



## COURSE OUTLINE

### 1. **Course:** CMMB 565, (MDSC 565) Advanced Topics In Microbial Pathogenesis and the Microbiome - Fall 2023

#### **Coordinator(s)**

<b>Name</b>	<b>Email</b>	<b>Phone</b>	<b>Office</b>	<b>Hours</b>
Dr Rebekah Devinney	rdevinne@ucalgary.ca	403 220-4095	HRIC 2C68	By appointment

#### **Section(s)**

Lecture 01 : TR 12:30 - 13:45 in SA 243

<b>Instructor</b>	<b>Email</b>	<b>Phone</b>	<b>Office</b>	<b>Hours</b>
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

To account for any necessary transition to remote learning for the current semester, courses with in-person lectures, labs, or tutorials may be shifted to remote delivery for a certain period of time. In addition, adjustments may be made to the modality and format of assessments and deadlines, as well as to other course components and/or requirements, so that all coursework tasks are in line with the necessary and evolving health precautions for all involved (students and staff).

#### **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.

#### **Course Site:**

D2L: CMMB 565 L01-(Fall 2022)-(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.

#### **Equity Diversity & Inclusion:**

The University of Calgary is committed to creating an equitable, diverse and inclusive campus, and condemns harm and discrimination of any form. We value all persons regardless of their race, gender, ethnicity, age, LGBTQIA2S+ identity and expression, disability, religion, spirituality, and socioeconomic status. The Faculty of Science strives to extend these values in every aspect of our courses, research, and teachings to better promote academic excellence and foster belonging for all.

The Biological Sciences Equity Committee acknowledges there are persistent barriers that prevent such accessibility and hinder our progress towards EDI. Our representatives (faculty, staff, postdocs, graduate and undergraduate students) are committed to addressing any concerns and work towards proactive solutions that enact necessary change within the department. To submit anonymous questions, comments or concerns regarding EDI related issues, please reach out to our Chair, Arshad Ayyaz ([\\_arshad.ayyaz@ucalgary.ca](mailto:_arshad.ayyaz@ucalgary.ca)), or a committee representative of your choice at <https://science.ucalgary.ca/biological-sciences/about/equity-diversity-and-inclusion>

### 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:

Course Component	Weight	Due Date (duration for exams)	Modality for exams	Location for exams
Paper Presentations <sup>1</sup>	20%	Ongoing		
Paper Synopses <sup>2</sup>	20%	Ongoing		
Term Paper #1 <sup>3</sup>	30%	Oct 19 2023		
Term Paper #2 <sup>4</sup>	30%	Dec 05 2023		

<sup>1</sup> The number of presentations will depend on the class enrolment. Students will present papers assigned by the course coordinators in the area 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. Students will be assigned roles in the presentation at that time. Paper presentations are as follows: Sept. 26, Sept. 28, Oct. 31, and Nov. 2, 2023.

<sup>2</sup> 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. The number of synopses each student will write will be determined by the number of presentations, based on class enrolment.

<sup>3</sup> 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 two double spaced pages, due by 11:59 PM on Oct 19, 2023 to the appropriate D2L dropbox and is worth 30% of the mark.

<sup>4</sup> Students will write a short essay in the area of Microbial Pathogenesis. The topic and detailed instructions will be posted on D2L during the first week of the pathogenesis block. The assignment is due by 11:59 PM on Dec. 5, 2023 to the appropriate D2L Dropbox and is worth 30% 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.

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

	A+	A	A-	B+	B	B-	C+	C	C-	D+	D
<b>Minimum % Required</b>	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:

In the event that a student legitimately fails to submit any online or in-person assessment on time (e.g. due to illness, domestic affliction, 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, or possible exemption and reweighing of components. Absences not reported within 48 hours will not be accommodated. Students may be asked to provide supporting documentation ([Section M.1](#)) for an excused absence, See [FAQ](#).

If an excused absence is approved, options for how the missed assessment is dealt with is at the discretion of the coordinator or course instructor. Some options such as an exemption and pro-rating among the components of the course may not be a viable option based on the design of this course.

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.

