Viruses are frequently in the news, often in association with outbreaks of disease. Many viruses do cause disease yet some viruses are being developed for beneficial purposes e.g. as vectors to carry particular genes for use in gene therapy or as oncolytic agents for treatment of tumours. Familiarity in working with viruses is valuable not only for the study of viruses but in all fields of biomedical science that use viruses as tools for gene delivery.

Hands-on experiments provide the opportunity to develop skills in working safely with human viruses. Important concepts are learned through analysis of results. Topics include propagation and assay of viruses in cell culture, viral vectors, examination of viruses by electron microscopy, replication kinetics, host response to infection and immunoassays for detection of antibody.

Experiments will involve the use of bacteriophage T4 in E. coli and human adenoviruses (with and without a reporter gene) in human cells. Specific topics include:

- Replication of bacteriophage
- Amplification of adenovirus and assay of virus in cell culture
- Fluorescence microscopy (for detection of selected proteins with specific antibody)
- Electron microscopy (to view individual virus particles)
- Analysis of host response to infection by RT-qPCR for detection of specific cytokines
- Immunoassays to measure antibody levels (your own!)
  (by inhibition of virus replication, by western blot and by ELISA)

Number of lecture hours – 12*

Number of lab hours – 36*

Estimated enrolment – 12-24 (maximum 26)

* The course consists of a 3 hour lab each Tuesday and a one hour class each Monday. The Monday class is used to prepare for the upcoming lab and/or to discuss results of previous labs. In some experiments, results are available the week after the experiment is set up but other experiments run over several weeks. Depending on the nature of the experiment, sometimes it is necessary for students to come in for short periods outside of the designated lab period.

The work is done in biological safety cabinets and the number of students per section is limited by the number of safety cabinets available. If necessary, an additional section will be opened on Tuesday afternoon.

Note that MGY378H1 S is a co-requisite for MGY381H1 S. If you drop MGY378, you must also drop MGY381.
Assessment

Term test #1 10%
Term test #2 15%
Lab reports 35%
Lab performance 10%
Final exam (cumulative) 30%

Lab reports are due usually in the laboratory period after final results are available.

Late penalty is 5% (i.e. 0.5 marks out of 10) per calendar day that the report is late. Reports are not accepted more than 7 days past the due date.

Some students may wish to record the material in the Monday classes. That material is the intellectual property of the person giving the class. It is for your personal use and must not be posted on websites.

Missed Tests:

If you miss a test due to illness, contact Dr. M. Brown within 7 days of the test and provide a copy of the Uof T Verification of Illness or Injury Form (available online at www.illnessverification.utoronto.ca) signed by a licenced practitioner (Physician, Surgeon, Nurse Practitioner, Registered Psychologist or Dentist) at the time of illness/injury, not after the fact.

Accessibility Needs:

The University of Toronto is committed to accessibility. If you require accommodations for a disability, or have any accessibility concerns about the course, the classroom or course materials, please contact Accessibility Services as soon as possible: <http://studentlife.utoronto.ca/as>.

Academic Integrity:

Academic honesty and responsibility are fundamental to good scholarship and learning. As members of this academic community, you have a responsibility to conduct yourself in accordance with these expectations.

All academic work in this course must adhere to the Code of Behavior on Academic Matters. http://www.governingcouncil.utoronto.ca/AssetFactory.aspx?did=4871

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Potential offences include, but are not limited to:

On tests and exams:
• Using or possessing any unauthorized aid, including a cell phone.
• Looking at someone else’s answers
• Letting someone else look at your answers.
• Submitting an altered test for re-grading.

In lab reports:
• Using someone else’s ideas or words without appropriate acknowledgement.
• Copying material word-for-word from a source (including lecture and study group notes) and not placing the words within quotation marks.
• Making up sources.
• Including references to sources that you did not use.
• Obtaining or providing unauthorized assistance including:
  • “crowdsourcing” ideas and text via a Facebook/online study group without attribution
  • lending your work to a classmate who submits it as his/her own without your permission.

Lab Reports:

You may develop your ideas and understand challenging concepts by comparing and discussing lectures, and approaches to lab reports, with your classmates. However, the report that you submit for marking must be your work alone. Here are some guidelines to help you collaborate in the right way, rather than collude:

Appropriate ways of collaborating:
• Comparing /reviewing lecture notes with friends
• Discussing lectures or lab reports with friends
• Documenting any contributions made to work done in pairs or groups.

Inappropriate ways of collaborating (collusion):
• Copying, either electronically or by hand, another student’s work into your own work
• Allowing someone else to copy from your work
• Giving a friend a copy of your assignment for “reference”

A set of guidelines for writing lab reports will be distributed before the first lab report is due.

If you have questions about what’s appropriate for a specific lab report, ask your TA or Dr. Brown.

Re Facebook groups: Problems have arisen in the past with misinformation that gets circulated on Facebook. It’s good to discuss questions with your peers and figure things out for yourselves but before assuming that what your friends say is correct, make sure to check with someone who is likely to know and who will be marking your work. Dr. Brown is happy to answer questions.