



MICB 306 – MOLECULAR VIROLOGY

COURSE OVERVIEW

What an extraordinary time to learn about cellular and molecular virology. On the backdrop of a global pandemic, we will explore fundamental principles of viral infection, and the impacts on infected hosts at the cellular and molecular level by examining examples of different human pathogenic viruses including alphainfluenza A viruses, flaviviruses, and coronaviruses. We will also cover various strategies for vaccine development and antiviral therapeutics. We will explore these concepts in the context of the current pandemic of SARS-CoV-2, the virus that causes COVID-19.

The course is divided into two modules each led by a different Instructor (see details below). Dr. Marcia Graves is a cell biologist, and will lead the first half of the course in Module 1 – principles in molecular virology, and will focus on the impacts of viral infection on host cellular processes. Dr. François Jean is a molecular virologist who specializes in pre-clinical models for developing anti-viral therapeutics, and is currently leading several research initiatives on SARS-CoV-2. Dr. Jean will delve deeper into several genera of human pathogenic viruses (<https://covid19.research.ubc.ca/people/francois-jean>).

TEACHING TEAM

INSTRUCTORS:

<i>Module 1 Instructor</i>	<i>Module 2 Instructor</i>
Dr. Marcia Graves: marcia.graves@ubc.ca Office: Biosciences room 3142 Student support hours: I will host a Learning Lounge Q&A on Zoom every Tuesday 1-2pm . I am happy to meet one-on-one by appointment on Zoom at a mutually convenient time; please email me to set this up.	Dr. François Jean: fjean@mail.ubc.ca Office: Life Sciences Centre, Room 3559 Student support hours: I will host a Learning Lounge Q&A on Zoom every Tuesday 1-4pm . I am happy to provide clarifications on the material covered in Module 2 and your assignment.

TEACHING ASSISTANTS: Dr. Graves and Dr. Jean are joined by Graduate Teaching Assistants who will lead tutorial sessions, facilitate the piazza discussion forum, and participate in grading course assessments. Teaching Assistants are here to help you! You will mostly communicate with TAs in tutorial and on piazza. Each TA may share their email at their discretion.

Graduate Teaching Assistants:

Christopher Hong
Annika Schulz

CLASS MEETING TIMES

LECTURES: Tuesdays and Thursdays, 9:30-10:50am - MATH 100

All lectures will be live-streamed and recorded. The Panopto link for watching lectures remotely will be shared on Canvas. If attending class regularly at the scheduled time will be challenging for you, please contact the Course Coordinator, [Dr. Marcia Graves](#).

We are committed to helping all students succeed, and encourage public health safety measures such as mask wearing. We will provide recorded lectures throughout the term so that anyone who is not able to attend will be able to view the lectures remotely.

TUTORIALS: *Please attend the tutorial in which you are registered.*

Graduate Teaching Assistants will host in-person tutorials. The goal of tutorials in MICB 306 is to reinforce concepts covered in class, allow students to ask questions, and to work in small groups to analyze data and think critically and creatively about major concepts in the field of virology. You will be asked to submit your work to Canvas to obtain credit for your tutorial engagement. The tutorials are not setup to be recorded. If you are not able to attend tutorial, it remains your responsibility to complete the activity for that week. If you are unable to attend tutorial for an extended length of time, please email [Dr. Marcia Graves](#).

Tutorials will begin the week of **September 12, 2022**. The tutorials are listed below.

Section	Day	Time	Teaching Assistants	Location
T01	Tuesdays	11am-12pm	Lead TA: TBA	HEBB B112
T04	Wednesdays	12pm-1pm	Lead TA: TBA	ESB 2012
T06	Thursdays	12:30-1:30	Lead TA: TBA	CHEM C124

COURSE GOALS AND TOPICS COVERED IN MICB 306:

Module 1 - principles in molecular virology

Dr. Graves will use select examples of human pathogenic viruses including Influenza A viruses, flaviviruses, measles virus, coronaviruses, and oncogenic viruses to explore concepts in:

- Virus structure and classification
- Virus transmission and outcomes of infection
- Host cell biology and viral hijacking of host cell pathways during viral replication
- The immune response to viral infection
- Anti-viral strategies and vaccines

We will learn various methods and experimental approaches used in virology research. Using data from primary research articles, we will practice drawing conclusions about the mechanisms of viral infection.

