

MDSC 351

Honours Cell & Molecular Biology

Instructors:

Mayi Arcellana-Panlilio, PhD, Course coordinator & Lecturer
e-mail: myarcell@ucalgary.ca

Office Hours/Policy on Answering Student Emails

Please feel free to make an appointment to meet with the Instructor by sending an e-mail with "MDSC 351" in the subject line of the message. Any questions or concerns can also be communicated by e-mail. Messages from students will be answered within 24 hrs, often sooner.

Teaching Assistants:

Elizabeth Barretto, Graduate teaching assistant
elizabeth.barretto@ucalgary.ca

Sophie Briggs, Graduate teaching assistant
sophie.briggs2@ucalgary.ca

Jahanara Rajwani, Graduate teaching assistant
jahanara.rajwani@ucalgary.ca

Time and Location:

All classes are held in Clara Christie Theatre

On Tuesdays, lectures and integrated tutorials run from 3:30 to 6:30 pm.

On Thursdays, lectures run from 3:30 to 5:30 pm.

On April 2 and 4, classes will be held from 3:30-6:30 pm on both days for group presentations.

Prerequisite/Co-Requisite:

MDSC 341 and enrollment in the BHSc Honours program, or consent of instructor.

BCEM 393 is a co-requisite of the course.

Course Description:

Introduction to principles in cellular and molecular biology. Emphasizes how structure underlies and determines function in the cell and how complex processes are organized and regulated at the molecular level.

Overarching Theme

Using the combination of lectures and inquiry-based learning, this course intends to build on the concepts learned in the introductory biology and genetics courses and to provide the solid background in cellular and molecular biology that students in the Bachelor of Health Sciences will need in order to understand many aspects of modern medical sciences. This course will focus on the structural organization of cells and the molecular basis of dynamic cellular processes, with emphasis on eukaryotic cells. Topics will include membrane trafficking, cell signaling, cytoskeleton, cell cycle, and cells and their environment.

Global Objectives

- By the end of this course, the student will have learned key concepts of cell and molecular biology, specifically how structure underlies and determines function in the cell and how complex processes are organized and regulated at the molecular level.

Learning Objectives

By the end of this course, students will be able to:

1. Explain key concepts of cell and molecular biology;
2. Apply their understanding of these concepts in new situations presented to them;
3. Draw connections among ideas, whether presented in this course or elsewhere;
4. Evaluate ideas, evidence, and interpretations; and
5. Articulate their learning through original work (written or in other media)
6. Facilitate the learning of others; and
7. Reflect on their performance.

Required Textbook

Karp G, Iwasa J, and Marshall W. 2016. Cell and Molecular Biology: Concepts and Experiments. Hoboken, N.J.: John Wiley & Sons, Inc. Eighth edition.

Evaluation

The University policy on grading and related matters is described in section F.2 of the 2018-2019 Calendar.

In determining the overall grade in the course, the following weights will be used:

Problem summary 1	15%	Associated learning objectives: 1-7
Problem summary 2	15%	Associated learning objectives: 1-7
Exam #1	20%	Associated learning objectives: 1-4
Exam #2	20%	Associated learning objectives: 1-4
Novel problem- oral presentation	10%	Associated learning objectives: 1-7
Novel problem- written	10%	Associated learning objectives: 1-5, & 7
Participation	<u>10%</u>	Associated learning objectives: 1-7
	100%	

***There is no final examination for this course.*

***A student's final grade for the course is the sum of the separate components. It is not necessary to pass each one separately in order to pass the course.*

A Note regarding Writing Assignments:

Writing skills are important to academic study in all disciplines. In keeping with the University of Calgary's emphasis on the importance of academic writing in student assignments (section E.2 of 2018-19 Calendar), writing is emphasized, and the grading thereof in determining a student's mark in this course. The Bachelor of Health Sciences values excellence in writing. Competence in writing entails skills in crafting logical, clear, coherent, non-redundant sentences, paragraphs and broader arguments, as well as skills with the mechanics of writing (grammar, spelling, punctuation). The University of Calgary offers a number of instructional services through the Students' Success Centre's Writing Support Services (<http://www.ucalgary.ca/writingsupport/>) for students seeking feedback on assignments or seeking to improve their general writing skills. Students are **strongly encouraged** to take advantage of these programs.

