

# Department of Microbiology and Immunology



## MICROBIOLOGY MIMM 211 - FALL 2024 – 3 CREDITS (Biology of Microorganisms)

Course Coordinator: Dr. Benoit Cousineau ([benoit.cousineau@mcgill.ca](mailto:benoit.cousineau@mcgill.ca))

Lecturers: Drs Benoit Cousineau, Jasmin Chahal, Samantha Gruenheid, François Le Mauff  
Greg Matlashewski, Corinne Maurice, Geoff McKay and Dao Nguyen.

Teaching Assistant: Gia Luu ([gia.luu@mail.mcgill.ca](mailto:gia.luu@mail.mcgill.ca))

TEAM TAs: Juliette Bouchard ([juliette.bouchard@mail.mcgill.ca](mailto:juliette.bouchard@mail.mcgill.ca))  
Sara Chaer ([sara.chaer@mail.mcgill.ca](mailto:sara.chaer@mail.mcgill.ca))

Lectures: Monday / Wednesday / Friday: 11:35 to 12:25

Location: McIntyre Building, Room 504  
Some lectures may have to be delivered by Zoom or in another room

Course evaluation: Midterm exam (lectures 1-16): 50 multiple choice questions, 40% of course grade

Final exam (not cumulative, lectures 17-38): 150 multiple choice questions, 60% of course grade

Students unable to attend the mid-term exam due to medical or non-medical reasons must submit a request for missing the exam within 1 week of the scheduled mid-term. Students who fail to do so will receive a grade of zero for the mid-term. Students must make the request by completing the missed mid-term exam webform available on the MIMM Department [website](#). The Department will evaluate any medical and non-medical situations and reserves the right to make any final decisions regarding what accommodations are reasonable and appropriate in the circumstances. For more information on submitting a request, please go to the Department website at <https://www.mcgill.ca/microimm/>.

Co-requisite: BIOL 200 (Fall term course given by the Department of Biology)

Course Description:

This introductory course in microbiology gives a basic and general introduction to the world of microorganisms including bacteria, fungi and parasites with particular emphasis on the properties of prokaryotic cells and viruses. The fundamental principles of bacterial cell structure and organization, microbial genetics and molecular biology are also introduced in this course. Students will acquire general knowledge and understanding of the microbial world that will serve as the foundation required to take more advanced courses in Microbiology, Virology and Parasitology. This U1-level course is a cornerstone of the Bachelor program in Microbiology and Immunology and thus serves as a prerequisite for several U2- and U3-level courses given in the Department of Microbiology and Immunology. However, this course also provides a broad and general introduction to world of microorganisms to students majoring or not in other general science program.

Learning objectives and topics covered:

- Learn the terminology used in the field of Microbiology
- Learn the origin and the history of Microbiology
- Learn some of the key experiments and scientists that gave rise to the field of Microbiology
- Realize the scope of Microbiology
- Learn the basic concepts leading to microbial evolution
- Learn the breadth of microbial diversity
- Learn the prokaryotic cell structures and their functions
- Learn how microorganisms grow and divide
- Learn the structure of various cell polymers (DNA, RNA, proteins)
- Learn the basics of DNA replication, RNA and protein synthesis
- Learn the prototypical structure of a bacterial gene
- Learn the basics of gene regulation
- Learn about mutations found in DNA and DNA repair mechanisms
- Learn the basic mechanisms for DNA transfer between cells
- Learn how bacteria interact with humans and how they cause disease (bacterial pathogenesis)
- Learn what type bacteria are found in the normal human microbiota
- Learn the basics of fungi taxonomy, structure, metabolism and pathogenesis
- Learn the structure and classification of viruses
- Learn how viruses replicate and how they interact with their host cells
- Learn the diversity and infectious cycles of protozoa, helminths and nematodes
- Learn the mechanism of action of various antimicrobial chemotherapeutic agents

