



UNIVERSITY OF CALGARY
FACULTY OF SCIENCE
DEPARTMENT OF BIOLOGICAL SCIENCES
COURSE OUTLINE

1. Course: BIOLOGY 331- INTRODUCTION TO CELLULAR AND MOLECULAR BIOLOGY

Lecture Section(s):	L01	MWF	12:00-12:50	ST 148	WINTER 2018
Tutorial Sections:	T01, 02, 03	Monday	1:00 PM	ST 055, ST 057, ST 061	
	T04, 05, 06	Monday	2:00 PM	ST 055, ST 057, ST 061	
	T07, 08, 09	Monday	4:00 PM	ST 055, ST 057, ST 061	
	T10, 11, 12	Monday	5:00 PM	ST 055, ST 057, ST 061	
	T13, 14	Tuesday	9:00 AM	ST 055, ST 057	
	T15, 16	Wednesday	9:00 AM	ST 055, ST 057	
	T17, 18	Thursday	9:00 AM	ST 055, ST 057	

Course Coordinator Dr. C. Shemanko

Instructor(s):	Dr. C. Shemanko	BI 238C	220-3861	shemanko@ucalgary.ca
	Dr. D. Muench	BI 397	220-7935	dmuench@ucalgary.ca
	Dr. I. Barrette-Ng	BI 430A	220-6240	mibarret@ucalgary.ca

Course email address: biol331@ucalgary.ca - please send all course related inquiries to this address.

<https://d2l.ucalgary.ca>: Study material, assignments, background information, readings, and course information.

Biological Sciences Department BI 186; (403) 220-3140; biosci@ucalgary.ca

2. PREREQUISITE(S): Biology 311

See section 3.5.C in the Faculty of Science section of the online Calendar
(<http://www.ucalgary.ca/pubs/calendar/current/sc-3-5.html>)

3. Grading: The University policy on grading and related matters is described sections F.1 and F.2 of the online University Calendar. In determining the overall grade in the course the following weights will be used:

Tutorial Assignments (6% each)	12% total	
Tutorial Teamwork (2% each)	16% total	
Peer assessment	2%	
Midterm - Saturday March 10, 2018	35%	ST 140 and 148
Final Exam	35%	

Each piece of work (tutorial assignments, midterm test or final examination) submitted by the student will be assigned a percentage score. The student's average percentage score for the various components listed above will be combined with the indicated weights to produce an overall percentage for the course, which will be used to determine the course letter grade.

Letter Grade	A+	A	A-	B+	B	B-	C+	C	C-	D+	D
Min. Percent Required	91	86	81	76	71	67	63	59	55	50	45

You will be asked to work in pre-assigned teams for the tutorial component of this course. Studies have shown that diverse teams of 5-7 people perform the best and provide all members with the best possible learning outcomes. To ensure that we can form the most diverse teams possible, we will make use of the ITP Metrics system to form teams in the first week of class. To help with team formation, you will be asked to complete a survey in week 1 of the semester. Once teams are formed, you will be asked to work with your teammates on the graded tutorial Teamwork this semester. To ensure individual accountability in all team work that will be completed this semester, you will be asked to also use the ITP Metrics system to evaluate the contributions of each of the members of his/her group and these evaluations will be used when assigning the final group grade for tutorial Teamwork. Further details on how you will be asked to evaluate your peers will be provided in class.

4. Missed Components of Term Work: The regulations of the Faculty of Science pertaining to this matter are found in the Faculty of Science area of the Calendar in Section 3.6. It is the student's responsibility to familiarize himself/herself with these regulations. See also Section E.3 of the University Calendar

5. **Scheduled out-of-class activities:** Dates and times of approved class activities held outside of class hours.

Mid-Term Saturday, March 10, 2018 Time 9:30-11:30 Locations ST 140 and 148

(Please schedule work and other activities accordingly.)

REGULARLY SCHEDULED CLASSES HAVE PRECEDENCE OVER ANY OUT-OF-CLASS-TIME-ACTIVITY. If you have a clash with this out-of-class-time-activity, please inform your instructor as soon as possible so that alternative arrangements may be made for you.

