



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 2019
Tutorial Sections:	T01, 02, 03	Monday	1:00 PM	ST 057, ST 055, ST 059	
	T04, 05, 06	Monday	2:00 PM	ST 057, ST 055, ST 059	
	T07, 08, 09	Monday	4:00 PM	ST 057, ST 055, ST 059	
	T10, 11, 12	Monday	5:00 PM	ST 059, ST 057, ST 055	
	T13, 14	Tuesday	9:00 AM	ST 057, ST 059	
	T15, 16	Wednesday	9:00 AM	ST 055, ST 057	
	T17, 18	Thursday	9:00 AM	ST 059, ST 055	

Course Coordinator Dr. C. Shemanko

Instructor(s): Dr. C. Shemanko BI 238C 220-3861 shemanko@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, and course information.

NOTE: Students must use their UofC account for all course correspondence.

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 09, 2019 15:30-17:30	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 09, 2019 Time 3:30PM-5:30PM 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 & LIVING ORGANISM STUDIES STATEMENTS:**

Students will not participate as subjects or researchers in human studies.

See also Section E.5 of the University Calendar.

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. Students are expected to be familiar with Section SC.4.1 of the University Calendar.

Reappraisal Of Grades:

A student wishing a reappraisal, should first attempt to review the graded work with the Course coordinator/instructor or department offering the course. Students with sufficient academic grounds may request a reappraisal. Non-academic grounds are not relevant for grade reappraisals. Students should be aware that the grade being reappraised may be raised, lowered or remain the same. See Section I.3 of the University Calendar.

a. **Term Work:** The student should present their rationale as effectively and as fully as possible to the Course coordinator/instructor within **15 days** of either being notified about the mark, or of the item's return to the class. If the student is not satisfied with the outcome, the student shall immediately submit the Reappraisal of Graded Term work form to the department in which the course is offered. The department will arrange for a reassessment of the work if, and only if, the student has sufficient academic grounds. See sections I.1 and I.2 of the University Calendar

b. **Final Exam:** The student shall submit the request to Enrolment Services. See Section I.3 of the University Calendar.

11. **Other Important Information For Students:**

a. **Mental Health** The University of Calgary recognizes the pivotal role that student mental health plays in physical health, social connectedness and academic success, and aspires to create a caring and supportive campus community where individuals can freely talk about mental health and receive supports when needed. We encourage you to explore the mental health resources available throughout the university community, such as counselling, self-help resources, peer support or skills-building available through the SU Wellness Centre (Room 370, MacEwan Student Centre, Mental Health Services Website) and the Campus Mental Health Strategy website (Mental Health).

- b. **SU Wellness Center:** The Students Union Wellness Centre provides health and wellness support for students including information and counselling on physical health, mental health and nutrition. For more information, see www.ucalgary.ca/wellnesscentre or call 403-210-9355.
- c. **Sexual Violence:** The University of Calgary is committed to fostering a safe, productive learning environment. The Sexual Violence Policy (<https://www.ucalgary.ca/policies/files/policies/sexual-violence-policy.pdf>) is a fundamental element in creating and sustaining a safer campus environment for all community members. We understand that sexual violence can undermine students' academic success and we encourage students who have experienced some form of sexual misconduct to talk to someone about their experience, so they can get the support they need. The Sexual Violence Support Advocate, Carla Bertsch, can provide confidential support and information regarding sexual violence to all members of the university community. Carla can be reached by email (svsa@ucalgary.ca) or phone at 403-220-2208 .
- d. **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. Examples of academic misconduct may include: submitting or presenting work as if it were the student's own work when it is not; submitting or presenting work in one course which has also been submitted in another course without the instructor's permission; collaborating in whole or in part without prior agreement of the instructor; borrowing experimental values from others without the instructor's approval; falsification/fabrication of experimental values in a report. **These are only examples.**
- e. **Assembly Points:** In case of emergency during class time, be sure to FAMILIARIZE YOURSELF with the information on assembly points.
- f. **Academic Accommodation Policy:** 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 [procedure-for-accommodations-for-students-with-disabilities.pdf](#). Students needing an accommodation in relation to their coursework or to fulfill requirements for a graduate degree, based on a protected ground other than disability, should communicate this need, preferably in writing, to the Associate Head, Undergraduate of the Department of Biological Sciences, Heather Addy by email addy@ucalgary.ca or phone 403 220-6979. Religious accommodation requests relating to class, test or exam scheduling or absences must be submitted no later than **14 days** prior to the date in question. See Section E.4 of the University Calendar.
- g. **Safewalk:** Campus Security will escort individuals day or night (See the Campus Safewalk website). Call 403-220-5333 for assistance. Use any campus phone, emergency phone or the yellow phones located at most parking lot pay booths.
- h. **Freedom of Information and Privacy:** This course is conducted in accordance with the Freedom of Information and Protection of Privacy Act (FOIPPA). 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 Legal Services website.
- i. **Student Union Information:** VP Academic, Phone: 403-220-3911 Email: suvpaca@ucalgary.ca. SU Faculty Rep., Phone: 403-220-3913 Email: sciencerep@su.ucalgary.ca. Student Ombudsman, Email: suvpaca@ucalgary.ca.
- j. **Internet and Electronic Device Information:** Unless instructed otherwise, cell phones should be turned off during class. All communication with other individuals via laptop, tablet, smart phone or other device is prohibited during class unless specifically permitted by the instructor. Students that violate this policy may be 2018-10-23 THIS IS A PRELIMINARY DRAFT OF THE OUTLINE. IT IS NOT YET APPROVED. 3 of 5 asked to leave the classroom. Repeated violations may result in a charge of misconduct.
- k. **Surveys:** At the University of Calgary, feedback through the Universal Student Ratings of Instruction (USRI) survey and the Faculty of Science Teaching Feedback form provides valuable information to help with evaluating instruction, enhancing learning and teaching, and selecting courses. Your responses make a difference - please participate in these surveys.

