



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

1. **Course: CMMB 523 – DNA, GENOMES AND RNA FUNCTION**

Lecture Section: L01      MWF      14:00-14:50      KNB 128      WINTER 2017

Course Coordinator:      Dr. Zimmerly

Instructor(s):      Dr. S. Zimmerly      BI 319C      220-7933      zimmerly@ucalgary.ca  
   Dr. S.L. Wong      BI 178A      220-5721      slwong@ucalgary.ca

D2L: CMMB 523 L01 (Winter 2017) - DNA Genomes and RNA Function  
Biological Sciences Department BI 186; (403) 220-3140; biosci@ucalgary.ca

2. **PREREQUISITE(S):**      CMMB 411  
   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:

Midterm Exam	25 %
Midterm Quiz	10 %
Assignments	20 %
Final Exam	45 %

(There will be a final exam scheduled by the Registrar's office.)

**The final grade is obtained from averaging all components.**

Grading Scale

A+	= 95	B-	= 70	D	= 50
A	= 85	C+	= 67	F	= 0
A-	= 80	C	= 63		
B+	= 77	C-	= 60		
B	= 73	D+	= 55		

Each piece of work (assignment, 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.6](#) of the University Calendar
5. **Scheduled out-of-class activities:** Dates and times of approved class activities held outside of class hours.

**Midterm      Thursday, February 09, 2017; 7:00-9:00 pm      ST 131**

**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:** Recommended: Molecular Biology of the Gene. Watson et al. Pearson. 7th Edition. (or equivalent textbook)
7. **Examination Policy:** Calculators are not allowed for this examination. The use of wireless devices, such as cell phones, PDAs (Palm OS or pocket PC devices etc.), and camera devices during the examination will not be allowed. 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 evaluation of the assignments. 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) **Academic Accommodation Policy:** Students with documentable disabilities are referred to the following links: Students with Disabilities: <http://www.ucalgary.ca/pubs/calendar/current/b-1.html> [B.1](#) and Student Accessibility Services: <http://www.ucalgary.ca/access/>.
- (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 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](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](mailto:addy@ucalgary.ca) or phone 403 220-3140.
- (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](http://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: \_\_\_\_\_  
M523 co W17; 1/2/2017 11:21 AM

## COURSE OUTCOMES:

### Course Content

#### **1. Regulation of prokaryotic gene expression (SLW)**

Methods to study bacterial transcription: (a) Recombinant DNA methods to produce and purify transcription factors; (b) Footprinting and other molecular biological approaches (e.g. surface plasmon resonance based biosensor) to study protein-nucleic acid and protein-protein interactions. Structure-function studies of both RNA polymerase and promoter sequences, analyses of the transcription process and examples of gene regulation by different strategies.

#### **2. Genome sequencing (SZ)**

Strategies and methods for sequencing bacterial and eukaryotic genomes. Genome composition of bacterial and eukaryotic genomes, with substantial detail on the human genome. Experiments designed to understand genomic biology, such as microarray analyses and genome-wide screens. Next-generation sequencing and applications. Experimental characterization following from the genome projects.

#### **3. Topics in eukaryotic gene expression and RNA (SZ)**

Summary of the diverse roles of RNA in the cell. Post-transcriptional regulation mechanisms, non-coding RNAs, riboswitches, catalytic RNAs and the RNA world hypothesis.