MICR*3420 Microbial Diversity and Ecology

Fall 2021
Section(s): C01

Department of Molecular and Cellular Biology
Credit Weight: 0.50
Version 3.00 - September 09, 2021

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1 Course Details

1.1 Calendar Description

The cycling of elements (carbon, nitrogen, sulphur) within ecosystems involves the contributions of diverse microorganisms. This course will study the diversity of predominantly Bacteria and Archaea in selected ecosystems at an organismal level, investigate the metabolic and enzymatic diversity in microbes that contribute to and thrive within these environments, and examine the methodologies used to study the relationships and evolution of microorganisms within an ecosystem.

Pre-Requisites: BIOC*3560, MBG*2040, MICR*2430

1.2 Course Description

This course is **scheduled** as face-to-face, and is designed to be highly interactive. Classes will include group work, during which, social distancing requirements will be suspended, but all other mandated safety protocols will be enforced.

Recognizing that we've all struggled, academically and personally, during the pandemic, and that those struggles are on-going, my goal is to help you learn and foster your curiosity about this field, while maintaining a focus on kindness, empathy and flexibility throughout the semester. We're all in this together, and it is my hope we will be able to work as a team, so that we are ALL successful and finish the semester strong, rather than feeling like we're limping to a finish line! To that end, the following strategies will be used:

1. Lectures will be virtual ***via*** Zoom until Sept. 28. These will be recorded and posted for streaming.
2. In-person classes: these will **NOT** be simultaneously streamed, however they will be recorded, edited and posted for streaming by the next day. Streaming from

Microsoft Stream can be used for closed-captioning. **If anyone is feeling ill,** please contact me, and stay home. Participation marks will not be affected.

3. Quarterly quizzes & review: non-cumulative, written on a Friday, *in class*, and time for completion estimated @ 15-20 min. ALL students will have until the end of class for completion, but may leave when done. With the exception of the last one (which is on the last day of classes), the following Monday class will be dedicated to review of problem areas, as identified in the quiz. This is essentially a group office hour, and attendance is optional (no participation marks).
4. Lecture videos: 4 pre-recorded lecture videos will be uploaded *in lieu* of in-person classes. Videos 2-4 are to compensate for dropping lectures for the longer quiz time & quiz review:
    - Fri. Sept. 24
    - Fri. Oct. 1
    - Fri. Oct. 22
    - Fri. Nov. 12
5. Keeping track: weekly tasks as well as their estimated "time to completion" will be itemized in advance (when possible), using the **Checklist** function of Courselink, **Courselink Announcements**, e-mails when necessary, as well as **Courselink Discussion Forums** for different course components. Dr. K. will check the latter daily.
6. **Assessments, due dates, and grading schemes all have built-in flexibility.**

1.3 Timetable

M, W, F 10:30-11:20 am in MAC149

- Sept. 10-26 *via* Zoom

1.4 Final Exam

December 14, 8:30am -10:30am. Location tba.

- The exam will be cumulative and will have a take-home component provided in advance, but written during the exam period.
- The exam will have a "2-stage" format, with a shorter second stage of the exam period for student teams to discuss and re-take a subset of the exam questions.

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2 Instructional Support

2.1 Instructional Support Team

Instructor: Wendy Keenleyside Ph.D.
Email: wkeenley@uoguelph.ca
Telephone: +1-519-824-4120 x53813
Office: SSC 3506
Office Hours: These will generally be through Zoom or Teams.

Individual by appointment - where there is demand or need, I will host group office hours.

- She/Her

2.2 Teaching Assistants

Teaching Assistant (GTA): Christopher Bunting
Email: cbunting@uoguelph.ca

- he/him

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3 Learning Resources

3.1 Required Resources

Microbiology: Canadian Edition (Textbook)
https://ecampusontario.pressbooks.pub/microbio/front-matter/preface/

- By Keenleyside ***et al.*** Adapted from Microbiology by Openstax.
- This is an Open Education Resource (OER): the e-book is free.

Courselink (Website)
https://courselink.uoguelph.ca
Additional materials will be posted on Courselink.

You are expected to check the site regularly for updates and information.

PEARTool (Website)
https://peartool.opened.uoguelph.ca/user/signon.cfm?destination=index%2Ecfm

This is an open education resource developed at the University of Guelph, for Peer Evaluation, Assessment and Review. This will be used for team members' assessments of the distribution of effort at the end of the semester.

