



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

1. **Course: CMMB 431 – BACTERIAL PATHOGENS**

Lecture Sections: L01 MWF 10:00-10:50 SS 113 WINTER 2018
 Course Coordinator: Dr. J.J. Harrison
 Instructor(s): Dr. J.J. Harrison BI 429B 220-7627 jjharris@ucalgary.ca

D2L Web Site: **CMMB 431 L01 (Winter 2018) - Bacterial Pathogens**
 Biological Sciences Department BI 186; (403) 220-3140; biosci@ucalgary.ca

2. **PREREQUISITE(S):** CMMB 343
 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 Exams	30% (2 X 15%)	In class	Feb 5 & March 5
Student Group Presentation	20%		
Term Paper	20%		
Final Exam	30%		

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

Each piece of work (term paper, Student Group Presentation, midterm exams 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.

Letter Grade	A+	A	A-	B+	B	B-	C+	C	C-	D+	D
Min. Percent Required	92	85	80	77	73	70	66	62	60	55	50

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. N/A

REGULARLY SCHEDULED CLASSES HAVE PRECEDENCE OVER ANY OUT-OF-CLASS-TIME-ACTIVITY.

6. **Course Materials:** TEXT: N/A

7. **Examination Policy:** No electronic or written aids (e.g. calculators, cell phones, tablets, computers, PDAs, notes, textbooks) will be allowed during writing of any exams. 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 the term paper will be a factor in the evaluation. 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.

ETHICS IN THE BIOLOGICAL SCIENCES

Studies in the Biological Sciences involve the use of living and dead organisms. Students taking laboratory- and field-based courses in these disciplines can expect involvement with and experimentation on such materials. Students perform dissections on dead or preserved organisms in some courses. In particular courses, students experiment on living organisms, their tissues, cells, or molecules. Sometimes field work requires students to collect a variety of living materials by many methods, including humane trapping.

All work on humans and other animals conforms to the Helsinki Declaration and to the regulations of the Canadian Council on Animal Care. The Department strives for the highest ethical standards consistent with stewardship of the environment for organisms whose use is not governed by statutory authority. Individuals contemplating taking courses or majoring in one of the fields of study offered by the Department of Biological Sciences should ensure that they have fully considered these issues before enrolling. Students are advised to discuss any concern they might have with the Undergraduate Program Director of the Department.

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 _____
M431 co W18; 1/5/2018 11:24 AM

LEARNING OUTCOMES

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

1. Explain, and discuss the major principles and concepts of a range of bacterial pathogens at various levels including:
 - a. Specific bacterial pathogens
 - b. Diseases caused by the bacterium
 - c. Mechanisms of pathogenesis
2. Describe host immune response to bacterial infections and how we fight off bacterial infections using antibiotics and how we prevent disease using vaccines
3. Explain the role of the human microbiome in health and protection against bacterial invaders.
4. Communicate scientific information by writing a scientific literature review and in particular be able to recognize and present primary scientific literature.
5. Sharpen your ability to reason logically and critically evaluate information
6. Deepen skills needed to work with a group of your peers and present a research approach
 - a. Apply your knowledge of scientific research on bacterial pathogens by presenting a research grant
 - b. Sharpen your oral communication Skills
7. Recognize members of the U of C community carrying out research on bacterial pathogens and infections and describe their findings.

TENTATIVE 2018 course schedule - May change due to availability of guest lecturers.		
Jan 8	What are bacterial pathogens, pathogenesis and infections?	Harrison
10	The human microbiome in health and disease	Harrison
12	How do bacterial pathogens attack their hosts?	Harrison
15	How the host fights back: The innate immune response	Groizeleau
17	How the host fights back: The adaptive immune response	Groizeleau
19	Sanitation and vaccination	Almblad
22	The human microbiota and immunity	McCoy
24	<i>Pseudomonas aeruginosa</i>	Harrison
26	Clinician Seminar: <i>Staphylococcus</i> spp.	Zhang
29	Antibiotics and resistance	Harrison
31	Research Seminar: Biofilms Select groups and assign term paper	Harrison
Feb 2	Clinician Seminar: Cystic fibrosis lung infections	Parkins
5	MIDTERM EXAM (in class)	Harrison
7	<i>Clostridium difficile</i>	TBD
9	<i>Yersinia pestis</i> and arthropod borne infections	Harrison
12	<i>Haemophilus influenza</i>	Schryvers
14	<i>Neisseria</i>	Schryvers
16	Research Seminar: The role of iron in pathogenesis	Schryvers
18-25	MIDTERM BREAK	
26	<i>Salmonella</i>	Harrison
28	<i>Listeria</i>	Harrison
Mar 2	Research Seminar: <i>Escherichia coli</i>	Savchenko
5	MIDTERM EXAM (in class)	Harrison
7	Research Seminar: <i>Borrelia</i> and lyme disease	Chaconas
9	Research Seminar: <i>Vibrio cholerae</i>	Dong
12	Clinician Seminar: Sexually transmitted infections	Ugarte-Torres
14	<i>Chlamydia</i> , <i>Rickettsia</i> and obligate intracellular pathogens	Devinney
16	<i>Legionella</i>	Harrison
19	Research Seminar: The human gut microbiome and asthma	Arrieta
21	<i>Corynebacterium diphtheriae</i>	Harrison
23	<i>Mycobacterium tuberculosis</i> - World TB Day	Harrison
26	Research Seminar: Vaginal microbiome and polymicrobial infections in reproductive health	Sycuro
28	<i>Bordetella</i>	Harrison
30	GOOD FRIDAY – No lecture	
Apr 2	STUDENT PRESENTATIONS	Harrison
4	STUDENT PRESENTATIONS	Harrison
6	STUDENT PRESENTATIONS	Harrison
9	STUDENT PRESENTATIONS	Harrison
11	STUDENT PRESENTATIONS	Harrison
13	STUDENT PRESENTATIONS	Harrison