Date	Day	Topic covered during the lecture	Lecturer
Aug. 28	W	1. The history and scope of microbiology	Cousineau
Aug. 30	F	2. The history and scope of microbiology	Cousineau
Sept. 02	M	<b>Labour Day – No Lecture</b>	
Sept. 04	W	3. Microbial evolution, taxonomy, and diversity	Cousineau
Sept. 06	F	4. Microbial evolution, taxonomy, and diversity	Cousineau
Sept. 09	M	5. Prokaryotic cell structure and function	Cousineau
Sept. 11	W	6. Prokaryotic cell structure and function	Cousineau
Sept. 13	F	7. Prokaryotic cell structure and function	Cousineau
Sept. 16	M	8. Prokaryotic cell structure and function	Cousineau
Sept. 18	W	9. Microbial growth	Cousineau
Sept. 20	F	10. Microbial growth	Cousineau
Sept. 23	M	11. Gene structure, replication, and expression	Cousineau
Sept. 25	W	12. Gene structure, replication, and expression	Cousineau
Sept. 27	F	13. Regulation of gene expression	Cousineau
Sept. 30	M	14. Regulation of gene expression	Cousineau
Oct. 02	W	15. Regulation of gene expression	Cousineau
Oct. 04	F	16. Mechanisms of genetic variation	Cousineau
Oct. 07	M	17. Fungi	Le Mauff
Oct. 09	W	<b>Midterm Exam / 19h30 / location to be determined</b>	Cousineau
Oct. 11	F	18. Fungi	Le Mauff
Oct. 14	M	<b>Thanksgiving - No Lecture</b>	
Oct. 16	W	<b>Fall break - No Lecture</b>	
Oct. 18	F	<b>Fall break - No Lecture</b>	
Oct. 21	M	19. Fungi	Le Mauff
Oct. 23	W	20. Fungi	Le Mauff
Oct. 25	F	21. Fungi	Le Mauff
Oct. 28	M	22. Parasitology	Matlashewski
Oct. 30	W	23. Parasitology	Matlashewski
Nov. 01	F	24. Virology I: Introduction to Viruses	Chahal
Nov. 04	M	25. Virology II: Viral structure, genome and classification	Chahal
Nov. 06	W	26. Virology III: Viral Genome classification	Chahal
Nov. 08	F	27. Virology IV: Viral life cycle and infections	Chahal
Nov. 11	M	28. Virology V: Cultivation and detection of viruses	Chahal
Nov. 13	W	29. Virology VI: Oncogenic and Pathogenic viruses	Chahal
Nov. 15	F	30. Bacterial pathogenesis	Gruenheid
Nov. 18	M	31. Bacterial pathogenesis	Gruenheid
Nov. 20	W	32. Microbiota	Maurice
Nov. 22	F	33. Microbiota	Maurice
Nov. 25	M	34. Microbiota	Maurice
Nov. 27	W	35. Control of microorganisms	McKay
Nov. 29	F	36. Control of microorganisms	McKay
Dec. 02	M	37. Antimicrobial chemotherapy	Nguyen
Dec. 04	W(M)	38. Antimicrobial chemotherapy	Nguyen

### **Recordings of sessions**

Lectures will be recorded, and the student's image, voice and name will be disclosed to classmates. Note that by remaining in sessions that are being recorded, the student is agreeing to be recorded.

### **Inclusive Learning Environment**

This course is designed to help you learn to communicate professionally both during your time at McGill and in your future workplaces. In keeping with McGill's policies on student rights and responsibilities, it is expected that during class discussions and small group interactions you will communicate constructively and respectfully. Sexist, racist, homophobic, ageist, and ableist expressions will not be tolerated in the classroom or during group meetings held outside of class.

McGill is committed to providing an inclusive and supportive learning environment. If you experience barriers to learning in this course, do not hesitate to discuss them with your instructor. If you have a special learning need or disability, you are encouraged to contact the Office for Students with Disabilities: <https://www.mcgill.ca/osd/>.