3.2 Recommended Resources

LPSN - List of Prokaryotic Names with Standing in Nomenclature (Website)
https://www.bacterio.net
List of Prokaryotic Names with Standing in Nomenclature

Most recent:

Parte, A.C., Sardà Carbasse, J., Meier-Kolthoff, J.P., Reimer, L.C. and Göker, M. (**2020**). List of Prokaryotic names with Standing in Nomenclature (LPSN) moves to the DSMZ. *International Journal of Systematic and Evolutionary Microbiology*, **70**, 5607-5612; DOI: 10.1099/ijsem.0.004332

- A regularly updated list of all bacterial names that have standing in nomenclature.
- Warning: Content is Biological Material and as such is subject to mutation, evolution and CHANGE

Bergey's manual of systematics of Archaea and Bacteria (Other)
"Bergey's manual of systematics of Archaea and Bacteria" (2015). Whitman, William Barnaby, editor.

- This is an electronic library resource, accessible through the University of Guelph Library
- Descriptions of the taxonomy, systematics, ecology, physiology, etc. of all named prokaryotic taxa.
- E-book replaces 5-volume 2nd second edition (Bergey's Manual of Systematic Bacteriology) completed in 2012.

The Prokaryotes (Other)
"The Prokaryotes" (2006) Vol. 1-7. Falkow, Stanley. editor.; Rosenberg, Eugene. editor.; Schleifer, Karl-Heinz. editor.; Stackebrandt, Erko. editor.

- This is an electronic library resource, accessible through the University of Guelph Library

4 Learning Outcomes

Learning goals and rationale: To develop a detailed understanding of the relationships and evolution of microorganisms, the intricacies of a microbial community, the concept of a species, and the classification and naming of microorganisms. The course is intended to build on concepts introduced in the 2000-level microbiology courses.

- **Content-related** learning outcomes will be posted separately on Courselink, and regularly updated. The content-related LOs all fall under 1 or more of the Course Learning Outcomes identified in section 4.1. The latter can be viewed as overarching descriptions of the course's scope, while the former are offering-specific, to be used by the intructor AND students when setting/writing and grading the various assessments.

4.1 Course Learning Outcomes

By the end of this course, you should be able to:

1. Describe the roles of microbes in the biosphere and in specific example ecosystems (e.g. the human gut & the marine environment), the ecological principles that determine microbial community structures.
2. Describe and assess methods for studying and identifying cultured and uncultured microorganisms, and discuss some of the current major bacterial and archaeal clades.
3. Describe, with specific examples, the various metabolic classes of the microbes and illustrate their central roles in the major biogeochemical cycles and in the current Anthropocene era.
4. Describe the relevance of the microbes in the evolution of life on Earth and interpret the information in phylogenetic trees. Describe and evaluate methods for studying the phylogeny of microbes, specifically the bacteria and archaea.
5. Explain, assess and propose, methods for characterizing microbial community structure, function, and diversity.
6. Explore taxonomic strategies and approaches used to name microorganisms. Discuss the criteria used to define bacterial species and infrasubspecific divisions within species and debate the species concept as it pertains to the bacteria and archaea.
7. Critically analyze the primary and secondary literature and explain these, through various modalities, at the nonspecialist level.
8. Develop and demonstrate team skills through open, regular and respectful communication and cooperation.

5 Teaching and Learning Activities

The lecture schedule for the various topics are approximate.

Pared down slides will be posted the day before scheduled lectures, and alongside any pre-recorded lecture videos. Live lectures will be recorded, edited, and made available for streaming from Courselink and from Microsoft Stream, usually within 24h.

5.1 Lecture

Week 1

Topics: **Introduction:** to course & field

- Reading the scientific literature class activities

Week 2

Topics: **Topic 1:** Microbial metabolism & biogeochemical cycling

References: Microbiology: Canadian edition.

