



COURSE OUTLINE

1. **Course:** CMMB 565, (MDSC 565) Advanced Topics In Microbial Pathogenesis and the Microbiome - Fall 2021

Lecture 01: TR 12:30 - 13:45 in EEEL 151

Instructor	Email	Phone	Office	Hours
Dr Markus Geuking	markus.geuking@ucalgary.ca	403 220-6840	HSC 1885	by appointment
Dr Rebekah Devinney	rdevinne@ucalgary.ca	403 220-4095	HRIC 2C68	By appointment

In Person Delivery Details:

We will deliver this course in person. Students are expected to abide by the University guidelines on masking and vaccination/testing. We are prepared to go online if required.

Re-Entry Protocol for Labs and Classrooms:

To limit the spread of COVID-19 on campus, the University of Calgary has implemented safety measures to ensure the campus is a safe and welcoming space for students, faculty and staff. The most current safety information for campus can be found [here](#).

Course Site:

D2L: CMMB 565 L01-(Fall 2021)-(MDSC 565) Advanced Topics In Microbial Pathogenesis and the Microbiome

Note: Students must use their U of C account for all course correspondence.

We will use the CMMB565 D2L page for assignments and communicating with students.

2. **Requisites:**

See section [3.5.C](#) in the Faculty of Science section of the online Calendar.

Prerequisite(s):

Cellular, Molecular and Microbial Biology 343 and 431.

3. **Grading:**

The University policy on grading and related matters is described in [F.1](#) and [F.2](#) of the online University Calendar.

In determining the overall grade in the course the following weights will be used:

Components	Weighting (%)	Due Date
Paper Presentation	20%	Multiple
Paper Synopses	20%	Multiple
Term Paper #1	30%	Oct 19, 2021
Term paper #2	30%	Dec 7, 2021

Assignments

Paper presentations: Students will present papers assigned by the course coordinators in the areas of Microbial Pathogenesis and the Microbiome. Presentations will be done in groups of 2-3 students, and papers assigned 2 weeks prior to the presentation date. Students will be assigned roles in the presentation at that time. This is worth 20% of the mark.

Papers will be assigned on the following dates:

Paper 1 : Sept 9

Papers 2 and 3: Sept 23

Papers 4 and 5: Oct 19

Paper 6: Nov 4

Paper synopsis: Students who are not involved in the presentation will write a brief (10-15 line) synopsis of the major points made in the paper, and prepare 3-5 questions to ask the presenters. Paper synopses will be due at 12:00 pm to the appropriate D2L Dropbox on the day of the presentation. There will be 5 paper synopses/student. This is worth 20% of the mark (total of all synopses).

Term Paper #1: Students will write a Letter of Intent for a research proposal in the area of the microbiome.

Detailed instructions for the Letter of Intent will be posted on D2L during the first week of class. The Letter of Intent is a maximum of 2 pages double spaced, and due by 11:59 pm on 10/19/21 to the appropriate D2L Dropbox, and is worth 25% of the mark.

Term Paper #2: Students will write a short essay in the area of Microbial Pathogenesis. The topic and detailed instructions will be posted on D2L on 10/19/21 (start of the pathogenesis block). This assignment is due by 11:59 pm on 12/7/21 to the appropriate D2L Dropbox, and is worth 25% of the mark.

Each piece of work (reports, assignments, quizzes, midterm exam(s) or final examination) submitted by the student will be assigned a grade. The student's grade for each component 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.

Each piece of work (reports, assignments, quizzes, midterm exam(s) or final examination) submitted by the student will be assigned a grade. The student's grade for each component 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.

The conversion between a percentage grade and letter grade is as follows.

	A+	A	A-	B+	B	B-	C+	C	C-	D+	D
Minimum % Required	95 %	86 %	80 %	77%	74%	70 %	65 %	60%	57%	54 %	50 %

Late Assignments: Students who hand in assignments late will be penalized 10% per day for handing in late. Assignments that are handed in 3 calendar days or more after the due date will be refused and the students assigned a score of zero for the assignment. Students may hand in assignments late without penalty if the student has discussed the timelines with course instructor at least 2 days in advance of the due date and the

course instructor has granted an extension.

