FOR APPROVAL **PUBLIC** **OPEN SESSION**

TO:	UTSC Academic Affairs Committee
SPONSOR:	Prof. Karin Ruhlandt, Vice-Principal Academic and Dean
CONTACT INFO:	416-208-7027, vpdean.utsc@utoronto.ca
PRESENTER:	Prof. Katie Larson, Vice-Dean Teaching, Learning & Undergraduate Programs
CONTACT INFO:	(416) 208-2978, vdundergrad.utsc@utoronto.ca
DATE:	March 19, 2025 for March 26, 2025
AGENDA ITEM:	7

ITEM IDENTIFICATION:

Minor Modifications: Undergraduate Curriculum Changes, Sciences UTSC (For approval)

JURISDICTIONAL INFORMATION:

The UTSC Academic Affairs Committee (AAC) "is concerned with matters affecting the teaching, learning and research functions of the Campus (AAC *Terms of Reference*, section 4)." Under section 5.6 of its *Terms of Reference*, the AAC is responsible for approval of "major and minor modifications to existing degree programs."

The AAC has responsibility for the approval of major and minor modifications to existing programs as defined by the University of Toronto Quality Assurance Process (UTQAP, Section 3.1 and 3.3).

GOVERNANCE PATH:

1. **UTSC Academic Affairs Committee [For Approval] (March 26, 2025)**

PREVIOUS ACTION TAKEN:

No previous action in governance has been taken on this item.

HIGHLIGHTS:

This package contains minor modifications to the undergraduate curriculum submitted by the UTSC Sciences academic units listed below. These changes require governance approval. Minor modifications

are defined as adjustments that do not substantially alter program or course learning outcomes but may involve modest changes to the structure of a program or course. Upon approval, these updates will be implemented for the 2025-2026 academic year.

- Department of Biological Sciences (Report: Undergraduate Minor Curriculum Modifications Sciences for Approval)
    - 4 New Courses:
        - BIOC18H3: Looking Inside Cells: Current Methods in Cell Biology
        - BIOC30H3: From Genetic Codes to Fantastic Creatures
        - BIOD18H3: Practical Approaches in Infection and Immunity
        - BIOD36H3: Advanced Topics in Molecular Parasitology
    - 2 Course Modifications:
        - BIOB90H3: Integrative Research Poster Project
        - BIOC90H3: Integrative Multimedia Documentary Project
    - 1 Course Revision:
        - BIOA12H3: General Biology: Concepts and Processes of Biological Systems

- Department of Computer Sciences (Report: Undergraduate Minor Curriculum Modifications Sciences for Approval)
    - 2 Program Modifications:
        - SCMIN2295: MINOR PROGRAM IN APPLIED STATISTICS (SCIENCE)
        - SCMIN2289: MINOR PROGRAM IN STATISTICS (SCIENCE)
    - 1 New Course:
        - CSCD21H3: Blockchains and Decentralized Applications

FINANCIAL IMPLICATIONS:

There are no significant financial implications to the campus operating budget.

RECOMMENDATION:

Be It Resolved:

THAT the proposed Sciences undergraduate curriculum changes for the 2025-26 academic year, as detailed in the respective curriculum report, be approved.

DOCUMENTATION PROVIDED:

1. Report - Undergraduate Minor Curriculum Modifications Sciences for Approval

UNIVERSITY OF TORONTO

University of Toronto Scarborough
2024-25 Curriculum Cycle
Undergraduate Minor Curriculum Modifications Sciences for Approval
March 26, 2025

Biological Sciences (UTSC), Department of

4 New Courses

BIOC18H3: Looking Inside Cells: Current Methods in Cell Biology

Impact on Programs: This Proposal triggers modifications in the unit's programs(s)

Description:

Cell biology techniques are at the forefront of biotechnology and biomedical research. This lecture/laboratory course will build on fundamental cell biology topics to understand and apply current methods used in research labs. This course will provide students with practical experience in analyzing eukaryotic cell structure and function, with a strong focus on light and fluorescence microscopy.

Prerequisites:

BIOB10H3 and BIOB11H3 and BIOB12H3

Enrolment Limits:

48 - This course has a significant laboratory component and requires specialized equipment. Therefore, enrollment will be capped to provide appropriate infrastructure.