- Ch. 8, sec. 10.3 & 10.6

Week 3

Topics: Microbial metabolism & biogeochemical cycling

- In-class discussion of assigned reading

References: Assigned reading:

- Daims, H., Lebedeva, E. V., Pjevac, P., Han, P., Herbold, C., Albertsen, M., Jehmlich, N., Palatinszky, M., Vierheilig, J., Bulaev, A., Kirkegaard, R. H., von Bergen, M., Rattei, T., Bendinger, B., Nielsen, P. H., & Wagner, M. (2015). **Complete nitrification by Nitrospira bacteria.** *Nature*

, *528*(7583), 504–509. https://doi.org/10.1038/nature16461

Week 4

Topics: **Topic 2:** Evolution of life on Earth

- In-class discussion of assigned reading

References: Assigned reading:

- Woese C. (1998). **The universal ancestor.** *Proceedings of the National Academy of Sciences of the United States of America*, *95*(12), 6854–6859. https://doi.org/10.1073/pnas.95.12.6854

Week 5

Topics: **Topic 3:** Techniques in Microbial Ecology

References: Microbiology: Canadian Edition.

- Sec. 10.1

Week 6

Topics: Techniques in microbial ecology

- In-class discussion of assigned reading

References: Assigned reading:

- Imachi, H., Nobu, M. K., Nakahara, N., Morono, Y., Ogawara, M., Takaki, Y., Takano, Y., Uematsu, K., Ikuta, T., Ito, M., Matsui, Y., Miyazaki, M., Murata, K., Saito, Y., Sakai, S., Song, C., Tasumi, E., Yamanaka, Y., Yamaguchi, T., Kamagata, Y., … Takai, K. (2020). **Isolation of an archaeon at the prokaryote-eukaryote interface**. *Nature*, *577*(7791), 519–525. https://doi.org/10.1038/s41586-019-1916-6

Week 7

Topics:

Topic 4: Microbial diversity & phylogenomics

- In-class discussion of assigned reading

References:

Assigned reading:

- Matsuo, Y., Komiya, S., Yasumizu, Y., Yasuoka, Y., Mizushima, K., Takagi, T., Kryukov, K., Fukuda, A., Morimoto, Y., Naito, Y., Okada, H., Bono, H., Nakagawa, S., & Hirota, K. (2021). **Full-length 16S rRNA gene amplicon analysis of human gut microbiota using MinION™ nanopore sequencing confers species-level resolution.** *BMC microbiology* , *21*(1), 35. https://doi.org/10.1186/s12866-021-02094-5

Week 8

Topics:

Topic 5: Microbial community ecology

- In-class discussion of assigned reading

References: Microbiology: Canadian Edition.

Assigned reading:

- Lynch, M. D., & Neufeld, J. D. (2015). **Ecology and exploration of the rare biosphere**. *Nature reviews. Microbiology*, *13*(4), 217–229. https://doi.org/10.1038/nrmicro3400

Week 9

Topics: **Topic 6:** Microbial Ecology of the human gut

- In-class discussion of assigned reading

References: Microbiology: Canadian Edition.

Assigned reading:

- Oliphant, K., Parreira, V. R., Cochrane, K., & Allen-Vercoe, E. (2019). **Drivers of human gut microbial community assembly: coadaptation, determinism and stochasticity.** *The ISME journal*, *13*(12), 3080–3092. https://doi.org/10.1038/s41396-019-0498-5

Week 10

Topics: **Topic 7:** Marine microbial ecology

References: Microbiology: Canadian Edition.

Week 11

Topics: Marine microbial ecology

- In-class discussion of assigned reading

References: Microbiology: Canadian Edition.

Assigned reading:

- Goordial, J., D'Angelo, T., Labonté, J. M., Poulton, N. J., Brown, J. M., Stepanauskas, R., Früh-Green, G. L., & Orcutt, B. N. (2021). **Microbial Diversity and Function in Shallow Subsurface Sediment and Oceanic Lithosphere of the Atlantis Massif.** *mBio*, *12* (4), e0049021. https://doi.org/10.1128/mBio.00490-21

Week 12

Topics: **Topic 8:** Microbial ecology and the Anthropocene

- In-class discussion of assigned reading

References: Assigned reading:

- Cavicchioli, R., Ripple, W. J., Timmis, K. N., Azam, F., Bakken, L. R., Baylis, M., Behrenfeld, M. J., Boetius, A., Boyd, P. W., Classen, A. T., Crowther, T. W., Danovaro, R., Foreman, C. M., Huisman, J., Hutchins, D. A., Jansson, J. K., Karl, D. M., Koskella, B., Mark Welch, D. B., Martiny, J., … Webster, N. S. (2019). **Scientists' warning to**

humanity: microorganisms and climate change.
Nature reviews. Microbiology, *17*(9), 569–586.
https://doi.org/10.1038/s41579-019-0222-5