6. **Course Materials:** TEXT: Required: Cell and Molecular Biology, Concepts and Experiments. Gerald Karp, John Wiley & Sons Inc., Toronto. 8th Edition, 2016. Comes with WileyPlus
7. **Examination Policy:** No electronic or written aids (eg. cell phones, tablets, computers, PDAs, notes, textbooks) will be allowed during writing of any exams. Non-programmable calculators will be permitted to answer quantitative questions on exams, if applicable, and permission to do this will be clearly indicated on the examination paper. Students should also read the Calendar, [Section G](#), on Examinations.
8. **Writing across the curriculum statement:** In this course, the quality of the student's writing in assignments will be a factor in the evaluation of those assignments. See also [Section E.2](#) of the University Calendar.
9. **Human studies statement:** See [Section E.5](#) of the University Calendar.

ETHICS IN THE BIOLOGICAL SCIENCES

Studies in the Biological Sciences involve the use of living and dead organisms. Students taking laboratory- and field-based courses in these disciplines can expect involvement with and experimentation on such materials. Students perform dissections on dead or preserved organisms in some courses. In particular courses, students experiment on living organisms, their tissues, cells, or molecules. Sometimes field work requires students to collect a variety of living materials by many methods, including humane trapping.

All work on humans and other animals conforms to the Helsinki Declaration and to the regulations of the Canadian Council on Animal Care. The Department strives for the highest ethical standards consistent with stewardship of the environment for organisms whose use is not governed by statutory authority. Individuals contemplating taking courses or majoring in one of the fields of study offered by the Department of Biological Sciences should ensure that they have fully considered these issues before enrolling. Students are advised to discuss any concern they might have with the Undergraduate Program Director of the Department.

10. OTHER IMPORTANT INFORMATION FOR STUDENTS:

- (a) **Misconduct:** Academic misconduct (cheating, plagiarism, or any other form) is a very serious offence that will be dealt with rigorously in all cases. A single offence may lead to disciplinary probation or suspension or expulsion. The Faculty of Science follows a zero tolerance policy regarding dishonesty. Please read the sections of the University Calendar under [Section K](#). Student Misconduct to inform yourself of definitions, processes and penalties.
- (b) **Assembly Points:** In case of emergency during class time, be sure to FAMILIARIZE YOURSELF with the information on [assembly points](#).
- (c) **Student Accommodations:** Students needing an Accommodation because of a Disability or medical condition should contact Student Accessibility Services in accordance with the Procedure for Accommodations for Students with Disabilities available at http://www.ucalgary.ca/policies/files/policies/procedure-for-accommodations-for-students-with-disabilities_0.pdf.
Students needing an Accommodation in relation to their coursework or to fulfil requirements for a graduate degree, based on a Protected Ground other than Disability, should communicate this need, preferably in writing, to the Associate Head of Biological Sciences, Dr. H. Addy by email addy@ucalgary.ca or phone 403 220-3140.
- (d) **Safewalk:** Campus Security will escort individuals day or night (<http://www.ucalgary.ca/security/safewalk/>). Call 220-5333 for assistance. Use any campus phone, emergency phone or the yellow phones located at most parking lot pay booths.
- (e) **Freedom of Information and Privacy:** This course is conducted in accordance with the Freedom of Information and Protection of Privacy Act (FOIPPA). As one consequence, students should identify themselves on all written work by placing their name on the front page and their ID number on each subsequent page. For more information see also <http://www.ucalgary.ca/secretariat/privacy>.
- (f) **Student Union Information:** VP Academic Phone: 403 220-3911 Email: suvpaca@ucalgary.ca
SU Faculty Rep. Phone: 403 220-3913 Email: science1@su.ucalgary.ca, science2@su.ucalgary.ca and science3@su.ucalgary.ca;
Student Ombuds Office: 403 220-6420 Email: ombuds@ucalgary.ca; <http://ucalgary.ca/provost/students/ombuds>
- (g) **Internet and Electronic Device Information:** You can assume that in all classes that you attend, your cell phone should be turned off unless instructed otherwise. Also, communication with other individuals, via laptop computers, Blackberries or other devices connectable

to the Internet is not allowed in class time unless specifically permitted by the instructor. If you violate this policy you may be asked to leave the classroom. Repeated abuse may result in a charge of misconduct.

- (h) **U.S.R.I.:** At the University of Calgary, feedback provided by students through the Universal Student Ratings of Instruction (USRI) survey provides valuable information to help with evaluating instruction, enhancing learning and teaching, and selecting courses (www.ucalgary.ca/usri). Your responses make a difference - please participate in USRI Surveys.

