

**Microbiology 408: Microbial Pathogenesis  
Course Outline – 2014**

**Instructors:**

Dr. Caroline Cameron, Room 247, Petch Building  
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Office Hours: 12:00-2:00 pm, Monday and Thursday or by appointment

Dr. Doug Briant, office to be decided due to Petch renovations  
E-mail: [dbriant@uvic.ca](mailto:dbriant@uvic.ca)  
Office Hours: Tuesday and Thursday, 1:00 – 2:00 \*\* available at other times by appointment \*\*

**Course Website:**

Material posted on Moodle

**Textbook:**

No textbook, all necessary material will be provided in the lectures

**TENTATIVE LECTURE SCHEDULE**

Month	Day	Section	Topic	Material to be Covered	Instructor	Assignments
January	6	I	Introduction	Content to be covered in course Introduction to microbial pathogenesis	Dr. Cameron	
	9, 13, 16	II	Host defense mechanisms and how bacteria circumvent them	1. Non-specific, innate and adaptive host defenses	Dr. Cameron	<b>January 16:</b> class time for discussion and completion of Assignment #1. Focus, innate immunity  <b>Assignment #1 due January 16<sup>th</sup></b>
	20, 23	III	Classic strategies used by bacteria to initiate and maintain infection	1. Microbial colonization and adherence strategies 2. Microbial invasion strategies	Dr. Briant	
	<b>27</b>				Drs. Cameron / Briant	<b>MIDTERM #1</b>
January/ February	30, 3, 6	IV	Selected mechanisms of bacterial pathogenesis	1. Bacterial secretion systems 2. Bacterial surface structures	Dr. Briant	<b>January 30:</b> class time for discussion and completion of Assignment #2. Focus, bacterial secretion systems  <b>Assignment #2 due January</b>

						30 <sup>th</sup>
February	10-14		READING BREAK			
February /March	17, 20, 24, 27, 3	IV	Selected mechanisms of bacterial pathogenesis	<ol style="list-style-type: none"> <li>3. Antigenic variation</li> <li>4. Biofilms and quorum sensing</li> <li>5. modulation of apoptotic processes</li> <li>6. toxins</li> </ol>	Dr. Briant	<p><b>February 20:</b> class time for discussion and completion of Assignment #3. Focus, biofilms and quorum sensing.</p> <p><b>Assignment #3 due February 20<sup>th</sup></b></p>
<b>March</b>	<b>6</b>				Dr. Briant	<b>MIDTERM #2</b>
March	10, 13	V	Pathogenesis of selected organisms	<ol style="list-style-type: none"> <li>1. Spirochetes <ol style="list-style-type: none"> <li>a. <i>Treponema pallidum</i></li> <li>b. <i>Borrelia burgdorferi</i></li> <li>c. <i>Borrelia hermsii</i></li> </ol> </li> </ol>	Dr. Cameron	<p><b>March 10:</b> class time for discussion and completion of Assignment #4. Focus, spirochete pathogenesis.</p> <p><b>Assignment #4 due March 10<sup>th</sup></b></p>
	17			<ol style="list-style-type: none"> <li>2. Intracellular pathogens/Gram-negative bacteria <ol style="list-style-type: none"> <li>a. <i>Salmonella</i></li> <li>b. <i>E. coli</i></li> </ol> </li> </ol>	Dr. Cameron	<p><b>March 17:</b> class time for discussion and completion of Assignment #5. Focus, Gram-negative bacterium.</p> <p><b>Assignment #5 due March 17<sup>th</sup></b></p>
	20			<ol style="list-style-type: none"> <li>3. Gram-positive bacteria <ol style="list-style-type: none"> <li>a. <i>Staphylococcus</i></li> <li>b. <i>Listeria</i></li> </ol> </li> </ol>	Dr. Cameron	<p><b>March 20:</b> class time for discussion and completion of Assignment #6. Focus, Gram-positive bacterium.</p> <p><b>Assignment #6 due March 20<sup>th</sup></b></p>
	24	VI	Mechanisms of interference with pathogenesis	<p>Antibacterial agents: Mechanisms of action and resistance</p> <ol style="list-style-type: none"> <li>1. Antibiotics</li> <li>2. Antibacterial peptides</li> </ol>	Dr. Cameron	
	27, 31	VII	Techniques for studying pathogenesis	<ol style="list-style-type: none"> <li>1. genetic and genomic approaches</li> <li>2. proteomic approaches</li> <li>3. systems biology</li> </ol>	Dr. Cameron	
April	3			REVIEW SESSION	Dr. Cameron	

## GRADING SCHEME

### Assessment of Student Performance

Marking of short answer exam questions on material presented in the course and assignment of a numerical mark to each question. Evaluation of performance on the assignments.