Module 2 - Case studies

Dr. Jean will reinforce the principles learned in Module 1 by examining in details the current state of research and new frontiers in molecular virology research for three genera of human enveloped viruses of major public health concern in Canada and around the world:

- *The case of alphainfluenzavirus [(-)ssRNA]*
- *The case of flavivirus [(+)ssRNA]*
- *The case of coronavirus [(+)ssRNA]*

At the end of this course, students should be able to:

1. Illustrate the intricate balance between virally encoded proteins and host factors (including host immune response) to explain and make predictions about the specificity and mechanisms of viral pathogenesis.
2. Discuss the structural organization and function of key host-cell pathways commonly hijacked during viral infection using examples from different virus replication strategies.
3. Discuss the impact of viral hijacking of key host-cell machineries on the development of virus-associated diseases.
4. Apply principles of molecular virology learned in this course to discuss current anti-viral strategies [direct-acting antivirals (DAAs) and indirect-acting antivirals (IAAs)] and creatively devise new therapeutic strategies.
5. Discuss in detail the virus lifecycle, viral pathogenesis, anti-viral strategies and global impact of selected human enveloped viruses on individuals and in populations (alphainfluenzaviruses, flaviviruses, coronaviruses).
6. Discuss several methodologies used for detection and diagnosis of human viral infections, as well as techniques /assays and new technologies used in experimental molecular virology.
7. Describe and interpret experimental data based on conceptual knowledge of molecular virology.
8. Discuss the interdisciplinary nature of virology and appreciate how current issues in virology intersect with global, cultural and political contexts such as climate change, public health security, bioethics, and human rights.
9. Gain an appreciation of the impact of basic research in molecular virology for Canada's COVID-19 pandemic public health measures strategy
10. Gain an appreciation of the grand challenges for the Canadian research community to (i) respond to the current COVID-19 pandemic and future pandemics, and (ii) develop a robust Canadian Pandemic Preparedness Plan.

PRE-REQUISITES

MICB 202 (Introductory medical microbiology and immunology)

Students should be familiar with the major concepts in virology and immunology that were discussed in MICB 202. We will review some key concepts before exploring these topics in more detail, but please review your notes from this course.

Recommended - BIOL 200 or equivalent (Cell Biology)

Students should be familiar with cellular organization and the functions of various organelles, the basic structures of DNA, proteins and membranes, and important cellular functions including transcription, mRNA splicing, translation, and protein secretion. The cell biology textbook by Alberts et al. (either "Essential Cell Biology" or "Molecular Biology of the Cell") will be an excellent resource for understanding cellular structure and function.

COURSE MATERIALS AND REQUIRED TECHNOLOGY

TECHNICAL REQUIREMENTS: In order to be able to work through this course, you will need a computer/tablet with reliable internet, capable of streaming video. A smartphone will likely not be enough. You will need to be able to type for assignments, quizzes and other coursework. Using an ethernet cable to access the internet whenever possible can increase the stability of your internet, and also reduce the load on your wifi network.

Your computer will also need the usual set of software, including:

- a Microsoft Office (or equivalent) suite of programs (UBC maintains licenses for many programs that allow student discounts/ downloads. See <https://it.ubc.ca/software-downloads>).
- up-to-date web browsers (Note: Canvas works best in Chrome; other software may be optimized for other browsers). Currently I have Safari, Firefox and Chrome on my computer.

OUR CANVAS PAGE: Canvas is UBC's Learning Management System, and it will be our classroom for this course. Our course page is organized according to the two main modules of MICB 306 and information will be posted each week. URL www.canvas.ubc.ca - MICB 306 Section 101 - 2022W; requires UBC CWL ID.

For Canvas help, contact the Help Desk: <https://students.canvas.ubc.ca/help/>

ONLINE DISCUSSION: This course will use Piazza for online discussion. The link is available through Canvas for students to enroll.

Please use a UBC affiliated email address when creating a login for piazza. Piazza will be the best way to communicate and get you help fast and efficiently from classmates, the TAs and the Instructors. Rather than emailing questions to the teaching team, we encourage you to post your questions on Piazza. If you have any problems or feedback for the developers, email: team@piazza.com

Once enrolled, find our class page through Canvas.