Please note, due to COVID-19, the requirement for providing a doctors note or statutory declaration as evidence for reasons for absence has been suspended. Please do not visit medical clinics for medical notes, or Commissioners for Oaths for statutory declarations. Let your instructor know immediately if you are ill and can not meet a deadline. <https://www.ucalgary.ca/current-students/fall-2020-term-faq>

The University of Calgary offers a [flexible grade option](#), Credit Granted (CG) to support student's breadth of learning and student wellness. Faculty units may have additional requirements or restrictions for the use of the CG grade at the faculty, degree or program level. To see the full list of Faculty of Science courses where CG is not eligible, please visit the following website: <https://science.ucalgary.ca/current-students/undergraduate/program-advising/flexible-grading-option-cg-grade>

4. **Missed Components Of Term Work:**

The university has suspended the requirement for students to provide evidence for absences. Please do not attend medical clinics for medical notes or Commissioners for Oaths for statutory declarations.

In the event that a student legitimately fails to submit any online assessment on time (e.g. due to illness etc...), please contact the course coordinator, or the course instructor if this course does not have a coordinator to arrange for a re-adjustment of a submission date. Absences not reported within 48 hours will not be accommodated. If an excused absence is approved, one possible arrangement is that the percentage weight of the legitimately missed assignment could also be pro-rated among the components of the course. This option is at the discretion of the coordinator and may not be a viable option based on the design of this course.

5. **Scheduled Out-of-Class Activities:**

There are no scheduled out of class activities for this course.

6. **Course Materials:**

Recommended Textbook(s):

Salyers, Wilson and Whitt, *Bacterial Pathogenesis: A Molecular Approach*: American Society for Microbiology.

This book supplements the primary source material assigned by each instructor, and is available as an eBook at the U. Calgary Library. It is a recommended rather than required text.

In order to successfully engage in their learning experiences at the University of Calgary, students taking online, remote and blended courses are required to have reliable access to the following technology:

- A computer with a supported operating system, as well as the latest security, and malware updates;
- A current and updated web browser;
- Webcam/Camera (built-in or external);
- Microphone and speaker (built-in or external), or headset with microphone;
- Current antivirus and/or firewall software enabled;
- Stable internet connection.

For more information please refer to the UofC [ELearning](#) online website.

7. **Examination Policy:**

There are no exams in this course.

Students should also read the Calendar, [Section G](#), on Examinations.

8. **Approved Mandatory And Optional Course Supplemental Fees:**

There are no additional fees required for this course

9. Writing Across The Curriculum Statement:

For all components of the course, in any written work, the quality of the student's writing (language, spelling, grammar, presentation etc.) can be a factor in the evaluation of the work. See also Section [E.2](#) of the University Calendar.

Writing skills are important to academic study in all disciplines. In keeping with the University of Calgary's emphasis on the importance of academic writing in student assignments (section E.2 of 2020-21 Calendar), writing is emphasized, and the grading thereof in determining a student's mark in this course. The University of Calgary values excellence in writing. Competence in writing entails skills in crafting logical, clear, coherent, non-redundant sentences, paragraphs and broader arguments, as well as skills with the mechanics of writing (grammar, spelling, punctuation). Sources used in research papers must be properly documented. The University of Calgary offers a number of instructional services through the Students' Success Centre's Writing Support Services (<http://www.ucalgary.ca/writingsupport/>) for students seeking feedback on assignments or seeking to improve their general writing skills. Students are **strongly encouraged** to take advantage of these programs.

10. Human & Living Organism Studies Statements:

Students will not participate as subjects or researchers in human studies.

See also [Section E.5](#) of the University Calendar.

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.

Students are expected to be familiar with [Section SC.4.1](#) of the University Calendar.

11. Reappraisal Of Grades:

A student wishing a reappraisal, should first attempt to review the graded work with the Course coordinator/instructor or department offering the course. Students with sufficient academic grounds may request a reappraisal. Non-academic grounds are not relevant for grade reappraisals. Students should be aware that the grade being reappraised may be raised, lowered or remain the same. See [Section I.3](#) of the University Calendar.

