-choice questions.

Approximately 30-35% of the questions will concern material covered in classes prior to the mid-term, 65-70% of the questions will cover material presented after the Mid-term Exam.

To aid preparation for exams, a series of Practice Tests will be available on Moodle.

**Grading:** Final Grades will be awarded using the following approximate overall marks:

A+	>90%
A	87-90%
A-	83-86%
B+	79-82%
B	74-78%
B-	70-73%
C+	69-74%
C	65-68%
C-	61-64%
D+	55-60%
D	50-55%
F	<50%

Each student will be assigned a grade based on their overall final mark – a bell-curve will not be used.

Student Conduct: All cell phones should be switched off while students are in class. Should a cell phone ring during class, the first instance will result in a warning to all students; further instances will result in the owner of the cell phone being asked to leave that day's class.

Students will be allowed to use standard non-programmable calculators in exams. **All other electronic devices are prohibited** and should not be brought into exams. Students found to be using a prohibited electronic device during an exam will be required to leave immediately and will receive a mark of zero for that exam.

Students should read pages 47-50 of the 2010-2011 G.P.R.C. Calendar dealing with the Rights and Responsibilities of Students, especially the sections dealing with plagiarism, cheating and the penalties involved since these are serious issues and will be dealt with severely.

In order to succeed in Biology 1070:

- it is advisable to attend all classes and laboratory sessions, and complete all assignments in full and on time.
- students should be active participants in class discussions
- students should ask any questions that will clarify the material being presented.

BI 1070  
TOPIC OUTLINE  
2010-2011

<u>TOPICS</u>	<u>Required Text Readings (pages)</u>		
	<u>8<sup>th</sup> edition</u>	<u>7<sup>th</sup> edition</u>	<u>6<sup>th</sup> edition</u>
Introduction to BI 1070			
Chemistry review	32-42, 58-89	34-43, 60-89	31-37, 62-84
Classification of living organisms	89, 98-9, 463-5, 516-7, 551-3, 556-9, 565-570	89, 98-9, 449, 523-6, 529-31, 534-7, 541-4	112-5, 522-3, 526-8, 532-4, 535-9
Overview of cell structure and membranes	95-97, 125-138	96, 124-138	112-3, 138- 152, 68-84
Cell walls and extracellular matrix	118-121, 557-9	118-121, 535-7	132-3, 528-9, 67-8
Cellular compartments	98-111, 558	98-111, 536	112-126
Cytoskeleton and molecular motors	112-118, 558-9	112-118, 536-8	126-32, 529-30
Cell Communication & Signaling	206-222	201-214	197-210
Biological Order and Energy	142-59	141-57	87-100, 156-9, 31-7
Chloroplasts and Photosynthesis	185-194	181-190	124-5, 176-8
Photosynthesis - Light Reactions	194-8, 163-4	190-3, 161-2	179-91
Photosynthesis – Calvin Cycle, photorespiration	198-203	193-8	191-4
Glycolysis & anaerobic metabolism	162-9, 177-9	160-7, 174-6	161-3, 170-2
Citric Acid Cycle (Kreb's Cycle)	170-7	168-74	161-7
Electron Transport Systems	180-182	176-8	167-8, 172-3
Other energy sources and bioremediation	572-3, 1260-1		532-4
Bacterial cell growth	236-7, 561-4, 559-61	226-7, 346-51, 537-8	223-4, 341-5, 531-2
Eucaryotic cell division and the cell cycle	228-43	218-33	216-22, 224-29
DNA chemistry and transfer in prokaryotes	305-10	293-8	287-92, 341-45, 80-84

DNA packaging in eukaryotes	320-23	359-63	354-56
<u>Required Text Readings (pages)</u>			
<u>TOPICS</u> (continued)	<u>8<sup>th</sup> edition</u>	<u>7<sup>th</sup> edition</u>	<u>6<sup>th</sup> edition</u>
DNA replication	311-19	299-307	292-99
Genes, mRNA and proteins	325-331	309-14	303-9
Transcription and RNA processing	331-335	315-9	309-13
Procaryotic regulation of transcription	351-6	352-6	347-51
Translation	337-344	320-8	313-321
Viruses, phages, viroids, prions	381-94	334-46	328-40, 342-3