READINGS AND OPTIONAL TEXTBOOKS:

The content covered in class will be the most relevant for your learning and will help you prepare for course assessments, like exams and assignments. Your instructors may also post .pdf copies of review papers from the literature to complement the material covered in class. For added support with the background information covered in class, we recommend, and may refer to specific readings from the following resources:

TEXTBOOKS: We will post .pdf copies of the relevant chapters on Canvas

Louten, J. ESSENTIAL HUMAN VIROLOGY. 2016, Academic Press, Elsevier. An ebook copy of the entire textbook is available through the UBC library Course Reserves link on Canvas.

Flint, J. et al. PRINCIPLES OF VIROLOGY. 4th ed., 2015, ASM Press. (An ebook copy of the entire textbook is available through the UBC library Course Reserves link on Canvas).

WEBSITES:

These websites will be useful for Module 1 of the course:

Viral Zone: <http://viralzone.expasy.org/> - a Swiss Institute of Bioinformatics web resource for all viral genus and families, providing general molecular and epidemiological information, along with virion and genome figures. This is a fantastic resource for Module 1 of the course.

HHMI Biointeractive Virus Explorer: <https://media.hhmi.org/biointeractive/click/virus-explorer/>

The following websites are of interest for Module 2 of the course.

- COVID-19: <https://www.coronavirus.gov>
- COVID-19 Clinical Resources: <https://clinicaltrials.gov/ct2/results?cond=COVID-19>
- SARS-CoV-2 Resources: <https://www.ncbi.nlm.nih.gov/sars-cov-2/>
- SARS-CoV-2 Protein Structures: <https://www.ncbi.nlm.nih.gov/Structure/SARS-CoV-2.html>
- CoVaRR-Net, or Coronavirus Variants Rapid Response Network. <https://covarnet.ca>. CoVaRR is a network of interdisciplinary researchers from institutions across Canada created to assist in the Government of Canada's overall strategy to address the potential threat of emerging SARS-CoV-2 variants.
- GeneTex Webinar: "Discovery of Novel Antiviral Agents Against Human Pathogenic Viruses: A Tale of Two Emerging Viruses - SARS-CoV-2 and Zika Virus" - Dr. Jean. <https://attendee.gotowebinar.com/recording/3832938633613149964>

PODCAST: TWIV – “This week in virology” podcast hosted by Dr. Vincent Racaniello

- ***PODCAST:*** TWiV 894: Dinner with the TMPRSS family: <https://www.microbe.tv/twiv/?s=TMPRSS2>

HOW TO BE SUCCESSFUL IN MICB 306

For success in MICB 306, students are expected to prepare for class on a weekly basis and are encouraged to engage in all lectures and all tutorials. If you are not able to attend in real time, all live streamed classes will be recorded for students to view on their own time.

Each week students will be expected to complete tasks to:

- **Prepare for class** - this may involve readings, watching videos/pre-recordings, completing a quiz
- **Engage in class** - some lectures will require you to submit a quiz, assignment, or discussion post

- **Practice in tutorial** – tutorial will require you to submit a quiz, assignment, or discussion post

The material covered in lecture and tutorial throughout both modules of the course will focus on the topics and types of problems that you will expect to see on tests. It is strongly encouraged that students actively engage during lecture and tutorial, in real-time, or by completing the activities as you view the recordings asynchronously. Ask and answer questions in class and on the piazza discussion forum. Module 2 of MICB 306 will focus on case studies of emerging viruses. It is vital to engage in lectures and tutorial, as the material covered will be based on the current status of the field from the primary literature and is not covered in any of the recommended textbooks.

Recommended tips to do well:

- Read recommended readings, and complete the weekly preparatory tasks.
- Engage in class and tutorial, participate in class discussion and complete problem-solving activities.
- Review your class notes and revisit the activities and questions from class and tutorial, practice data analysis and write answers to questions posed in class.
- Write down the concepts you are unsure about, seek additional support by asking questions on piazza, or visiting your instructor in virtual office hours with prepared questions.
- Form study groups and establish ways to stay connected. Learn from each other!

If you require specific accommodations to support you as you learn, the Center for Accessibility is also there to support you, and to help us understand your needs. Please contact them sooner rather than later, as these things can take time to get approved. If you have any concerns about your progress in this course, please contact the course coordinator: Dr. Marcia Graves marcia.graves@ubc.ca.

