



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

1. Course: **BIOLOGY 331– INTRODUCTION TO CELLULAR AND MOLECULAR BIOLOGY**

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|---------------------|-------------|-----------|-------------|------------------------|-------------|
| Lecture Section(s): | L01 | MWF | 12:00-12:50 | ST 140 | WINTER 2017 |
| Tutorial Sections: | T01, 02, 03 | Monday | 1:00 PM | ST 055, ST 057, SS 209 | |
| | T04, 05, 06 | Monday | 2:00 PM | SB 128, ST 063, SS 209 | |
| | T07, 08, 09 | Monday | 4:00 PM | ST 061, ST 057, SS 209 | |
| | T10, 11, 12 | Monday | 5:00 PM | ST 061, ST 057, SS 209 | |
| | T13, 14 | Tuesday | 9:00 AM | KNB 129, ST 059 | |
| | T15, 16 | Wednesday | 9:00 AM | ST 055, SS 209 | |
| | T17, 18 | Thursday | 9:00 AM | SA 235, KNB 129 | |

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. V. Zaremberg BI 390 220-4298 vzarembe@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 quizzes (1% each) | 8% total | |
| 1 Preliminary Exam | | |
| Midterm Saturday March 11, 2017 | 40% | ST 140 and 148 |
| Final Exam | 40% total | |

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.

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 11, 2017 Time 12:30-14:30 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 laboratory reports will be a factor in the evaluation of those reports. See also [Section E.2](#) of the University Calendar.
9. **Human studies statement:** indicating whether students in the course may be expected to participate as subjects or researchers. See also [Section E.5](#) of the University Calendar.

STUDIES IN THE BIOLOGICAL SCIENCES INVOLVE THE USE OF LIVING AND DEAD ORGANISMS. Students are expected to be familiar with <http://www.ucalgary.ca/pubs/calendar/current/sc-5-1.html> of the on-line calendar.

See also <http://www.ucalgary.ca/pubs/calendar/current/e-5.html>.

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 W17; 9/29/2016 3:37 PM

| DATE | Instructor | |
|-----------------|--------------|--|
| JAN | | |
| 9 | VZ | Course Introduction |
| 11 | VZ | Introduction to cellular membranes |
| 13 | VZ | Fluidity and membrane proteins |
| | | |
| 16 | VZ | Membrane transport |
| 18 | VZ | Membrane potential |
| 20 | VZ | Endomembrane system |
| | | |
| 23 | VZ | Endoplasmic reticulum & protein synthesis |
| 25 | VZ | Membrane trafficking I |
| 27 | VZ | Sorting at TGN |
| | | |
| | | |
| 30 | VZ | Lysosomes and endocytosis |
| FEB | | |
| 1 | VZ | Protein import into organelles |
| 3 | VZ | Peroxisomes- Mitochondria - Chloroplasts |
| | | |
| | | |
| 6 | VZ | Cytoskeleton I |
| 8 | VZ | Cytoskeleton II |
| 10 | VZ | Cytoskeleton III |
| | | |
| 13 | VZ | Muscle contractility - summary |
| 15 | CS | DNA organization and chromosome structure, epigenetics |
| 17 | CS | Stem cells, therapeutic and reproductive cloning |
| | | READING WEEK 19-26 |
| | | <u>Interactions between cells and environment</u> |
| 27 | CS | Cell-cell interactions |
| MAR | | |
| 1 | CS | Cell-junctions I & II |
| 3 | VZ-CS | Question and Answer for Midterm |
| | | |
| | | |
| 6 | CS | Extracellular Matrix |
| | | <u>Cell communication</u> |
| 8 | CS | Introduction to Intercellular Signaling |
| 10 | CS | Cell signaling: G proteins & cAMP pathway |
| March 11 | VZ/CS | MIDTERM EXAMINATION (Jan 9- Feb 27) SATURDAY |
| 13 | CS | Cell signaling: IP3/Ca ²⁺ /PKC pathways. |
| 15 | CS | Cell signaling: Receptor tyrosine kinases |
| | | <u>Control of gene expression and reprogramming</u> |
| 17 | CS | Gene regulation and steroid hormones |
| | | |
| 20 | CS | Regulation of the cell cycle: I |
| 22 | CS | Regulation of the cell cycle: II |
| | | <u>Cancer and what protects us</u> |
| 24 | CS | DNA damage and cell cycle checkpoints |
| | | |
| | | |
| 7 | CS | Apoptosis |
| 29 | CS | Cell biology of cancer: Introduction |
| | | <u>Plant Biology</u> |
| 31 | DM | Plant Biology I |
| | | |
| 3 | DM | Plant Biology II |
| 5 | DM | Plant Biology III |
| 7 | CS | Tumor Suppressors |
| | | |
| 10 | CS | Proto-oncogenes and Oncogenes |
| 12 | CS | Question and Answer for Final Exam |
| | | |
| | | |

| Week of | | Tutorial Schedule |
|---------|----|----------------------------------|
| Jan 9 | | |
| Jan 16 | VZ | Tutorial 1 |
| Jan 23 | VZ | Tutorial 2 |
| Jan 30 | VZ | Tutorial 3 |
| Feb 6 | VZ | Tutorial 4 |
| Feb 13 | VZ | Review |
| Feb 20 | | Reading week no tutorials |
| Feb 27 | | No tutorials |
| Mar 6 | CS | Tutorial 5 |
| Mar 13 | CS | Tutorial 6 |
| Mar 20 | CS | Tutorial 7 |
| Mar 27 | CS | Tutorial 8 |
| April 3 | | Review |

Final exam includes material from March 1 though April 12

January 11 – Mar 13

Dr. Zaremborg
Telephone 220-4298; e-mail biol331@ucalgary.ca

March 31- April 5

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

March 15 - 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.

Grading Scale:

92.5+ A+
87.5 A
82.5 A-
77.5 B+
72.5 B
67.5 B-
62.5 C+
57.5 C
52.5 C-
50.0 D+
47.5 D
<47.5 F

LEARNING COURSE 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