### **Health and Wellness**

Student wellbeing is a priority for the University. To help students find the support they need as quickly as possible, all of McGill's health and wellness resources have been integrated into a single [Student Wellness Hub](#), a one-stop shop for everything related to physical and mental health. If you need access to services or would like more information, you are strongly encouraged to visit the Virtual Hub: <https://www.mcgill.ca/wellness-hub/>. As the instructors of this course we endeavor to provide an inclusive learning environment. However, if you experience barriers to learning in this course, do not hesitate to discuss them with me and the [Office for Students with Disabilities](#), 514-398-6009.

### **McGill Writing Centre Tutorial Service**

Writing well is key to both academic and professional success. The McGill Writing Centre (MWC) offers credit courses in academic and professional writing, and a tutorial service open to all McGill students: <https://www.mcgill.ca/mwc/tutorial-service>. The tutorial service offers one-to-one sessions with seasoned instructors and experienced tutors who will work with you at any stage of the writing process.

During the campus closure period, there will be no tutors on site and no administrative staff at the MWC to answer inquiries. Tutoring sessions will be conducted online via the Microsoft Teams platform. This application is available for free to all students through Office 365: <https://www.mcgill.ca/it/office365-software>. For information about how to book an appointment through Microsoft Teams, please go to <https://www.mcgill.ca/mwc/tutorial-service>.

### **McGill Library**

Discover the McGill Library's rich array of resources. Watch a short welcome video in English, French, Arabic, Chinese, Hindi, Persian, Spanish, or Urdu: <https://www.mcgill.ca/library/orientation>.

## **McGill University Policy Statements**

1) “McGill University values academic integrity. Therefore all students must understand the meaning and consequences of cheating, plagiarism and other academic offences under the Code of Student Conduct and Disciplinary Procedures (see <http://www.mcgill.ca/integrity> for more information).”

“L'université McGill attache une haute importance à l'honnêteté académique. Il incombe par conséquent à tous les étudiants de comprendre ce que l'on entend par tricherie, plagiat et autres infractions académiques, ainsi que les conséquences que peuvent avoir de telles actions, selon le Code de conduite de l'étudiant et des procédures disciplinaires (pour de plus amples renseignements, veuillez consulter le site [www.mcgill.ca/integrity](http://www.mcgill.ca/integrity)).”

2) “In accord with McGill University’s Charter of Student’s Rights, students in this course have the right to submit in English or in French any written work that is to be graded.”

“Conformément à la charte des droits de l’étudiant de l’Université McGill, chaque étudiant a le droit de soumettre en français ou en anglais tout travail écrit devant être noté (sauf dans les cours dont l’un des objets est la maîtrise d’une langue).”

3) “In the event of extraordinary circumstances beyond the University’s control, the content and/or evaluation scheme in this course is subject to change.”

4) McGill has policies on sustainability, paper use and other initiatives to promote a culture of sustainability at McGill.

5) If you have a disability please contact the instructor to arrange a time to discuss your situation. It would be helpful if you contact the Office for Students with Disabilities at 514-398-6009 before you do this.

6) © Instructor generated course materials (e.g., handouts, notes, summaries, exam questions, etc.) are protected by law and may not be copied or distributed in any form or in any medium without explicit permission of the instructor. Note that infringements of copyright can be subjected to follow up by the University under the Code of Student Conduct and Disciplinary Procedures.

7) “End-of-course evaluations are one of the ways that McGill works toward maintaining and improving the quality of courses and the student’s learning experience. You will be notified by e-mail when the evaluations are available on Mercury, the online course evaluation system. Please note that a minimum number of responses must be received for results to be available to students.”

8) Additional policies governing academic issues which affect students can be found in the McGill Charter of Students’ Rights and Responsibilities ([www.mcgill.ca/files/secretariat/Handbook-on-Student-Rights-and-Responsibilities-2010.pdf](http://www.mcgill.ca/files/secretariat/Handbook-on-Student-Rights-and-Responsibilities-2010.pdf)).