#### 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 mandatory or optional course supplemental fees 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 their [website](#) or call [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 ([syva@ucalgary.ca](mailto:syva@ucalgary.ca)) or phone at [403-220-2208](#). The complete University of Calgary policy on sexual violence can be viewed [here](#).
- d. **Student Ombuds Office:** A safe place for all students of the University of Calgary to discuss student related issues, interpersonal conflict, academic and non-academic concerns, and many other problems.
- e. **Student Union Information:** [SU contact](#), Email your SU Science Reps: [science1@su.ucalgary.ca](mailto:science1@su.ucalgary.ca), [science2@su.ucalgary.ca](mailto:science2@su.ucalgary.ca), [science3@su.ucalgary.ca](mailto:science3@su.ucalgary.ca),
- f. **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 [imgieg@ucalgary.ca](mailto:imgieg@ucalgary.ca) preferably 10 business days before the due date of an assessment or scheduled absence.

- g. **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](#)  
[Faculty of Science Academic Misconduct Process](#)  
[Research Integrity Policy](#)

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

- h. **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.
- i. **Freedom of Information and Privacy:** This course is conducted in accordance with the Freedom of Information and Protection of Privacy Act (FOIPPA). 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.
- j. **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.

**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	Sept. 5 <sup>th</sup> , 2023	Tue	Course introduction	Geuking/DeVinney
<b>Microbiome Block</b>				
1	Sept. 7 <sup>th</sup> , 2023	Th	Microbiome Introduction - Intestinal Microbiome - <i>assign Paper 1</i>	Geuking
2	Sept. 12 <sup>th</sup> , 2023	Tue	Microbiome in early life - <i>assign Paper 2</i>	McCoy

3	Sept. 14 <sup>th</sup> , 2023	Th	Diet, Obesity, and Gut Microbiota	Reimer/Tuplin
4	Sept. 19 <sup>th</sup> , 2023	Tue	Gnotobiology/Methods	Geuking/Thomson
5	Sept. 21 <sup>st</sup> , 2023	Th	Vaginal microbiome	Sycuro
6	Sept. 26 <sup>th</sup> , 2023	Tue	Paper 1	Geuking/DeVinney
7	Sept. 28 <sup>th</sup> , 2023	Th	Paper 2	Geuking/DeVinney
8	Oct. 3 <sup>rd</sup> , 2023	Tue	LOI working session	Geuking
9	Oct. 5 <sup>th</sup> , 2023	Th	Fungal Mycobiome	Arrieta
10	Oct. 10 <sup>th</sup> , 2023	Tue	Bioinformatics I: Methods for analysis of microbiome data	Hena Ramay
11	Oct. 12 <sup>th</sup> , 2023	Th	Bioinformatics II: Methods for analysis of microbiome data	Hena Ramay
12	Oct. 17 <sup>th</sup> , 2023	Tue	LOI working session	Geuking
<b>Pathogenesis Block</b>				
13	Oct. 19 <sup>th</sup> , 2023	Th	Intro to pathogens	DeVinney, LOI Due
14	Oct. 24 <sup>th</sup> , 2023	Tue	Pathogen evolution	DeVinney
15	Oct. 26 <sup>th</sup> , 2023	Th	TB and Trained Immunity	Khan
16	Oct. 31 <sup>st</sup> , 2023	Tue	Paper 3	Geuking/DeVinney
17	Nov. 2 <sup>nd</sup> , 2023	Th	Paper 4	Geuking/DeVinney
18	Nov. 7 <sup>th</sup> , 2023	Tue	Legionella	Savchenko
19	Nov. 9 <sup>th</sup> , 2023	Th	Genomic epidemiology	Lynch
Nov. 13-17, 2023 Reading week. No classes				
20	Nov. 21 <sup>st</sup> , 2023	Tue	Immune evasion by pathogens	Petri
21	Nov. 23 <sup>rd</sup> , 2023	Th	Bacterial Secretion Systems	DeVinney
22	Nov. 28 <sup>th</sup> , 2023	Tue	Pathogens and actin	Alvarez Olmedo
23	Nov. 30 <sup>th</sup> , 2023	Th	Assignment 2 work session	DeVinney
24	Dec. 5 <sup>th</sup> , 2023	Tue	Course wrap up session. USRI	Geuking/DeVinney; assignment 2 due

Electronically Approved - Aug 30 2023 09:26

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**Department Approval**