Notes:

Priority will be given to students in the following programs in Biological Sciences: Specialist Program in Molecular Biology and Biotechnology Co-op and Non-Co-op; Specialist in Human Biology Co-op and Non-Co-op; Major in Human Biology and Major in Molecular Biology, Immunology and Disease.

Delivery Method:

In Person

Methods of Assessment:

1. In class-critical thinking and reflection exercises (LOs 1 &2) Students will work in groups on problem-based and reflection exercises to enhance their understanding of lecture material.
2. Lab performance (LOs 3, 4 & 5)
Students will be assessed in their ability to properly navigate a wet lab using good laboratory practices. This will include students learning how to set up, record and analyze their experiments. Preparation of flowcharts will be required ahead of each practical. Preliminary analysis of data will be checked in the following class, this will also be applied to further assessments such as lab reports and oral presentations.
3. Written reports and oral presentations (LOs 5, 6 & 7)
Students will be assessed in their ability to generate, analyze, interpret and criticize their lab results to create clear and effective presentations.
4. In class midterm and final exam (all LOs)
Students will demonstrate their understanding of cell biology, techniques, their applications and limitations. Exams will be a combination of critical thinking and reasoning exercises integrating lecture and laboratory content.

Breadth Requirements:

Natural Sciences

CNC Allowed:

Y

Credit Value:

Fixed: 0.5

Learning Outcomes:

By the end of this course students are expected to fulfill the following learning outcomes (LOs):
1. Understand the structure, function and dynamics of cells and organelles in both animals and plants.
2. Compare and contrast common techniques used to study cell biology and understand their limitations.
3. Apply different staining, functional assays and probes to study cell structure and functions.
4. Execute and analyze the limitations of routine cell biology techniques such as cell culture and gene delivery.
5. Generate and analyze experimental data with the assistance of imaging software.
6. Evaluate primary research articles in cell biology to formulate hypotheses and to design experiments with appropriate controls.
7. Interpret and synthesize experimental data to create written reports and oral presentations.

- The proposed course is well aligned with the program learning outcomes of the Specialist Program in Molecular Biology and Biotechnology, Specialist in Human Biology; Major in Human Biology and Major in Molecular Biology, Immunology and Disease.

- This lecture/laboratory course presents students with the opportunity to gain hands-on training in current cell biology methods, which is not currently covered in our curriculum and will be critical for the development of job-ready skills.
- This course will provide students with a deep understanding of current experimental approaches discussed in many seminar courses that integrate cell biology methods (e.g., BIOD23H3, BIOD17H3, BIOD29H3 & BIOD20H3, BIOD26H3, among others).
- Ultimately, this course will enhance their preparation for 4th year seminar-based courses.

Course Experience:

None

Topics Covered:

- The role of cell structure and functions across different organisms and cell types.
- The use of cell biology methods across different fields of study i.e., immunology, microbiology, neurobiology, etc.
- The development and fundamentals of routine methods in cell biology, including tissue culture, gene delivery and expression.
- The fundamentals and limitations of imaging methods and analysis techniques.
- Different means to visualize cell components and their functions using immunolabeling, fluorescent dyes and probes.
- The most common approaches to study cell processes such us endocytosis, autophagy and cell death.
- The use of chemical and genetic tools for the manipulation of cellular functions and pathways.

Rationale:

This course is being proposed for the following reasons:

1. The focus of our current lab curriculum has been around molecular biology, mainly due to a lack of suitable infrastructure to carry out more advanced methods needed for cell biology studies. Thus, the current curriculum does not reflect the critical importance of cell biology techniques in biotechnology and biomedical research. Lab renovations completed in 2024, with the design and acquisition of appropriate equipment, allow us to mount this cell biology lecture/laboratory course to offer students hands on training in cell biology methods.
2. To help meet the demands of increased student enrollment in the Department of Biological Sciences, as well as to increase the cluster of SAMIH-related courses we already offer in cell biology, virology, microbiology, immunology, biochemistry and parasitology (such as BIOC10H3, BIOC17H3, BIOC39H3, BIOC20H3 and BIOC35H3, among others). By acquiring the technical knowledge and practical skills in this course, students will also be better prepared to fully comprehend studies involving cell biology techniques discussed in related D-level courses such as BIOD29H3, BIOD17H3, BIOD20H3, BIOD23H3 and BIOD26H3, among others. In addition, this course will help students tie together concepts in epigenetics and the field of stem cells taught in BIOD19H3 and BIOD24H3.
3. To support students with the knowledge base in cell biology that is needed to better prepare them for potential co-op positions. This is in line with our department moving all our programs towards offering co-op. Ultimately, this will better equip students with technical skills for biotechnology and biomedicine positions.
4. This course is being proposed in tandem and will be a pre-requisite for the D level course “Cell Biology methods in Infection and immunity”. These courses together will help students develop job-ready and research skills much needed in the study of health and disease. This is critical in an era when we need to be better equipped to respond to emergencies, such as the next pandemic.