TEACHING AND LEARNING IN THE TIME OF COVID-19

SPECIAL CONSIDERATIONS FOR LEARNING REMOTELY: All students are encouraged to attend weekly live-streamed lectures and tutorials whenever possible. However, there is no penalty for missing a lecture. Attendance will not be taken and lectures will be recorded for asynchronous viewing. Lectures and tutorial may involve activities for students to complete. If students are not able to attend lectures live in real-time, that's ok. Watch the recording of the classes, and complete the activity on your own or in a study group. Instructions will be available on Canvas. For more tips and resources on remote learning please visit: keeplearning.ubc.ca

YOUR HEALTH AND SAFETY FOR THE CAMPUS COMMUNITY: UBC encourages all students staff and faculty to be up to date with vaccinations against SARS-CoV2. We also strongly encourage students to wear masks in shared indoor spaces.

If you are sick it is important that you stay home and not come to the UBC Campus. Your precautions will help reduce risk and keep everyone safer.

- A daily self-health assessment is required before attending campus. Every day, before coming to UBC, complete the self-assessment for Covid symptoms using this tool: <https://bc.thrive.health/covid19/en>

- Do not come to UBC if you have Covid symptoms, have recently tested positive for Covid, or are required to quarantine. You can check this website to find out if you should self-isolate or self-monitor:
<http://www.bccdc.ca/health-info/diseases-conditions/covid-19/self-isolation#Who>.

ACCOMMODATIONS FOR ILLNESS OR OTHER EXTENUATING CIRCUMSTANCES: In this class, we will provide flexibility for individuals going through a tough time. Please contact the course coordinator: Dr. Marcia Graves marcia.graves@ubc.ca to communicate your needs as they arise. It is much better to reach out as soon as you realize you need support rather than waiting. This will make it easier to come up with a plan to help you succeed.

COURSE EVALUATIONS

MODULE 1:

Preparatory Online quizzes	4%	<i>There will be 4 quizzes based on assigned pre-reading. Due dates will be posted to Canvas.</i>
Lecture Activities	6%	<i>These will be based on effort and self-reflection submissions. Due dates will be posted to Canvas.</i>
Viral Principles Practice Test	5%	Sept 27
Module 1 Summative Exam	30%	Oct 24

MODULE 2

Assignment:	10%	
<ul style="list-style-type: none"> <i>"Challenges Ahead: Antiviral Drug Combinations for SARS-CoV-2 Variants of Concern: The case of highly transmissible omicron subvariants"</i> 		
Module 2 Summative Exam	35%	
Tutorial		
Tutorial Activities in Module 1	5%	<i>These will be based on effort and self-reflection submissions. Due dates will be posted to Canvas.</i>
Tutorial Activities in Module 2	5%	<i>Activities to support the Module 2 Assignment Due dates will be posted to Canvas.</i>

TEACHING APPROACH

Module 1 Classroom Philosophy - We are an intentional community of learners, with the goal of exploring virology together. Based on overwhelming evidence, I believe that people learn best when they are actively doing, rather than passively listening. So, as a class, we will learn together in an interactive, open style. I strongly encourage questions, thoughts and discussion from as many voices as possible. Diversity is a strength that science desperately needs to meet the challenges it faces. If the amount of group interaction or timing of live classes is challenging for you or makes

you significantly uncomfortable, please reach out to me, and we will work something out. Feedback is always welcome. Please also remember that we are all individuals with unique histories and lived experiences. Always be kind to each other, respect each other's questions and ideas, and do your best to minimize distractions in class to show respect for the teaching team and your peers.

Module 2 Goals - The goal of module 2 is to create a student-centered, learning space in lectures and tutorials to help students integrate and apply the fundamental concepts of molecular virology learned in Module 1 to three genera of enveloped viruses of major public health concern in Canada and around the world. This year, first, Dr. Jean will present our current-state-of-knowledge on selected emerging and re-emerging pathogenic viruses [e.g., *influenza A virus*, dengue virus, Zika virus, and coronaviruses) and second describe the next frontiers in anti-viral drug discovery, biologics, and molecular diagnostic technologies for these life-threatening viruses.