- a. **Term Work:** The student should present their rationale as effectively and as fully as possible to the Course coordinator/instructor within **ten business days** of either being notified about the mark, or of the item's return to the class. If the student is not satisfied with the outcome, the student shall submit the Reappraisal of Graded Term work form to the department in which the course is offered within 2 business days of receiving the decision from the instructor. The Department will arrange for a reappraisal of the work within the next ten business days. The reappraisal will only be considered if the student provides a detailed rationale that outlines where and for what reason an error is suspected. See sections [I.1](#) and [I.2](#) of the University Calendar
- b. **Final Exam:** The student shall submit the request to Enrolment Services. See [Section I.3](#) of the University Calendar.

12. Other Important Information For Students:

- a. **Mental Health** The University of Calgary recognizes the pivotal role that student mental health plays in physical health, social connectedness and academic success, and aspires to create a caring and supportive campus community where individuals can freely talk about mental health and receive supports when needed. We encourage you to explore the mental health resources available throughout the university community, such as counselling, self-help resources, peer support or skills-building available through the SU Wellness Centre (Room 370, MacEwan Student Centre, [Mental Health Services Website](#)) and the Campus Mental Health Strategy website ([Mental Health](#)).
- b. **SU Wellness Services:** For more information, see www.ucalgary.ca/wellnesscentre or call [403-210-9355](tel:403-210-9355).
- c. **Sexual Violence:** The Sexual Violence Support Advocate, Carla Bertsch, can provide confidential support and information regarding sexual violence to all members of the university community. Carla can be reached

by email (svsa@ucalgary.ca) or phone at 403-220-2208. The complete University of Calgary policy on sexual violence can be viewed at (<https://www.ucalgary.ca/legal-services/sites/default/files/teams/1/Policies-Sexual-and-Gender-Based-Violence-Policy.pdf>)

- d. **Misconduct:** Academic integrity is the foundation of the development and acquisition of knowledge and is based on values of honesty, trust, responsibility, and respect. We expect members of our community to act with integrity. Research integrity, ethics, and principles of conduct are key to academic integrity. Members of our campus community are required to abide by our institutional [Code of Conduct](#) and promote academic integrity in upholding the University of Calgary's reputation of excellence. Some examples of academic misconduct include but are not limited to: posting course material to online platforms or file sharing without the course instructor's consent; submitting or presenting work as if it were the student's own work; submitting or presenting work in one course which has also been submitted in another course without the instructor's permission; borrowing experimental values from others without the instructor's approval; falsification/fabrication of experimental values in a report. Please read the following to inform yourself more on academic integrity:

[Student Handbook on Academic Integrity](#)
Student Academic Misconduct [Policy](#) and [Procedure](#)
[Research Integrity Policy](#)

Additional information is available on the [Student Success Centre Academic Integrity page](#)

- e. **Academic Accommodation Policy:**

It is the student's responsibility to request academic accommodations according to the University policies and procedures listed below. The student accommodation policy can be found at: <https://www.ucalgary.ca/legal-services/sites/default/files/teams/1/Policies-Student-Accommodation-Policy.pdf>

Students needing an accommodation because of a disability or medical condition should communicate this need to Student Accessibility Services in accordance with the Procedure for Accommodations for Students with Disabilities: <https://www.ucalgary.ca/legal-services/sites/default/files/teams/1/Policies-Accommodation-for-Students-with-Disabilities-Procedure.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, by filling out the [Request for Academic Accommodation Form](#) and sending it to Lisa Gieg by email mgieg@ucalgary.ca preferably 10 business days before the due date of an assessment or scheduled absence.