### Evaluation of the Exams/Assignments and Weighting

Midterm #1: January 27<sup>th</sup>, 20% of final grade, covers material from January 6<sup>th</sup> through January 23<sup>rd</sup> inclusive.  
Midterm #2: March 6<sup>th</sup>, 30% of final grade, covers material from January 30<sup>th</sup> through March 3<sup>rd</sup>, inclusive.  
Assignments: Six assignments, worth 10% of final grade  
Final: date to be announced, 40% of final grade, covers material from March 10<sup>th</sup> through April 3<sup>rd</sup> inclusive.

#### Assignments:

Completion of each of six assignments is mandatory and attendance at each of the class discussion sessions is mandatory (attendance will be taken). Failure to attend a group discussion session without prior notification and approval by the instructor or a medical note will result in a loss of the assignment mark for each session missed. Failure to participate in the group discussion sessions and/or failure to contribute to the writing of the assignments will also result in a loss of the assignment mark. Each assignment will be based upon peer-taught group work. The class will be split into groups, and class discussion time will be provided.

#### Assignments #1-#6 (worth 10% of final grade):

- Six assignments that focus upon primary literature papers (one paper per assignment, papers will be chosen by the instructors).
- In total these assignments will comprise 10% of your final mark.
- Each assignment will ask concept-based questions stemming from the paper that will test your understanding of the material presented in the paper.
- The group discussion format and dedicated class time (30 minutes each assignment) will allow you to learn the subject through teaching to your peers.
- A link to the assigned primary literature paper will be posted on Moodle in advance of the class when the assignment will be discussed.
- Questions will be provided in class for you to answer as a group during the class discussion time.
- **Assignments will be due at the end of each class discussion period.**

#### The dedicated class times for discussion will be on:

January 16<sup>th</sup>, 2014  
January 30<sup>th</sup>, 2014  
February 20<sup>th</sup>, 2014  
March 10<sup>th</sup>, 2014  
March 17<sup>th</sup>, 2014  
March 20<sup>th</sup>, 2014

Revised UVic Grading Scheme (effective May 1, 2012)

Grades	Grade Point Value	Percentage	Description
A+	9	90 – 100	<b>Exceptional, outstanding and excellent</b> performance. Normally achieved by a minority of students. These grades indicate a student who is self-initiating, exceeds expectation and has an insightful grasp of the subject matter.
A	8	85 – 89	
A-	7	80 – 84	
B+	6	77 – 79	<b>Very good, good and solid</b> performance. Normally achieved by the largest number of students. These grades indicate a good grasp of the subject matter or excellent grasp in one area balanced with satisfactory grasp in the other area.
B	5	73 – 76	
B-	4	70 – 72	
C+	3	65 – 69	<b>Satisfactory, or minimally satisfactory.</b> These grades indicate a satisfactory performance and knowledge of the subject matter.
C	2	60 – 64	
D	1	50 – 59	<b>Marginal</b> Performance. A student receiving this grade demonstrated a superficial grasp of the subject matter.
F	0	0-49	<b>Unsatisfactory</b> performance. Wrote final examination and completed course requirements; no supplemental.
N	0	0-49	Did not write examination or complete course requirements by the end of term or session; no supplemental. Failure to complete one or more components of student evaluation 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 O. The maximum percentage that can accompany an N on a student’s transcript is 49

## **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. 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 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.
5. Scan sheets for multiple choice exams (bubble sheets) will not be made available for review. Therefore, in addition to filling in answers on the scan sheet, students should also circle their answers in ink on their exam.
6. Professors may refuse to review/remark exams not written in 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.
7. Examination papers that have pages removed, or are mutilated will not be marked.