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6 Assessments

The goal of the combined assessments is obviously to provide formative feedback on your abilities and comprehension, but also to help you learn the course material and further develop your learning, analytical, communication and team skills. To reduce the stress and anxiety that assessments and deadlines create, there is considerable flexibility in due dates, and the grading schemes, as well as choice in some of the assessments (e.g. answer 2 of 4 questions). Instead of a single, higher-stakes midterm, you will write a total of 4 short, **non-cumulative** quizzes every 3 weeks (on the material from the previous 3 weeks), and can drop 1 of those. The final exam **IS** cumulative, so students will be expected to keep reviewing previously covered material. Assigned readings and their subsequent discussions should help, as the articles become more complex/multidisciplinary, as the semester progresses. Students who do better on the final compared to the quizzes will automatically have the quiz grade weight transferred to the final exam.

6.1 Marking Schemes & Distributions

For students who perform better on the final exam *vs* the combined quizzes, the grade weight from the latter will be transferred to the final exam.

Quizzes are best 3 of 4 while 6 "excellent" reading summaries of 8 gives full marks; bonus marks for "excellent" grade on 7 (2.5%), or 8 (5%) summaries.

Name	Scheme A (%)	Scheme B (%)
Reading summaries	20	20
Participation	10	10
Quizzes	15	0
Team project	15	15
Final exam	40	55
Total	100	100

6.2 Assessment Details

Reading Summaries (20%)
Date: Throughout the semester
Learning Outcome: 1, 2, 3, 4, 5, 6, 7

There is 1 assigned journal article for each major topic (8 in total) - these are identified in the course outline and in Courselink. Due dates are all Wednesdays, by 10:30am and submission is to dropbox:

1. Sept. 29
2. Oct. 6
3. Oct. 20
4. Oct. 27
5. Nov. 3
6. Nov. 10
7. Nov. 24
8. Dec. 1

Reading guides **may** be provided by the instructor to help prevent students from falling down "rabbit holes" of irrelevant details. For each assigned paper, a 1 page summary is to be submitted to the dropbox prior to the class in which the paper will be discussed. A copy of the summary and the article is also to be brought to class to help with your participation in the discussion. Grading for each summary employs specifications grading: it is SAT/UNSAT. SAT is based on completion plus evidence of comprehension (full marks). UNSAT summaries may be revised following the in-class discussion, and resubmitted within 48h **for full marks** (by Friday at 10:30am). The final exam will include questions related to the major aspects of the assigned readings (as identified in the Content-specific learning outcomes on Courselink).

- **To receive the full 20%, students must submit a total of 6 (of the 8) "SAT" summaries.**

Bonus marks:

- **a total of 7 "SAT" summaries = 2.5%, and a total of 8 "SAT" summaries = 5%**

Participation (10%)

Date: Thoughout the semester
Learning Outcome: 1, 2, 3, 4, 5, 6, 7, 8
Each class, whether remote or in-person, will be highly interactive. In order to increase accessibility, break down barriers and develop a sense of community, the instructor will use a randomized classlist and random calling, to solicit feedback following group discussions. Students receive one point per response with the total grade determined as a percentage of the calls they answered. Students absent from one class and unable to answer will be cycled to the top of the list for the next class. **Students who are ill are asked to stay home & let Dr. K. know: your participation marks will not be affected.**

There will be two major types of discussion:

1. **Assigned readings:** each reading assignment will be discussed in class. After an initial question period, students will work in groups to discuss questions specific to each paper.
2. **Class Activities:** students will work in groups to complete an activity relating to the lecture material.