Grading Scheme:

A+ 97-100%	B+ 80-84%	C+ 65-69%	D+ 54-56%
A 90-96%	B 75-79%	C 60-64%	D 50-53%
A- 85-89%	B- 70-74%	C- 57-59%	F 0-49%

Missed Components of Term Work:

Any unexcused late submissions will suffer a penalty of 10% per day. No submissions will be accepted beyond the 3rd day for any assignment, except the novel problem essay, which cannot be accepted beyond day 2 due to final grade deadlines.

Students who miss a quiz will receive a mark of zero unless the instructor has been previously notified. There will be NO exceptions to this policy.

Extensions will NOT be granted on any assignment or quizzes. The only exceptions to this are those in keeping with the University Calendar (debilitating illness, religious conviction, or severe domestic affliction) that are received in writing and with supporting documentation. Traffic jams and late or full buses are common events in Calgary and are NOT acceptable reasons for late arrivals to class, meetings and examinations. Please note that while absences are permitted for religious reasons, students are responsible for providing advance notice and adhering to other guidelines on this matter, as outlined in the University Calendar (<https://www.ucalgary.ca/pubs/calendar/current/e-4.html>).

Brightspace by Desire2Learn (D2L)

Brightspace (by D2L) is located on the University of Calgary server and will be used extensively for communication with students. **It is the student's responsibility to ensure that they receive**

all posted communications and documents and that they receive emails sent by instructors or fellow students through D2L. Only your @ucalgary.ca email address may be linked to D2L. Please ensure that you are regularly checking your @ucalgary.ca account.

If you need help accessing or using D2L, please visit the Desire2Learn resource page for students: <http://elearn.ucalgary.ca/d2l-student/>.

Policies Governing the Course:

Attendance

While attendance per se is not compulsory, one should be aware that participation does comprise 10% of the final mark, and this component includes participation in in-class activities and tutorials, as well as submission of short assignments given during class.

Conduct During Lectures

The classroom should be respected as a safe place to share ideas without judgement - a community in which we can all learn from one another. Students are expected to conduct themselves in a mature and courteous manner during ALL lectures. Students are expected to frame their comments and questions to lecturers in respectful and appropriate language, always maintaining sensitivity towards the topic.

Students are expected to take notes during class and should not rely solely on material supplied by the instructors.

Electronic Devices

The Bachelor of Health Sciences program aims to create a supportive and respectful learning environment for all students. Research studies have found that student use of electronic devices (laptops, tablets, etc) in the classroom negatively affects the learning of both the user and those sitting nearby. Inappropriate use of laptops is also disruptive to your fellow classmates and disrespectful to the lecturer. The use of laptops and other electronic note-taking devices is permitted; however, their use in the classroom should be for course-related work/note-taking only. Please do **NOT to surf the web, check email or do other unrelated work**. Students who use their laptops inappropriately or are otherwise disruptive during lectures will be asked to leave.

Cell phones (or similar devices) should **be turned off** (not merely silent) upon entering the classroom. Sending/receiving text messages or leaving the class to take calls is disruptive to the entire class and will not be tolerated unless absolutely necessary. Students who disregard this rule during lectures or tutorials will be asked to leave. These items are not permitted under any circumstance during exams/quizzes, etc.

Copyright

It is the responsibility of students and professors to ensure that materials they post or distribute to others comply with the Copyright Act and the University's Fair Dealing Guidance

for Students (library.ucalgary.ca/files/library/guidance_for_students.pdf). Further information for students is available on the Copyright Office web page (<http://library.ucalgary.ca/copyright>)

A Note Regarding Instructor Intellectual Property

Generally speaking, course materials created by professor(s) (including course outlines, presentations and posted notes, labs, case studies, assignments and exams) remain the intellectual property of the professor(s). These materials may **NOT** be reproduced, redistributed or copied without the explicit consent of the professor. **The posting of course materials to third party websites such as note-sharing sites without permission is prohibited.** Sharing of extracts of these course materials with other students enrolled in the course **at the same time** may be allowed under fair dealing.