Dr. Jean will reinforce the principles learned in module 1 by examining in details the current state of research and new frontiers in molecular virology research for three genera of human enveloped viruses of major public health concern in Canada and around the world:

- **The case of alphainfluenzavirus (InfA) [(-)ssRNA]:** Global health burden; swine-origin influenza A virus (S-OIV) and avian-origin influenza A virus (A-OIV); influenza A virus-associated clinical diseases; lifecycles (host-virus interactions); determinants of influenza A virus pathogenicity; HAo glycoprotein activation; molecular diagnostics (MDx); DAAs & IAAs; biologics.
- **The case of flavivirus (FLAV) [(+)ssRNA]:** Global health burden; dengue virus (DENV) and Zika virus (ZIKV); flavivirus-associated clinical diseases; lifecycles (host-virus interactions); new mechanisms of transmission (Exosome (Exos)-mediated viral transmission); determinants of flaviviral pathogenicity: prM glycoprotein activation; DAAs and IAAs; molecular diagnostics (MDx); vaccine trials; biologics.
- **The case of coronavirus (CoV) [(+)ssRNA]:** Global health burden; coronavirus-associated clinical diseases (SARS-CoV-2/COVID-19); multi-organ disease; SARS-CoV-2 variants of concern (VOC); lifecycle (host-virus interactions); determinants of viral pathogenicity: spike glycoprotein activation; DAAs and IAAs; antiviral drug combinations; molecular diagnostics (MDx); vaccine trials; biologics.

EXAM POLICIES

MODULE 1 TESTS:

- Your knowledge and skills in Module 1 will be measured over two tests:
 - Viral principles practice test (in-class) (5%)
 - Module 1 summative assessment (evening/outside of class) (30%)

- The viral principles practice test is a lower-stakes exercise (5%) to help you with the types of test questions you can expect for the summative Module 1 test. Note that the kinds of activities we will do in lecture and tutorial are aligned with the caliber of questions you might see on the module 1 tests. Focus on the notes provided for your studying; the readings are to support what we discuss in class.
- All module 1 tests will largely focus on data analysis and will involve short-answer responses, although there will likely be some true/false questions that will require you to compare and contrast concepts and provide a rationale for your answers.
- Details about the tests, and any added policies will be discussed in class and will be posted on Canvas. Information may also be sent out via email through the Student Services Center or Canvas; therefore, it is important that your email address is recorded with the University.
- For the Module 1 tests, any student that feels that they should have been awarded additional marks can appeal this in writing. The student must discuss (in writing) why their answer should be awarded additional marks – the question will be re-evaluated by the teaching team. Opportunities to share your rationale for a regrade will be available on Canvas.

MODULE 2 SUMMATIVE EXAM (held during final exam period):

- The Module 2 Summative Exam is worth 35% of the final grade and will be held in-person during the final exam period. The final exam will cover the content taught by Dr. Jean. However, since the material in the second half of the course builds on earlier material, you will need to be familiar with the major concepts from the first half of the course. The exam period is set for Dec. 11th – Dec. 22th.
- Missed Final Exams: Students that are unable to write the final exam must report to the Dean's Office as soon as possible and request a Deferred Exam. The Dean's office will require valid reasoning and possibly documentation to explain your inability to take the exam. Deferred Exams are scheduled by the Registrar's Office and are usually held in late July.
- Note that instructors are not permitted to rearrange the times of final exams for students other than in a case of exam hardship. An exam hardship is defined as 3 exams within a 24-hour period. For example, Student "A" has an exam at 8:30 am, 12:00 noon and 7 pm; this is an exam hardship and the 2nd exam would be rescheduled (probably to the following day). An example of what is not an exam hardship: Student "B" has exams scheduled at 8 am, 12:00 noon, then 8 am the following day. The third exam is in the next 24-hour period.
- The final exam will contain a combination of questions, including multiple choice, short answer, short essay. Most questions can be answered with several sentences, or at maximum with 1 – 2 paragraphs. It is okay to present your answer in point form. Clear and concise writing is better than a large volume. Responses that have the right answer, but with lots of incorrect or irrelevant information may receive lower scores than responses that are correct and concise.
- Tip: Outline your response first as opposed to writing a "stream of consciousness" answer.