Team Research Assignment (15%)

Date: During the last half of the semester, Outside of class
Learning Outcome: 2, 3, 4, 7, 8
The purpose of this assignment is: 1) to participate in the development of content for new bacterial, and archaeal diversity chapters in a new edition of the introductory textbook "Microbiology: Canadian Edition", 2) to research and teach each other about some of the major groups of bacteria and archaea, and 3) to further develop your research, communication and team skills. Teams of 4-5 will be created and held accountable to each other using the same strategy as in MICR2430 (team charter, team effectiveness feedback summary, assessment of distribution of effort among team members using PEARTool). Individual project grades will be assessed based on the (team grade) x average score (as %) from the team's distribution of effort assessments. Teams will be announced by **Oct. 15** . Each team will pick 1 bacterial or archaean clade from among a selection provided. Working outside of class, teams will "drill down" to a genus or species of particular importance or interest from within that clade.

Some details are still being determined, however the following is a general description:

1. **Friday Oct. 16**: team charter due to dropbox
2. **Friday Nov. 5 (10:30AM)**: 1-2 page draft description of "adopted" clade and proposed genus/species (with rationale) to dropbox. Content guidelines will be provided. During the Nov. 5 class, teams will review and provide feedback on 2 other team's submissions
3. **Friday Nov. 5 (5PM)**: team effectiveness feedback summary to dropbox
4. **Friday Nov. 19**: 3 min. vignette (.mp4, akin to the "Hinterlands Who's Who" vignettes created by the Canadian Wildlife Federation and Environment and Climate Change Canada) to the clade-specific topic under the "Team Project Submissions" discussion forum.
5. **Friday Nov. 26**: deadline for individuals to post feedback on at least 2 other vignettes
6. **Monday Nov. 29**: Fact Sheet uploaded to clade's topic in "Team project Submissions" discussion.

7. **Monday Dec. 6**: deadline for team member's distribution of effort scores (PEARTool)

The final exam will include a section where students select and describe specific aspects of **3**-**4** clades from a given subset of the total groups researched by the teams. The final vignettes and Fact Sheets, accessible to everyone *via* the discussion forum, will provide the relevant content for that portion of the exam.

The list of clades that will be "up for adoption", as well as details on grading, and rubrics, will be provided separately.

Quizzes (15%)
Date: Fridays of weeks 3, 6, 9 & 12, MAC149
Learning Outcome: 1, 2, 3, 4, 5, 6, 7

1. **Friday Oct. 1, 10:30-11:20**
2. **Friday Oct. 22, 10:30-11:20**
3. **Friday Nov. 12, 10:30-11:20**
4. **Friday Dec. 3; 10:30-11:20**

- Short, written questions, with choice. On the material from the previous 3 weeks, including relevant concepts from assigned readings.
- Best 3 of 4 (each is therefore worth 5% of your course grade).
- Estimated time for completion ~15-20 min. All students have entire class to complete but may leave once done.

Final exam (40%)
Date: Tue, Dec 14, 8:30 AM - 10:30 AM, tba
Learning Outcome: 1, 2, 3, 4, 5, 6, 7
2-stage*****, in person. Location tba

Cumulative including the assigned readings and fact sheets/vignettes from the team project. Students will have some choice in the questions they choose to answer and the length of the first (individual) stage will be shortened to allow for the second group stage.

During the second stage, project teams will work together***** to reach consensus on a subset of questions from the individual stage.

Grade is calculated to give the highest possible, using either of the following:

1. Only the individual portion of the exam
2. Both stages of the exam combined (85% + 15%)
3. Individual plus the class average from the second stage (when a student is unable to participate in the second stage***;** 85% + 15%)

*** Because the exam begins at 8:30, students who receive extra time through SAS may be unable to begin early enough to write the 2-stage exam. Please identify yourself with Dr. K. early in the semester - I will try to find a solution if possible.**

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7 Course Statements

7.1 Student responsibilities

Safety: if you are feeling ill, please e-mail Dr. K. and **do NOT come to class**. Participation marks will not be affected.

Respectfulness: let's all do our part to create an environment of mutual respect. In class, this means paying attention, not talking while the instructor or another student is talking, not sending or receiving text messages or phone calls once class has started.

Project teams: team members will negotiate and sign the terms of a team charter and, after working together for a few weeks, individually fill out, then discuss as a group, their "Team Effectiveness Feedback" assessments. The team as a whole will use the individual results and their discussions to develop a summary and report agreed-upon steps for improving performance. As with work-place teams (which are generally the norm), the development of an effective team requires effort, communication and skill but can result in a synergy that leads to performance, creativity and productivity that are superior to what a single member working alone can accomplish. Significant problems within a team should be identified and resolved as agreed in the Team Effectiveness Feedback Summary. If necessary (and as a last resort), teams may request mediation by the instructor.