Academic Accommodations Based on Disability or Medical Condition

It is the student's responsibility to register with Student Accessibility Services to be eligible for formal academic accommodation in accordance with the Procedure for Accommodations for Students with Disabilities (https://www.ucalgary.ca/policies/files/policies/procedure-for-accommodations-for-students-with-disabilities_0.pdf). If you are a student who may require academic accommodation and have not registered with Student Accessibility Services, please contact their office at (403) 220-8237; <http://www.ucalgary.ca/access/>. Students will be provided with all necessary accommodations to ensure equal opportunity to succeed in this course. Please provide the instructor your accommodation letter from Student Accessibility Services within 14 days after the start of this course so that all needed arrangements for exams and assignments can be made.

Accommodations on Protected Grounds other than Disability

Students who require an accommodation in relation to their coursework based on a protected ground other than disability, should communicate this need, preferably in writing, to the designated BHSc program contact, Mrs. Jennifer Logan (jljlogan@ucalgary), or to Dr. Ebba Kurz, Associate Dean, Undergraduate Health and Science Education, Cumming School of Medicine. Students who require an accommodation unrelated to their coursework or the requirements for a graduate degree, based on a protected ground other than disability, should communicate this need, preferably in writing, to the Vice-Provost (Student Experience). For additional information on support services and accommodations for students with disabilities, visit www.ucalgary.ca/access/.

Academic Misconduct

The University of Calgary is committed to the highest standards of academic integrity and honesty. The University of Calgary has created rules to govern all its members regarding the creation of knowledge and the demonstration of knowledge having been learned. These rules are contained principally in Sections J to L of the University of Calgary Calendar. Students are expected to be familiar with these standards and to uphold the policies of the University in this respect. The Calendar also stipulates the penalties for violating these rules. Please know that the University and the Cumming School of Medicine take these rules seriously. **All incidences of academic dishonesty in this course, such as cheating and plagiarism, will be reported to the**

Associate Dean for investigation; infractions will be noted on the record of a student found to be guilty.

Recording of Lectures

Audio or video recording of lectures is prohibited except where explicit permission has been received from the instructor.

Other Important Information

Freedom of Information and Protection of Privacy Act

This course is conducted in accordance with the Freedom of Information and Protection of Privacy Act (FOIP); students should identify themselves on written assignments (exams and term work) by their name and ID number on the front page and ID on each subsequent page. Work assigned to you by your course instructor will remain confidential unless otherwise stated before submission. The assignment cannot be returned to anyone else without your expressed permission to the instructor. Grades will be made available on an individual basis and students will not have access to other students' grades without expressed consent. Similarly, any information about yourself that you share with your course instructor will not be given to anyone else without your permission. See <http://www.ucalgary.ca/policies/files/policies/privacy-policy-2011.pdf> for more information.

Appeals

If there is a concern with the course, academic matter or a grade, first communicate with the instructor. If these concerns cannot be resolved, students can proceed with an academic appeal, as per Section I of the University Calendar. Students must follow the official reappraisal/appeal process and may contact the Student Ombuds' Office (<http://www.ucalgary.ca/ombuds>) for assistance with this and with any other academic concerns, including academic and non-academic misconduct. Students should be aware that concerns about graded term work may only be initiated **within 15 days** of first being notified of the grade.

Resources for Support of Student Learning, Success, Safety and Wellness

Student Success Centre	http://www.ucalgary.ca/ssc/
Student Wellness Centre	http://www.ucalgary.ca/wellnesscentre/
Distress Centre	http://www.distresscentre.com/
Library Resources	http://library.ucalgary.ca

Wellness and Mental Health Resources

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 excellent 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, <https://www.ucalgary.ca/wellnesscentre/services/mental-health-services>) and the Campus Mental Health Strategy (<http://www.ucalgary.ca/mentalhealth/>).

