BCMB489AO1: MICROBIOME AND BIOCHEMICAL TECHNIQUES
COURSE OUTLINE SPRING 2021

INSTRUCTOR

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LECTURE TIME

Tues, Wed, Fri: 11:30-12:20

COURSE DESCRIPTION AND OBJECTIVES:

This course aims to examine recent advances in microbiome research and select techniques in the context of human health. Current knowledge of microbiome features and mechanisms of impact on host metabolism, immunity, neural and endocrine system functions and associated diseases will be discussed, as well as therapeutic applications within the microbiome biotechnology industry. Specific experimental approaches with respect to theoretical background, protocol development, and applications will also be highlighted throughout the course. Students will: 1) acquire a comprehensive understanding of recent advances in microbiome research, applications, and approaches; 2) strengthen skills in data interpretation and critical evaluation of primary research literature; 3) develop a stronger understanding of select biochemical techniques and how to optimize associated protocols; and 4) develop oral presentation skills.

COURSE FORMAT

Classes will be based on recent primary research papers involving different aspects of the microbiome. Each paper will be presented in part by the instructor and a student group (one paper per group). Each group member will be assigned a specific part of the paper to contribute for an individual mark. In addition to discussing findings and implications, a biochemical technique from select papers will be reviewed further by the instructor. An overview of the theoretical background of the technique and aspects of its protocol will be provided. Students (individual) will subsequently complete short exercises associated with the technique, which include data interpretation, calculations, protocol development or researching recent advances. Students will also work in a group to develop a presentation for the end of the course.

Tuesday, Wednesday Class: Synchronous via Zoom (link to be posted on BrightSpace) for reviewing papers and techniques. Short assignments (3 total) will be presented during this time.

Friday Class: Synchronous via Zoom; devoted to group work. There will not be a formal lecture during this time but the instructor will be available for questions. Students must attend group meetings, since it can be difficult to get everyone together at different times. Groups can additionally meet outside of class time, but this will be in the absence of the instructor. Group work will consist of preparing an oral presentation (15-20 min total) for the end of the course on a select microbiome paper and linked biotechnology company/applications. Information on the presentation content and format will be provided in a separate document. The presentations will be held during the last week of class.

The Group Presentation grade will be based in part on the group delivery (group mark), individual contributions, which will be documented at each group meeting, and a brief written report on aspects of the group presentation (individual mark). Group meeting time can also be spent discussing aspects of the one paper that each group will contribute to a lecture. Each group member will contribute a different section and will receive an individual grade.

****Students MUST sign into the Zoom link via their UVIC ID in order to access the sessions.***

COURSE TOPICS

1. Microbiome Overview	-Features, functions, methods for investigation, challenges, impacts
2. Microbiome and Immunomodulation	-mechanisms, approaches; implications for infectious disease (virus) and autoimmune disorders (MS)
3. Microbiome and Host Metabolism	-mechanisms, approaches; implications for insulin resistance, Diabetes
4.Microbiome and Neuroendocrine system	-mechanisms, approaches; mental health disorders (Autism, depression)
5. Microbiome and Cancer	-mechanisms of impact
6. Microbiome Therapeutics and the Pharmabiotic Research Industry	**-**applications, company profiles, history

ASSESMENT OF STUDENT PERFORMANCE

(1) Techniques to be used:

• Assignment of a numerical mark to short answer and longer answer questions on exams, paper assignments, and group presentations.

•Exams are based on material covered in synchronous sessions.

•Exams are completed on BrightSpace and are "open-book", but students are expected to study as if they were writing in class in order to complete the exams within the designated time frame. Students are obligated to write the exam on their own, without the assistance of others or the internet.

•Exams can be initiated within a 24 h time block, and completed within a restricted amount of time after initiation.

(2) Evaluation and weighting:

Component	Date	Contribution
Midterm I	Feb. 24	25%
Midterm II	March 26	25%
Assignments (3)	TBA	15%
Paper contribution	TBA	7.5%
Group Presentation (inc. group and individual contributions)	April 6,7,9	25%
Participation		2.5%

Anticipated Workload: @ 7-8 h/week

-Class time (2.5 h/week); reading papers (2 h/week); group project research (2 h/week); review lecture material (2 h/week); assignment completion (1.5 h; 3 total)

(3) Grading Scheme:

A$^+$ 90 -100 **B$^+$** 77 - 79 **C$^+$** 65 - 69 **F** < 50

A	85 - 89	**B**	73 - 76	**C**	60 - 64	**N***	< 50
A$^-$	80 - 84	**B$^-$**	70 - 72	**D**	50 - 59		

* N grades

Students who have completed the following elements will be considered to have completed the course and will be assigned a final grade: Midterm 1, Midterm 2, Group Presentation, at least 2 Assignments, and Paper Contribution.