7.2 Grading

- Each team member will provide, through the UofG PEARTool, distribution of effort evaluations. The average assessment of each team member will be used to assess individual grades based on the team mark. The individual grade may go UP or DOWN, relative to the group grade, within limits.

- In extreme circumstances, accompanied by failed mediation, an individual may be removed from a group; that student will be required to work independently on a separate project.

7.3 When You Cannot Meet a Course Requirement

- Please advise the instructor or your team members promptly by e-mail if you encounter difficulties meeting any of the course deadlines and have just cause for accommodation to be made.

7.4 E-mails

- Please only use your UofG e-mail account.
- Students are expected to monitor their UofG e-mail accounts routinely - this is the official means of communication at UofG, and given the team aspect of this course, the instructor may e-mail reminders or enquiries.
- All questions related to course content should first be posted to the Discussion board on Courselink. Dr. K. will regularly check and respond to those posts, allowing the rest of the class to see the answers.
- E-mails regarding personal concerns will be prioritized - we're here to help and support you!
- If you feel you need help with your learning/study skills, please e-mail Dr. K!
- Please be patient - replies to e-mails sent outside of regular weekday hours (9 am-5 pm Eastern Time) may take 24-48h.

8 Department of Molecular and Cellular Biology Statements

8.1 Academic Advisors

If you are concerned about any aspect of your academic program:

- Make an appointment with a program counsellor in your degree program. B.Sc. Academic Advising or Program Counsellors

8.2 Academic Support

If you are struggling to succeed academically:

- Learning Commons: There are numerous academic resources offered by the Learning Commons including, Supported Learning Groups for a variety of courses, workshops related to time management, taking multiple choice exams, and general study skills. You can also set up individualized appointments with a learning specialist. http://www.learningcommons.uoguelph.ca/
- Science Commons: Located in the library, the Science Commons provides support for physics, mathematic/statistics, and chemistry. Details on their hours of operations can be found at: http://www.lib.uoguelph.ca/get-assistance/studying/chemistry-physics-help and http://www.lib.uoguelph.ca/get-assistance/studying/math-stats-help

8.3 Wellness

If you are struggling with personal or health issues:

- Counselling services offers individualized appointments to help students work through personal struggles that may be impacting their academic performance. https://www.uoguelph.ca/counselling/
- Student Health Services is located on campus and is available to provide medical attention. https://www.uoguelph.ca/studenthealthservices/clinic
- For support related to stress and anxiety, besides Health Services and Counselling Services, Kathy Somers runs training workshops and one-on-one sessions related to stress management and high performance situations. http://www.selfregulationskills.ca/

8.4 Personal information

Personal information is collected under the authority of the University of Guelph Act (1964), and in accordance with Ontario's Freedom of Information and Protection of Privacy Act (FIPPA) http://www.e-laws.gov.on.ca/index.html. This information is used by University officials in order to carry out their authorized academic and administrative responsibilities and also to establish a relationship for alumni and development purposes.

For more information regarding the Collection, Use and Disclosure of Personal Information policies please see the Undergraduate Calendar. (https://www.uoguelph.ca/registrar/calendars/undergraduate/current/intro/index.shtml)

8.5 Course Offering Information Disclaimer

Please note that course delivery format (face-to-face vs online) is subject to change up to the first-class day depending on requirements placed on the University and its employees by

public health bodies, and local, provincial and federal governments. Any changes to course format prior to the first class will be posted on WebAdvisor/Student Planning as they become available.

9 University Statements

9.1 Email Communication

As per university regulations, all students are required to check their e-mail account regularly: e-mail is the official route of communication between the University and its students.

9.2 When You Cannot Meet a Course Requirement

When you find yourself unable to meet an in-course requirement because of illness or compassionate reasons please advise the course instructor (or designated person, such as a teaching assistant) in writing, with your name, id#, and e-mail contact. The grounds for Academic Consideration are detailed in the Undergraduate and Graduate Calendars.