Consultation:

DCC September 12, 2024
Registrar's office course code approval by Amber Lantsman and Naureen Nizam November 5, 2024
Registrar’s Office (Lindsey Taylor) February 28, 2025

Resources:

The Department of Biological Sciences has requested the Office of the Vice-Principal Academic & Dean (OVPD) support for the following:

1. 150 TA hours (2 TAs x 75 hours)
2. Ancillary fee of $10.71 will be added for the first year until we determine the cost of consumables for the course.
3. One teaching stipend (Fall 2025)
   - We will initially need a stipend as the course is being proposed to address a gap in our curriculum as it relates to cell biology, and we are now capable of mounting this prerequisite to BIOD18H3 as our lab renovations are completed.
   - This course does not currently have an instructor for the short term, but we would like to go ahead and offer it to our students as a capstone for Molecular Biology and Biotechnology Co-op and Non-Co-op and the Major in Molecular Biology, Immunology and Disease.
   - We are anticipating longer term; the course will be taught by Professor Terebiznik (currently Chair) or a teaching stream hire being requested as part of the SAMIH initiatives.

OVPD commits to provide the following:

1. For TA support, OVPD commits in principle to provide 150 TA hours (2 TAs x 75 hours) for Fall 2025. This commitment is one-time-only and made with the understanding that the Department’s overall FCE enrolment will increase, and that the departmental TA budget does not have sufficient funds to cover these course offerings.
2. For Ancillary Fees, Biology will need to submit their request through the annual ancillary fee update process.
3. For stipend needs, OVPD commits to provide one teaching stipend for Fall 2025. This is a one-time-only commitment, and it is expected that this course will be taught by a faculty member for the long term as indicated in the proposal.

Overlap with Existing Courses:

None

Part of a Program Proposal:

Specialist and Major Programs in Human Biology (Science) Co-op and Non-Co-op
Specialist Program in Integrative Biology Co-op and Non-Co-op
Specialist Program in Molecular Biology and Biotechnology (Science) Co-op and Non-Co-op
Major Program in Molecular Biology, Immunology and Disease (Science) Co-op and Non-Co-op
The course will be listed in the above programs as options in a bin to provide students with greater flexibility and guidelines for their timetables and program completion.

Estimated Enrolment:

48

Instructor:

Professor M Terebiznik

Proposal Status:

Under Review

BIOC30H3: From Genetic Codes to Fantastic Creatures

Impact on Programs: This Proposal triggers modifications in the unit's programs(s)

Description:

In this interdisciplinary course, students will be introduced to strategies used by organisms – from microscopic bugs to plants and animals- to grow into the correct shape and size to complete their life cycle. The course will highlight molecular mechanisms controlling developmental processes common to all life forms. Within this course, students will integrate evidence and tools from across biology to advance the student understanding of how this knowledge can be critical in improving and advancing human health and well-being.

Prerequisites:

BIOB10H3 and BIOB11H3

Enrolment Limits:

50

Delivery Method:

In Person

Methods of Assessment:

• Take home assignments- 30%- several scaffolded assignments including incorporation of class presentations, written reports and computational analysis that will support the understanding of concepts discussed in this course midterm (LO 2, 3, 5, 6, 7,8)
• mid-term -short answer and data analysis 30% (LO 1,2,3,4 5,7)
• Final exam- 40% short answer data analysis and application-based questions (LO 1,2,3,4,5,7)

Breadth Requirements:

Natural Sciences

CNC Allowed:

Y

Credit Value:

Fixed: 0.5

Learning Outcomes:

By the end of the course, students will:
1. Understand and identify important biological phenomena from across multiple organisms.
2. Understand and apply advanced molecular biology, genomics, genetics, development and evolutionary biology techniques to understand how organism develop and maintain final shape
3. Interconnect the concepts introduced to students in other first and second-year courses and apply them to problems in human health, agriculture, and biotechnology.
4. Understand and evaluate the importance of studying model organisms.
5. Evaluate information about a biological phenomenon and identify and evaluate the limits of knowledge.
6. Create hypotheses, identify and describe research strategies to test these hypotheses within the fields of genetics, gene regulation, evolution and developmental biology.
7. Analyze and interpret experimental data describing biological phenomena.
8. Develop Communication on critical thinking skills through reports, analysis, and interpretation of studies of biological phenomena.
These learning outcomes support the program learning outcomes incorporated into the major department Program learning outcomes that are shared by programs in Biological Sciences

Topics Covered:

• Evolution and development in model organisms from prokaryotes and eukaryotes. This course will highlight examples of models from across the various Kingdoms
• How representative model organisms Control development using cell signaling and gene regulation.
• Discuss of conserved biological phenomenon across model organisms
• The role environment plays in control of gene expression and development

Rationale:

This C-level course is being proposed to expand the courses that provide students with small learning environments to enhance the development of knowledge integration from multiple model organisms and disciplines an area that is not explored in detail in the existing C-level courses taught in the department critical to students understanding on the role model organisms play in knowledge acquisition.
The key contributions of this course to the curriculum:
1. Provide a small third year course experience that allows a more in-depth approach to enhancing the understanding of the role of data collection, data interpretation and limitations of knowledge. Most of our C level courses have enrollments well above 100 and often above 300.
2. Address how studies spanning model organisms and biological disciplines are essential for the discovery and validation of scientific knowledge
3. Apply interdisciplinary approaches and analyses to explain how proteins and RNAs encoded by genes program cells and shape tissues, tissue functions, and organisms ranging from microbes and plants to mammals.

This proposed course will help students meet University degree level expectations and reinforce declared learning outcomes of multiple programs -
(i) Human Biology major and specialist,
(ii) Specialist in Molecular Biology and Biotechnology and major in Molecular Biology Immunology and disease, major in Plant Biology, Specialist in Integrative Biology and the Major in Biology.

Consultation:

DCC September 12, 2024
Course code approved by the Office of Registrar - Amber Lantsman and Naureen Nizam. June 3, 2024
Registrar's Office (Lindsey Taylor) February 28, 2025

Resources:

The Department of Biological Sciences has requested the Office of the Vice-Principal Academic & Dean OVPD support for 70 TA hours.

OVPD commits in principle to provide 70 TA hours for Fall 2025. This commitment is one-time-only and made with the understanding that the Department's overall FCE enrolment will increase, and that the departmental TA budget does not have sufficient funds to cover these course offerings.

Overlap with Existing Courses:
This proposed course will have some minor overlap with BIOC19 (Animal Developmental Biology) and BIOC15 (Genetics). However, BIOC19/15H3 are large enrolment courses that do not integrate multiple disciplines or information about model systems which is a major goal of this course and unique to the existing curriculum.

Part of a Program Proposal:
Specialist and Major Programs in Conservation and Biodiversity (Science) Co-op and Non-Co-op
Specialist and Major Programs in Human Biology (Science) Co-op and Non-Co-op
Specialist Program in Integrative Biology Co-op and Non-Co-op
Specialist Program in Molecular Biology and Biotechnology (Science) Co-op and Non-Co-op
Major Program in Molecular Biology, Immunology and Disease (Science) Co-op and Non-Co-op
Major Program in Plant Biology Co-op and Non-Co-op
The course will be listed in the above programs as options in a bin to provide students with greater flexibility and guidelines for their timetables and program completion.

Estimated Enrolment:
50

Instructor:
Professor Satyaki P. Rajavasireddy

Proposal Status:
Under Review

BIOD18H3: Practical Approaches in Infection and Immunity

Impact on Programs: This Proposal triggers modifications in the unit's programs(s)

Description:

Cell Biology methods are pivotal to study the molecular and cellular mechanisms of infection and immunity. This lecture/laboratory course will build on understanding the role of microbes in health and disease by analyzing how different microbe models interact with eukaryotic host cells. Techniques such as fluorescence microscopy, flow cytometry and immunoassays will unravel the fascinating world of host cell-microbe interactions. Students will also explore the use of model systems using primary research to support their understanding of these interactions.