Failure to complete one or more of these elements will result in a grade of "N" regardless of the cumulative percentage on other elements of the course. An N is a failing grade, and it factors into a student's GPA as 0. The maximum percentage that can accompany an N on a student's transcript is 49.

Students are responsible for ensuring that they are properly registered in the course, and are expected to have met all pre/co-requisites for the course.

DEPARTMENT INFORMATION AND POLICIES

1. The Department of Biochemistry and Microbiology upholds and enforces the University's policies on academic integrity. These policies are described in the current University Calendar. All students are advised to read this section.

2. Cell phones, computers, and other electronic devices must be turned off at all times during live class sessions unless being used for the purpose of connecting and engaging with the class.

3. No recordings of live lectures are permitted without permission of the instructor. Many online courses will be recorded by the instructor for accessibility for students unable to attend. If you do not wish to be recorded, contact your instructor to determine if alternative arrangements can be made.

4. Course materials, such as notes, problem sheets, quizzes, examinations, example sheets, or review sheets, may not be redistributed without the explicit written permission of the instructor.

5. Students are expected to be available for all exams. Instructors may grant deferrals for midterm examinations for illness, accident, or family affliction. Although students do not require documentation, students must contact their instructor and BCMB office (biocmicr@uvic.ca) with the reason for their absence within 48 hours after the midterm exam. The Department will keep a record of the absences. It is the responsibility of the student to ensure all required components are complete, and to arrange deferred exams/assignments with the instructor, which normally should occur within one week of the original exam date.

6. The Department of Biochemistry and Microbiology considers it a breach of academic integrity for a student taking a deferred examination to discuss the exam with classmates. Similarly, students who reveal the contents of an examination to students taking an examination are considered to be in violation of the University of Victoria policy on academic integrity (see current University Calendar). Students must abide by UVic academic regulations and observe standards of scholarly integrity (no plagiarism or cheating). Online exams must be taken individually and not with a friend, classmate, or group, nor can you access notes, course materials, the internet, or other resources without the permission of the instructor. You are prohibited from sharing any information about the exam with others. Use of unauthorized electronic devices and accessing the internet and class material during exams is prohibited unless permission is granted by the

instructor. Instructors may use Browser Lockdown Software to block access during classes and exams.

7. Deferral of a final exam must be requested with an Academic Concession form and submitted directly to Undergraduate Records. Deferred final exams for fall term courses will be arranged by the instructor. Deferred final exams or spring term courses will be arranged through Undergraduate Records and must be written before the end of the summer term as stipulated in the University Calendar.

8. Requests for review/remark of a midterm exam must be made within one week of the exam being returned.

9. The instructor reserves the right to use plagiarism detection software or other platforms to assess the integrity of student work.

10. Supplemental exams or assignments will not be offered to students wishing to upgrade their final mark.

11. Anonymous participation in online classes is not permitted without permission of the instructor.

IMPORTANT NOTE ABOUT COVID-RELATED STRESS

The current pandemic is placing added stressors- financial, mental, and physical- on everyone. Your wellbeing is of foremost importance. If you are experiencing difficulties coping, the University has resources to help. Reach out to Counselling Services, the Centre for Academic Communication, or Learning Assistance Program for assistance.

CENTRE FOR ACCESSIBLE LEARNING

Students with diverse learning styles and needs are welcome in this course. In particular, if you have a disability/health consideration that may require accommodations, approach the Centre for Accessible Learning (CAL) as soon as possible in order to assess your specific needs. https://www.uvic.ca/services/cal/index.php

COURSE EXPERIENCE SURVEY (CES)

We value your feedback on this course. Towards the end of term you will have the opportunity to complete a confidential course experience survey (CES) regarding your learning experience. The survey is vital to providing feedback to us regarding the course and our teaching, as well as to help the department improve the overall program for students in the future. When it is time for you to complete the survey, you will receive an email inviting you to do so. If you do not receive an email invitation, you can go directly to your CES dashboard. You will need to use your UVic NetLink ID to access the survey, which can be done on your laptop, tablet or mobile device. We will remind you nearer the time but please be thinking about this important