ACADEMIC INTEGRITY AND YOUR RESPONSIBILITY AS A UBC STUDENT

As members of the UBC community, you are part of a large network of academics across the globe, whose primary business is ideas. How exciting! Academic integrity is the foundation on which all university endeavors are built, from the most advanced research to the smallest document created by a student for a course or club. Everything we do depends on our ability to create and share in an environment where we can trust each other to work honestly and ethically to create knowledge and build scholarship. When you registered for your first course at UBC, [you agreed to uphold these values](#) and to uphold academic integrity in all of your scholastic endeavours.

Breaches of academic integrity, or academic misconduct has consequences. You should carefully review how UBC defines [academic misconduct](#) and what the possible [disciplinary measures](#) are. Any academic integrity violations will be reported to the Dean of Students as academic misconduct (violation of course rules). Sanctions for academic misconduct may include a failing grade on an assignment, exam, an overall reduction in your final course grade, or a failing grade in the course, among other possibilities. Particularly with moving all assignments and exams online, academic misconduct issues are at the forefront. Here is a non-exhaustive list of activities that are classified as academic misconduct, and may be particular relevant for you in your online classes:

- **Cheating** - this includes working together on an assignment, and using any form of additional resources to help you if you have not been instructed to do so.
- **Breaching the rules of an exam** - this includes breaching an agreed upon academic integrity pledge.
- **Plagiarism** - this can mean submitting work that is not your own, or not properly attributing someone's ideas with appropriate citations. Adding your name to a group assignment when you have not contributed, is also considered plagiarism. You can also plagiarize yourself! You are not permitted to submit the same work, even if it is your own, to receive credit for more than one assignment.
- **Accessing and submitting course material to third party websites** - Several commercial services (ex: Course Hero, Chegg) have approached students regarding selling/posting class notes, study guides, and other course materials. Distributing the instructor's notes, exam questions and other course materials in this course is not permitted, ever. It is important for you to know that these third party sites maintain a record of all submissions. This can have negative repercussions for your future. There have been cases where students were caught engaging in this behavior, and years later, it impacted their admission to professional school! *Just don't do it.* See more information below in the copyright disclaimer.

The teaching team wants you to succeed, but they want you to do it fairly, and honestly. Remember that we are members of the academic community, too, so we believe in the value of academic integrity in our scholarly work. We are also employees of UBC, so we are also expected to uphold the values (and policies) of UBC. We will hold you to the standards that we are held to, and we will investigate when there is an indication that academic misconduct has occurred.

Copyright disclaimer:

We recognize the temptation to download and repost course material. This is not a good idea, or in any way fair to those that have worked so hard to create this material. Textbooks take years to create and keep up to date. Assignments and exams are carefully crafted and take hours, days of work to get right.

Diagrams and figures included in lecture presentations adhere to Copyright Guidelines for UBC Faculty, Staff and Students <http://copyright.ubc.ca/requirements/copyright-guidelines/> and UBC Fair Dealing Requirements for Faculty and Staff <http://copyright.ubc.ca/requirements/fair-dealing/>. All material uploaded to Canvas that contain diagrams and figures are used with permission of the publisher; are in the public domain; are licensed by Creative Commons; meet the permitted terms of use of UBC's library license agreements for electronic items; and/or adhere to the UBC Fair Dealing Requirements for Faculty and Staff. Access to the Canvas course site is limited to students currently registered in this course. Under no circumstance are students permitted to provide any other person with means to access this material. Distribution of this material to a third party is strictly forbidden. This includes taking pictures/ videos of copyrighted material on your own mobile device, and sharing them with others. Screenshots, photos and other recordings that you create of course material are for your own personal use, and cannot be uploaded to any websites, or shared with anyone that might do so. Note that the person who shares the work is just as liable as the person that uploads it unlawfully.