Student Ombuds' Office

The Student Ombuds' Office supports and provides a safe, neutral space for students. For more information, please visit www.ucalgary.ca/ombuds/ or email ombuds@ucalgary.ca

Student Union (SU) Information

The SU Vice-President Academic can be reached at (403) 220-3911 or suvpaca@ucalgary.ca; the SU representatives for the Cumming School of Medicine can be reached at medrep1@su.ucalgary.ca or medrep2@su.ucalgary.ca.

Emergency Evacuation/Assembly Points

Assembly points for emergencies have been identified across campus. Assembly points are designed to establish a location for information updates from the emergency responders to the evacuees; and from the evacuated population to the emergency responders. The primary assembly point for the Clara Christie Theatre is the HRIC Atrium. For more information, see the University of Calgary's Emergency Management website: <http://www.ucalgary.ca/emergencyplan/assemblypoints>.

Safewalk

Campus security will escort individuals, day or night, anywhere on campus (including McMahon Stadium, Health Sciences Centre, Student Family Housing, the Alberta Children's Hospital and the University LRT station). Call 403-220-5333 or visit <http://www.ucalgary.ca/security/safewalk>. Use any campus phone, emergency phone or the yellow phone located at most parking lot pay booths. Please ensure your personal safety by taking advantage of this service.

Class Schedule

The following is a list of topics for class, associated readings, and assignment / exam due dates. Please note that unforeseen circumstances may cause changes to the schedule with respect to the timing of topics and readings. Students will be notified of all changes in a timely manner by way of email and D2L announcements. The exam dates are firm and will not be altered.

2019	MDSC 351		
	Lectures	Tutorials	Karp 8e
Week 1			
08-Jan			
10-Jan	Intro/overview of cells & cell research	Tutorial 1: Sample problem/Small-group tutorial format	1
Week 2			
15-Jan	DNA structure & DNA replication	Tutorial 2: Summary writing exercise	10,13
17-Jan	Gene expression		11
Week 3			
22-Jan	Control of gene expression	Tutorial 3: Introduce Problem summary #1	12
24-Jan	Cell structure and function: the nucleus		12
Week 4			
29-Jan	Plasma membrane I	Tutorial 4: Personal reflection in inquiry learning	4
31-Jan	Plasma membrane II		4
Week 5			
04-Feb		PS#1 submission deadline Monday night, 11:59 pm	
05-Feb	Cytoplasmic membrane systems I		8
07-Feb	Cytoplasmic membrane systems II		8
Week 6			
12-Feb	Mitochondria and energy metabolism	Tutorial 5: Review session	5
14-Feb	Exam #1: material from Jan 10th to Feb 7th		
Week 7			
19-Feb	Reading week - no classes		
21-Feb			
Week 8			
26-Feb	Cytoskeleton and cell movement	Tutorial 6: Introduce PS#2	9
28-Feb	Cell junctions, adhesion, and the ECM		7
Week 9			
05-Mar	Cell signaling I	Tutorial 7: ID Groups for Novel Problem project	15
07-Mar	Cell signaling II		15
Week 10			
11-Mar		PS# 2 submission deadline Monday night, 11:59 pm	
12-Mar	Cell cycle	Tutorial 8: Brainstorming for novel problem	14
14-Mar	DNA Damage and repair	Novel problem plan due Thursday night, 11:59 pm	13
Week 11			
19-Mar	Apoptosis	Tutorial 9: Feedback on plans/ Groups meet to discuss NF	15
21-Mar	Cancer		16
Week 12			
26-Mar	Special topics	Tutorial 10: Review	
28-Mar	Exam #2: material from Feb 12th to Mar 21st		
Week 13			
02-Apr	Novel problem presentations I*	*Note that classes run from 3:30 to 6:30 pm on both days!	
04-Apr	Novel problem presentations II*		
Week 14			
09-Apr	Course evaluations/Wrap-up lecture		
11-Apr		Novel problem essay due Thursday night, 11:59 pm	