Undergraduate Calendar - Academic Consideration and Appeals
https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-ac.shtml

Graduate Calendar - Grounds for Academic Consideration
https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/index.shtml

Associate Diploma Calendar - Academic Consideration, Appeals and Petitions
https://www.uoguelph.ca/registrar/calendars/diploma/current/index.shtml

9.3 Drop Date

Students will have until the last day of classes to drop courses without academic penalty. The deadline to drop two-semester courses will be the last day of classes in the second semester. This applies to all students (undergraduate, graduate and diploma) except for Doctor of Veterinary Medicine and Associate Diploma in Veterinary Technology (conventional and alternative delivery) students. The regulations and procedures for course registration are available in their respective Academic Calendars.

Undergraduate Calendar - Dropping Courses
https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-drop.shtml

Graduate Calendar - Registration Changes
https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/genreg-reg-regchg.shtml

Associate Diploma Calendar - Dropping Courses
https://www.uoguelph.ca/registrar/calendars/diploma/current/c08/c08-drop.shtml

9.4 Copies of Out-of-class Assignments

Keep paper and/or other reliable back-up copies of all out-of-class assignments: you may be asked to resubmit work at any time.

9.5 Accessibility

The University promotes the full participation of students who experience disabilities in their academic programs. To that end, the provision of academic accommodation is a shared responsibility between the University and the student.

When accommodations are needed, the student is required to first register with Student Accessibility Services (SAS). Documentation to substantiate the existence of a disability is required; however, interim accommodations may be possible while that process is underway.

Accommodations are available for both permanent and temporary disabilities. It should be noted that common illnesses such as a cold or the flu do not constitute a disability.

Use of the SAS Exam Centre requires students to book their exams at least 7 days in advance and not later than the 40th Class Day.

For Guelph students, information can be found on the SAS website
https://www.uoguelph.ca/sas

For Ridgetown students, information can be found on the Ridgetown SAS website
https://www.ridgetownc.com/services/accessibilityservices.cfm

9.6 Academic Integrity

The University of Guelph is committed to upholding the highest standards of academic integrity, and it is the responsibility of all members of the University community-faculty, staff, and students-to be aware of what constitutes academic misconduct and to do as much as possible to prevent academic offences from occurring. University of Guelph students have the responsibility of abiding by the University's policy on academic misconduct regardless of their location of study; faculty, staff, and students have the responsibility of supporting an environment that encourages academic integrity. Students need to remain aware that instructors have access to and the right to use electronic and other means of detection.

Please note: Whether or not a student intended to commit academic misconduct is not relevant for a finding of guilt. Hurried or careless submission of assignments does not excuse students from responsibility for verifying the academic integrity of their work before submitting it. Students who are in any doubt as to whether an action on their part could be construed as an academic offence should consult with a faculty member or faculty advisor.

Undergraduate Calendar - Academic Misconduct
https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-amisconduct.shtml

Graduate Calendar - Academic Misconduct
https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/index.shtml

9.7 Recording of Materials

Presentations that are made in relation to course work - including lectures - cannot be recorded or copied without the permission of the presenter, whether the instructor, a student, or guest lecturer. Material recorded with permission is restricted to use for that course unless further permission is granted.

9.8 Resources

The Academic Calendars are the source of information about the University of Guelph's procedures, policies, and regulations that apply to undergraduate, graduate, and diploma programs.

Academic Calendars
https://www.uoguelph.ca/academics/calendars

9.9 Disclaimer

Please note that the ongoing COVID-19 pandemic may necessitate a revision of the format of course offerings, changes in classroom protocols, and academic schedules. Any such changes will be announced via CourseLink and/or class email.

This includes on-campus scheduling during the semester, mid-terms and final examination schedules. All University-wide decisions will be posted on the COVID-19 website (https://news.uoguelph.ca/2019-novel-coronavirus-information/) and circulated by email.

9.10 Illness

Medical notes will not normally be required for singular instances of academic consideration, although students may be required to provide supporting documentation for multiple missed assessments or when involving a large part of a course (e.g.. final exam or major assignment).

9.11 Covid-19 Safety Protocols

For information on current safety protocols, follow these links:

- https://news.uoguelph.ca/return-to-campuses/how-u-of-g-is-preparing-for-your-safe-return/
- https://news.uoguelph.ca/return-to-campuses/spaces/#ClassroomSpaces

Please note, these guidelines may be updated as required in response to evolving University, Public Health or government directives.