Department Approval _____ ORIGINAL SIGNED _____ Date _____

Associate Dean's Approval for
 out of regular class-time activity: _____ ORIGINAL SIGNED _____ Date: _____
 B331 co W19; 10/23/2018 11:46 AM

DATE	Instructor	
JAN		
11	IBN	Course Introduction
14	IBN	Introduction to cellular membranes and techniques in cell and molecular biology
16	IBN	Structure of plasma membranes
18	IBN	Function of plasma membranes
21	IBN	Function of plasma membranes
23	IBN	
25	IBN	Cytoplasmic membrane systems: structure and function
28	IBN	Cytoplasmic membrane systems: structure and function
30	IBN	
FEB		
1	IBN	Lecture assignment part A (worth 3%)
4	IBN	Introduction to membrane trafficking Sorting at the Trans-Golgi network
6	IBN	Lysosomes and endocytosis
8	IBN	Protein import into organelles
11	IBN	Looking at some examples: Peroxisomes- Mitochondria - Chloroplasts
13	IBN	Cytoskeleton and cell motility part I
15	IBN	Cytoskeleton and cell motility part II
		READING WEEK 18-22
		Plant Cell Biology
25	IBN	Cytoskeleton and cell motility part III
27	IBN	Lecture assignment part B (worth 3%)
MAR		<u>Interactions between cells and environment</u>
1	CS	DNA organization and chromosome structure, epigenetics
4	CS	Stem cells, therapeutic and reproductive cloning
6	CS	Cell-cell interactions
8	IBN	Question and Answer for Midterm
9	IBN	MIDTERM EXAMINATION (material from Jan 11- Feb 27) SATURDAY
11	CS	Cell-junctions I & II
13	CS	Extracellular Matrix
		Cell communication
15	CS	Introduction to Intercellular Signaling
18	CS	Cell signaling: G proteins & cAMP pathway
20	CS	Cell signaling: IP3/Ca ²⁺ /PKC pathways.
22	CS	Cell signaling: Receptor tyrosine kinases
		Control of gene expression and reprogramming
25	CS	Gene regulation and steroid hormones
27	CS	Regulation of the cell cycle: I
29	CS	Regulation of the cell cycle: II
April		Cancer and what protects us
1	CS	DNA damage and cell cycle checkpoints
3	CS	Apoptosis
5	CS	Cell biology of cancer: Introduction
8	CS	Tumor Suppressors,
10	CS	Proto-oncogenes and Oncogenes
12	CS	Question and Answer for Final Exam

Week of		Tutorial Schedule
Jan 14	I	
Jan 21	IBN	Complete survey to create Working Groups
Jan 28	IIBN	Make Working Group Contracts in tutorial
Feb 4	IIBN	Tutorial 1
Feb 11	IIBN	Tutorial 2
Feb 25	IBN	Tutorial 3
Feb 18		Reading week – no tutorials
Feb 25	IBN	Tutorial 4
Mar 4		No tutorials
Mar 11	CS	Tutorial 5
Mar 18	CS	Tutorial 6
Mar 25	CS	Tutorial 7
April 1	CS	Tutorial 8
April 8		No tutorial

Final exam includes material from March 1 through April 12

January 11 – Feb 27

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

Mar 1 - April 12

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**