- f. **Freedom of Information and Privacy:** This course is conducted in accordance with the Freedom of Information and Protection of Privacy Act (FOIP). 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 [Legal Services](#) website.
- g. **Student Union Information:** [VP Academic](#), Phone: [403-220-3911](tel:403-220-3911) Email: suvpaca@ucalgary.ca. SU Faculty Rep., Phone: [403-220-3913](tel:403-220-3913) Email: sciencerep@su.ucalgary.ca. [Student Ombudsman](#), Email: ombuds@ucalgary.ca.
- h. **Surveys:** At the University of Calgary, feedback through the Universal Student Ratings of Instruction ([USRI](#)) survey and the Faculty of Science Teaching Feedback form provides valuable information to help with evaluating instruction, enhancing learning and teaching, and selecting courses. Your responses make a difference - please participate in these surveys.
- i. **Copyright of Course Materials:** All course materials (including those posted on the course D2L site, a course website, or used in any teaching activity such as (but not limited to) examinations, quizzes, assignments, laboratory manuals, lecture slides or lecture materials and other course notes) are protected by law. These materials are for the sole use of students registered in this course and must not be redistributed. Sharing these materials with anyone else would be a breach of the terms and conditions governing student access to D2L, as well as a violation of the copyright in these materials, and may be pursued as a case of student academic or [non-academic misconduct](#), in addition to any other remedies available at law.

Global Objectives:

CMMB565 is designed to give students the knowledge and skill set to work and think independently in the areas of microbial pathogenesis and the microbiome. By the end of the course, students will be able to critically discuss the published literature in both in both oral and written formats. The main goal of this course is to enhance: 1) the students understanding of pathogenesis and the microbiome and 2) the ability to understand and critique the

literature in these topic areas.

Course Objectives:

After completion of the course, the student will be able:

1. To discuss the contribution of the microbiome to health and disease
2. To understand the contribution of microbial virulence factors and antibiotic resistance to disease
3. To critically assess the published literature
4. To write and present a proposal based on their original ideas

	Date		Topic	Instructor
0	9/7/21	T	Course introduction	Geuking/DeVinney
Microbiome Block				
1	9/9/21	Th	1 Microbiome Introduction - Intestinal Microbiome: Papers 1 assigned	Geuking
2	9/14/21	T	2 Microbiome in early life	McCoy
3	9/16/21	Th	3 Diet, Obesity, and Gut Microbiota	Reimer
4	9/21/21	T	4 Gnotobiology/Methods	Geuking/Thomson
5	9/23/21	Th	5 Vaginal microbiome, paper 2 and 3 assigned	Sycuro
6	9/28/21	T	6: Paper 1	Geuking/DeVinney
7	9/30/21	Th	National Day for Truth and Reconciliation	No Class
8	10/5/21	T	7 Fungal Mycobiome	Arrieta
9	10/7/21	Th	8 Bioinformatics methods for analysis of microbiome data	Hena Ramay
10	10/12/21	T	9 Paper 2	Geuking/DeVinney
11	10/14/21	Th	10 Paper 3	Geuking/DeVinney
Pathogenesis Block				
12	10/19/21	T	1 Pathogenesis intro, Paper 4 and 5 assigned	DeVinney
13	10/21/21	Th	2 Pathogenic mechanisms-adhere, invade,	DeVinney
14	10/26/21	T	3 Pathogenic mechanisms-intracellular survival	DeVinney
15	10/28/21	Th	4 Immune Evasion	Petri
16	11/2/21	T	5 Paper 4	Geuking/DeVinney
17	11/4/21	Th	6 Paper 5 Paper 6 assigned	Geuking/DeVinney
Nov 7-13 Reading week. No classes				
18	11/16/21	T	7 Secretion systems,	DeVinney
19	11/18/21	Th	8 Legionella and type IV secretion	Savchenko
20	11/23/21	T	9 Antimicrobial Resistance	DeVinney
21	11/25/21	Th	10 Emerging ID	van Marle
22	11/30/21	T	11 Paper 6	Geuking/DeVinney
23	12/2/21	Th	12 Pathogenesis wrap up	DeVinney
24	12/7/21	T	Course wrap up session. USRI	Geuking/DeVinney

Electronically Approved - Sep 05 2021 16:56

Department Approval

Electronically Approved - Sep 07 2021 10:40

Associate Dean's Approval