Department Approval _____ ORIGINAL SIGNED _____ Date _____

Associate Dean's Approval for
out of regular class-time activity: _____ ORIGINAL SIGNED _____ Date: _____
B331 co W18; 12/13/2017 9:47 AM

DATE	Instructor	
JAN		
8	IBN	Course Introduction
10	IBN	Introduction to cellular membranes and techniques in cell and molecular biology
12	IBN	Structure of plasma membranes – Fluidity and membrane proteins
15	IBN	Function of plasma membranes: Membrane transport
17	IBN	Function of plasma membranes: Membrane potential
19	IBN	Cytoplasmic membrane systems: structure and function part I
22	IBN	Cytoplasmic membrane systems: structure and function part II
24	IBN	Introduction to membrane trafficking
26	IBN	Sorting at the Trans-Golgi network
29	IBN	Lysosomes and endocytosis
31	IBN	Protein import into organelles
FEB		
2	IBN	Looking at some examples: Peroxisomes- Mitochondria - Chloroplasts
5	IBN	Cytoskeleton and cell motility part I
7	IBN	Cytoskeleton and cell motility part II
9	IBN	Cytoskeleton and cell motility part III
12	IBN	Muscle contractility - summary
		<u>Plant Cell Biology</u>
14	DM	Plant Cell Biology I
16	DM	Plant Cell Biology II
		READING WEEK 18-25
26	DM	Plant Cell Biology III
		<u>Interactions between cells and environment</u>
28	CS	DNA organization and chromosome structure, epigenetics
MAR 2	CS	Stem cells, therapeutic and reproductive cloning
5	CS	Cell-cell interactions
7	CS	Cell-junctions I & II
9	IBN/DM	Question and Answer for Midterm
March 10	IBN /DM	MIDTERM EXAMINATION (material from Jan 8- Feb 26) SATURDAY
12	CS	Extracellular Matrix
		<u>Cell communication</u>
14	CS	Introduction to Intercellular Signaling
16	CS	Cell signaling: G proteins & cAMP pathway
19	CS	Cell signaling: IP3/Ca2+/PKC pathways.
21	CS	Cell signaling: Receptor tyrosine kinases
		<u>Control of gene expression and reprogramming</u>
23	CS	Gene regulation and steroid hormones
26	CS	Regulation of the cell cycle: I
28	CS	Regulation of the cell cycle: II
30		UNIVERSITY CLOSED
APRIL		<u>Cancer and what protects us</u>
2	CS	DNA damage and cell cycle checkpoints
4	CS	Apoptosis
6	CS	Cell biology of cancer: Introduction
9	CS	Tumor Suppressors
11	CS	Proto-oncogenes and Oncogenes
13	CS	Question and Answer for Final Exam
Week of		Tutorial Schedule
Jan 8	IBN	Complete survey to create Working Groups
Jan 15	IIBN	Make Working Group Contracts in tutorial
Jan 22	IIBN	Tutorial 1

Jan 29	IIBN	Tutorial 2
Feb 5	IBN	Tutorial 3
Feb 12	IBN	Tutorial 4
Feb 19		Reading week no tutorials
Feb 26		No tutorials
Mar 5	CS	Tutorial 5
Mar 12	CS	Tutorial 6
Mar 19	CS	Tutorial 7
Mar 26	CS	Tutorial 8
April 2		No tutorial
April 9		No tutorial

Final exam includes material from Feb 28 through April 13

January 8 – Feb 12

Dr. Barrette-Ng
Telephone 220-6240; e-mail biol331@ucalgary.ca

Feb 14 - 26

Dr. Muench
Telephone 220-7935; email biol331@ucalgary.ca

Feb 28 - April 13

Dr. Shemanko
Telephone 220-3861; email biol331@ucalgary.ca

OFFICE HOURS WILL BE ANNOUNCED BY EACH INSTRUCTOR. PLEASE USE THE COURSE EMAIL (biol331@ucalgary.ca) FOR CORRESPONDENCE, EXCEPT IN GENUINE EMERGENCIES.

YOU MUST ATTEND THE TUTORIAL SESSION IN WHICH YOU ARE REGISTERED.

COURSE LEARNING OUTCOMES

- **Explain how macromolecules interact to support cell structure, function, dynamics and responses to environmental signals**
- **Describe the evolutionary diversity of cells, and how this diversity contributes to tissue and whole organism function**
- **Apply knowledge and technical understanding of cell and molecular biology to interpret experimental data**