Statement regarding online learning for international students:

We recognize that some of you may be joining us remotely this term. During this pandemic, the shift to online learning has greatly altered teaching and studying at UBC, including changes to health and safety considerations. Keep in mind that some UBC courses might cover topics that are censored or considered illegal by non-Canadian governments. This may include, but is not limited to, human rights, representative government, defamation, obscenity, gender or sexuality, and historical or current geopolitical controversies. If you are a student living abroad, you will be subject to the laws of your local jurisdiction, and your local authorities might limit your access to course material or take punitive action against you. UBC is strongly committed to academic freedom, but has no control over foreign authorities, (please visit:

<http://www.calendar.ubc.ca/vancouver/index.cfm?tree=3,33,86,0> for an articulation of the values of the University conveyed in the Senate Statement on Academic Freedom). Thus, we recognize that students will have legitimate reason to exercise caution in studying certain subjects. If you have concerns regarding your personal situation, consider postponing taking a course with manifest risks, until you are back on campus or reach out to your academic advisor to find substitute courses. For further information and support, please visit: <http://academic.ubc.ca/support-resources/freedom-expression>.

TENTATIVE COURSE SCHEDULE - 2022W TERM 1

	Week	Lecture Date	Topics covered in pre-class prep and live streamed lectures <i>View Weekly overview on Canvas for all expected activities and due dates</i>	Tutorial
Module 1: General principles in virology	1	T Sep 6	Imagine Day - No Class	
		Th Sep 8	Course details Virology Principles I: <i>Virus structure and classification</i>	No tutorial
	2	T Sep 13	Virology Principles I: <i>Tropism and determinants of a successful infection</i>	TUTORIAL 1 Week 1 recap: Types of viruses, structure and classification
		Th Sep 15	Virology Principles I: <i>Outcomes of viral infections and viral transmission</i>	
	3	T Sep 20	Virology Principles I Wrap up Case Study - Measles Virus	TUTORIAL 2 Week 2 recap: Virus transmission Practice question
		Th Sep 22	Virology Principles II: The viral life cycle and impacts on host cell biology <i>Attachment and entry - Focus on the host endomembrane system</i>	
	4	T Sep 27	Virology Principles Practice Test - 5% of course grade In-class	No tutorial
		Th Sep 29	Review Practice test In-class	
		F Sep 30	National Day for Truth and Reconciliation - No class	
	5	T Oct 4	Virology Principles II: The viral life cycle and impacts on host cell biology <i>Focus on the host secretory pathway, and viral factories for replication</i>	TUTORIAL 3 Virology Principles II recap & Practice question
		Th Oct 6	Virology Principles II: The viral life cycle and impacts on host cell biology <i>Viral replication strategies, impacts on host gene expression, membranous organelle organization</i>	
	6	M Oct 10	THANKSGIVING	No tutorial
		T Oct 11	Virology Principles II: The viral life cycle and impacts on host cell biology <i>Viral assembly maturation and release - endomembrane system revisited, impacts on lipid metabolism</i>	
		Th Oct 13	Host immune response to viral infection	
7	T Oct 18	Vaccines and anti-viral approaches	TUTORIAL 4 Immune response, vaccines, antivirals recap & Practice question	
	Th Oct 20	Oncogenic viruses - (time permitting) MODULE 1 WRAP-UP		
		M Oct 24	Module 1 Summative test - 30% - outside class time	
Module 2: Case studies	8	T Oct 25	Start of Module 2 Introduction to emerging viruses and the case of InfA (part-1)	No tutorial
		Th Oct 27	The case of InfA (part-2)	
	9	T Nov 1	The case of InfA (part-3)	TUTORIAL 5 Practice question & Assignment support
		Th Nov 3	The case of InfA (part-4) and/or the case of FLAV (part-1)	
	10	T Nov 8	The case of FLAV (part-2)	No Tutorial
		Th Nov 10	MIDTERM BREAK Nov 9-11th - NO CLASS	

	F Nov 11	Remembrance Day	
11	T Nov 15	<i>The Case of FLAV (part-3)</i>	TUTORIAL 6
	Th Nov 17	<i>The case of CoV (part-1)</i>	Practice question & Assignment support
12	T Nov 22	<i>The case of CoV (part-2)</i>	TUTORIAL 7
	Th Nov 24	<i>The case of CoV (part-3)</i>	Practice question & Assignment support
13	T Nov 29	<i>The case of CoV (part-4)</i>	TUTORIAL 8
	Th Dec 1	Module 2 Review	Practice question & Module 2 recap
14	T Dec 6	Last day of class Module 2 - Support for Module 2 Assignment Module 2 Assignment is due by the end of the day	No Tutorial
	Dec 11-22	Final Exam period	