



Grande Prairie Regional College
Dept. of Science



BI 2010
Cellular Biology



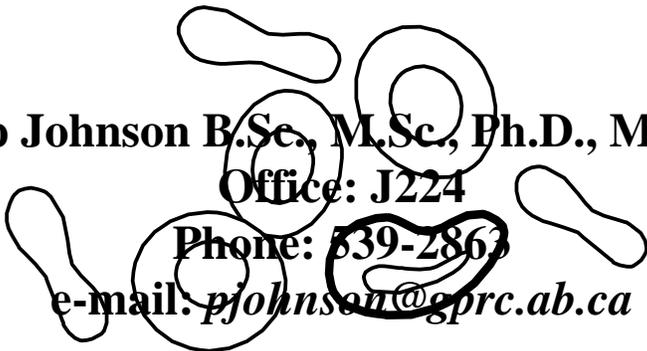
Course Outline
Winter 2009 - 2010

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Course Description: A structural and functional dissection of a eucaryotic cell. 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

Schedule: Tuesday / Thursday 1300-1420 hrs J201
(2 x 80 minute classes)

Contact hours: 3-0-0 (3 credits)

Pre-requisites: BI 1070

Pre-requisite/Co-requisite: CH 1610 or CH 2610

Transferability: Athabasca University - BIOL 3xx (3)
Augustana University - BIO 2xx (3)
Canadian University College - BIOL 374 (4)
Concordia University College - BES 201 (3)
King's University College - BIOL 3xx (3)
University of Alberta - BIOL 201 (3)
University of Calgary - BIOL 331 (3)
University of Lethbridge - BIOL 2xxx (3)

Textbook: 'The World of the Cell' (7th Edition 2009)
Becker, Kleinsmith and Hardin
Benjamin Cummings

This text is intended to supplement the lecture notes, not substitute for them. **It is expected that students read both the pages listed in the Lecture Outline along with other relevant sections of the text.**

Other Resources: Copies of the following book will be placed on reserve in the library:

"Molecular Biology of the cell" - Alberts *et al*

Handouts containing copies of the Powerpoint slides used in class will be available for download from the course page on Blackboard.

Evaluation:

Exam I	30%
Exam II	30%
Final Exam	40%

Exams I and II will be non-cumulative and held during class after approximately 4 weeks and 8 weeks of the semester.

The Final Exam will be cumulative, with 40% of marks assigned to material covered prior to Exam II, and 60% of the marks assigned to material covered after Exam II. It will be scheduled during Final Exam week.

All exams will consist of a combination of multiple-choice and written questions.

Final Grades will be assigned based approximately on the marks distribution shown in the table below.

Alpha grade	4 point equivalent	Percentage guidelines	Designation
A+	4.0	90-100	Excellent
A	4.0	85-89.9	
A-	3.7	80-84.9	First class
B+	3.3	77-79.9	
B	3.0	73-76.9	Good
B-	2.7	70- 72.9	
C+	2.3	67-69.9	Satisfactory
C	2.0	63-66.9	
C-	1.7	60-62.9	
D+	1.3	55-59.9	Minimal pass
D	1.0	50-54.9	
F	0.0	0-49.9	Fail
WF	0.0	0	Fail – withdrawal after deadline

Students should be aware that a grade of D or D+ may not be acceptable for transfer to some other post-secondary institutions.

Student Conduct:

It is expected that students attend all classes on time. Students should avoid any disruptive behaviour during class. All cell phones must be switched off during class.

Students should refer to pages of the 2009-10 GPRC Calendar regarding policies on plagiarism, cheating and the resultant penalties. These are serious issues and will be dealt with severely.

BI 2010 Topic Outline and Readings

	Topic	Readings (Becker, 7th Edition)
Part 1 - How cells are studied		
Topic 1	Cell biology techniques	Chapter 1 5 - 9 Chapter 4 92 Chapter 12 328 - 331 Appendix A1 - A29
Topic 2	Proteins	Chapter 3 41 - 54 Chapter 7 178 - 180
Topic 3	What is a cell?	Chapter 1 1 - 6
Part 2 - How cells work		
Topic 4	The nucleus	Chapter 18 538 - 546
Topic 5	The ER	Chapter 12 324 - 332, Chapter 22 696 - 702
Topic 6	The Golgi apparatus	Chapter 12 333 - 342
Topic 7	Vesicles on the move	Chapter 12 342 - 352 Chapter 16 452 - 456
Topic 8	Lysosomes & peroxisomes	Chapter 11 316 – 317, 356 - 360 Chapter 12 352 - 356
Topic 9	Mitochondria & chloroplasts	Chapter 10 254 - 258 Chapter 11 295 - 297 Chapter 22 703 - 705
Topic 10	Membrane lipids	Chapter 7 163 - 173
Topic 11	Membrane proteins	Chapter 7 173 - 178, 181-189
Topic 12	Membrane transport proteins	Chapter 8 202 - 210, 212 - 214
Topic 13	Microtubules	Chapter 4 95 - 98 Chapter 15 425 - 437
Topic 14	Actin filaments & intermediate filaments	Chapter 15 437 - 448
Topic 15	Structures outside of the plasma membrane	Chapter 17 490 - 500, 484 -490

Part 3 - How cells move and communicate

Topic 16	Cellular movement	Chapter 16 461 - 468, 473 - 476
Topic 17	Action potentials	Chapter 13 371 - 380
Topic 18	Neurons	Chapter 13 380 - 388
Topic 19	Motor neurons & neurotoxins	Chapter 13 387 (Box 13A) Chapter 16 468 - 470
Topic 20	Non-neuronal cell signaling	Chapter 14 392 - 398, 404 - 412

Part 4 - How cells divide

Topic 21	Cell cycle & regulation	Chapter 19 551 – 553, 582-591
Topic 23	Cell cycle – mitosis & cytokinesis	Chapter 19 572 - 582
Topic 24	Apoptosis	Chapter 14 411, 419 - 421
Topic 25	Cancer cells	Chapter 24 757 - 789