MICR302
Molecular Microbiology
CRN 22284
Winter 2016

Class time/location: Mon, Thurs, 11:30 – 12:50, ECS 125

Instructor: Dr. Doug Briant
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Instructor: Dr. Chris Nelson
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Textbook: Since the course material is as up-to-date as possible, there is no course textbook. Much of the source material (papers) will be provided on-line in the CourseSpaces site, and will serve as an additional resource. You will need your UVic NetLink ID and password to access this information.

It is, however, recommended that you have easy access to a standard microbiology textbook.

Lecture Notes: Notes will generally be made available on the CourseSpaces site prior to lectures. Notes are arranged by topic, and a single topic may span multiple lectures. ***Lecture notes are not complete***, and students will be responsible for all materials covered in the lectures.

MICR302 course learning objectives:

- In this course, you will gain the tools to recognize relationships between DNA, RNA and protein. Applying these tools, you will be able to evaluate the specific contributions of different molecular mechanisms microbes utilize to respond to environmental changes.
- You will have the ability to compare microbial communication and signalling strategies.
- You will understand the importance of the microbiome in maintaining human health.
- You will be able to discuss the utility of budding yeast a model eukaryotic system.

By the end of the course, it is expected that each student will be capable of examining a biological response and hypothesizing which underlying genetic and/or biochemical process defines the response. Students will then be able to design experiments, including all relevant controls, to test their proposed hypothesis.

Important dates and evaluation:

EVALUATION	Date
** 1% mini assignment 1	***in class, electronic group submission, for participation mark only*** Monday, January 25
** 1% mini assignment 2	***in class, electronic group submission, for participation mark only*** Monday,February 22
6.5% DJB final assignment	***in class, hard copy*** Monday, March 14
6.5% CJN final assignment	***in class, hard copy*** Monday, April 04
40% midterm	***in Bob Wright A150, 7:00 – 9:00 pm*** ***** note time and room*** Tuesday, February 16
45% final exam	***3 hrs, set by registrar***

** no formal mark is awarded for mini assignments. Assignments will be discussed in lecture and electronically submitted for participation marks. Material may appear on exams.

- Students are responsible for ensuring that they are properly registered in the course.
- Students are expected to have met all pre/co-requisites for the course (see above).

Grading:

A+	90 -100	**B+**	77 - 79	**C+**	65 - 69	**F**	< 50
A	85 - 89	**B**	73 - 76	**C**	60 - 64	**N ****	< 50
A-	80 - 84	**B-**	70 - 72	**D**	50 - 59		

** N grades

Students who have completed the following elements will be considered to have completed the course and will be assigned a final grade:

- ***The midterm and final exams must be completed to complete the course***

Failure to complete one or more of these elements will result in a grade of “N” regardless of the cumulative percentage on other elements of the course. An N is a failing grade, and it factors into a student’s GPA as 0. The maximum percentage that can accompany an N on a student’s transcript is 49

Tentative Class Schedule:

	topic	***comments***
1	***Introduction***	
2	***DNA***	
	a) gene structure and expression	bacterial gene architecture, σ factors, comparison between prokaryotic and eukaryotic systems
3	***RNA***	
	a) stability and processing	mRNA decay, processing stable RNA transcripts
	b) riboswitches	overview of riboswitches
	c) CRISPR	RNA silencing in prokaryotes
4	***Protein***	
	a) two component systems	introduction to prokaryotic protein signalling
	b) protein splicing	inteins and exteins, applications
	c) translational surveillance	identification and destruction of aberrant proteins in prokaryotes
5	***Environment***	
	a) heat shock	role of sigma factors, chaperones and proteases
	b) envelope stress	antisigma factors
	c) stationary phase	rpoS, σ^S
	d) stringent response	response to stringent conditions, including σ and ppGpp
	e) sporulation	role of phosphorylation and sigma factors
6	***Bacterial Signalling***	
	a) environmental	chemotaxis and two component systems
	b) community	quorum sensing and bacterial communication, importance of biofilms
7	***Microbiome***	how does the microbiome impact human health?
8	***Budding yeast: a model eukaryote***	Lifecycle, examples of conserved signal transduction pathways, molecular methods, genetic techniques and systems level high-throughput methods for insight into eukaryotic biology.

DEPARTMENT INFORMATION AND POLICIES

1. The Department of Biochemistry and Microbiology upholds and enforces the University's policies on academic integrity. These policies are described in the current University Calendar. All students are advised to read this section.

2. Cell phones, computers, and other electronic devices must be turned off at all times unless being used for a purpose relevant to the class. Students having a cell phone, tablet, or computer on their person during an exam will be assumed to have it for the purpose of cheating.

3. Any recordings of lectures may only be performed with written permission of the instructor, and are for personal use only. The instructor retains copyright to such recordings and all lecture materials provided for the class (electronic and otherwise); these materials must not be shared or reposted on the Internet.

4. Course materials, such as notes, problem sheets, quizzes, examinations, example sheets, or review sheets, may not be redistributed without the explicit written permission of the instructor.

5. Students are expected to be present for the midterm and final exams. Instructors may grant deferrals for midterm examinations for illness, accident, or family affliction, and students must provide appropriate documentation 48 hours after the midterm exam. The deferred exam must be written within five business days of the original exam. The Department of Biochemistry and Microbiology considers it a breach of academic integrity for a student taking a deferred examination to discuss the exam with classmates. Similarly, students who reveal the contents of an examination to students taking a deferred examination are considered to be in violation of the University of Victoria policy on academic integrity (see current University Calendar). Deferral of a final exam must be requested with an Academic Concession form and submitted directly to Undergraduate Records. Deferred final exams for fall term courses will be arranged by the instructor. Deferred final exams for spring term courses will be arranged through Undergraduate Records and must be written before the end of the summer term as stipulated in the University Calendar.

6. Multiple choice scan sheets for machine scoring (bubble sheets) are considered the authentic exam answer paper and will be retained by the department for 1 year.

7. Professors may refuse to review/remark exams not written in indelible ink. In addition, requests for review/remark of a midterm exam must be made within one week of the exam being returned. Students are expected to promptly pick up midterm exams after marking has been completed, either in class or from the instructor.

8. Examination papers that have pages removed, or are mutilated will not be marked.

9. I reserve the right to use plagiarism detection software or other platforms to assess the integrity of student work."

Resource Centre for Students with a Disability

Students with diverse learning styles and needs are welcome in this course. In particular, if you have a disability/health consideration that may require accommodations, approach the Resource Centre for Students with a Disability (RCSD) as soon as possible (http://rcsd.uvic.ca/.) in order to assess your specific needs

Course Experience Survey (CES)

I value your feedback on this course. Towards the end of term, as in all other courses at UVic, you will have the opportunity to complete an anonymous survey regarding your learning experience (CES). The survey is vital to providing feedback to me regarding the course and my teaching, as well as to help the department improve the overall program for students in the future. The survey is accessed via MyPage and can be done on your laptop, tablet, or mobile device. I will remind you and provide you with more detailed information nearer the time but please be thinking about this important activity during the course.