Prerequisites:

BIOC17H3 and BIOC18H3

Enrolment Limits:

24 - This course will have a cap on enrollment as it will require significant laboratory support and equipment, along with much more in-depth analysis due to being a 4th year capstone course.

Recommended Preparation:

BIOC39H3

Notes:

Priority will be given to students in the Biological Sciences programs: Specialist Program in Molecular Biology and Biotechnology & Specialist program in Human Biology. As space permits, this course will be also opened to students in the Major program in Human Biology and Major program in Molecular Biology, Immunology, and Disease.

Delivery Method:

In Person

Methods of Assessment:

1. In class-critical thinking and reflection exercises (LOs 1, 2, 3 & 9)
   Students will work in groups on problem-based and reflection exercises to enhance and demonstrate their understanding of lecture material.
2. Lab performance (LOs 4, 5, 6 & 7)
   Students will be required to understand and apply good practices in a CL2 lab and keep high quality records of their experiments throughout all the practicals. This will include preparation of flowcharts and preliminary analysis of data collected. This analysis will also be applied to further assessments such as lab reports and oral presentations.
3. Written reports and oral presentations (LOs 6, 7, 8 & 9)
   Students will be assessed in their ability to generate, analyze, interpret and critique the relevance of their lab results to create clear and effective presentations. Every major lab module will involve students writing a report and presenting.
4. In-class group debate and discussion (LOs 1, 2, 3 and 9)
   One group debate will be held where students will represent different “personas” to debate one trending and/or controversial scientific topic (e.g., gain of function mutations) related to class material.
   Class discussions will involve student interpretation and critique of data from primary literature. Such discussions will require students to demonstrate their understanding of the suitability and feasibility of specific methods for answering research questions. (e.g., proper use of in vitro and in vivo models in research studies).
5. Final exam (all LOs)
   The final exam will require students to integrate concepts presented in this course and demonstrate their understanding and application of cell biology methods in infection and immunity. The exam will be a combination of critical thinking and reasoning exercises integrating lecture and laboratory content.

Breadth Requirements:

Natural Sciences

CNC Allowed:

Y

Credit Value:

Fixed: 0.5

Learning Outcomes:

By the end of this course students are expected to achieve the following learning outcomes (LOs):

1. Describe and discuss the mechanisms by which microbe models interact with their host cells and the role of these interactions in health and disease.
2. Compare and contrast cell biology techniques applied to the study of host cell-microbe interactions using bacteria, viruses, and fungi.
3. Distinguish the advantages and limitations of in-vitro and in-vivo models in infection and immunity studies.
4. Apply cell culture and microbiology skills to perform infection assays in eukaryotic cells.
5. Understand and apply the best biosafety practices in Containment Level 2 labs (CL2).
6. Implement microscopy, flow cytometry and immunoassays to assess infection, microbe manipulation of cell pathways and the consequent cell immune responses.
7. Create experimental designs based on proposed hypothesis.
8. Generate and interpret imaging and flow cytometry data using appropriate software.
9. Interpret, synthesize and critique experimental data to create written reports and oral presentations.
10. Evaluate and critique scientific literature in microbe-host cell interactions.

The proposed course is well aligned with the program learning outcomes of the Specialist Program in Molecular Biology and Biotechnology and the Specialist program in Human Biology. It is also well aligned with the program learning outcomes of the Major program in Human Biology and Major program in Molecular Biology, Immunology, and Disease.

At present our course curriculum is lacking in courses that provide the skillset related to cell biology methods. Such training is critical to support students in the development of niche skills for future positions in research and academia. This fourth-year course capstone course builds on the third-year course (Looking Inside Cells: Current Methods in Cell Biology) that is being proposed in tandem, to address this need.

Course Experience:

None

Topics Covered:

- Procedures necessary to carry out more complex experiments in a more advanced biosafety level laboratory.
- The role of microbe-host cell interactions in health and disease.
- The cell biology behind host-cell and microbe interactions.
- The development of model organisms for both microbes and host cells as well as their use in the field of infection and immunity.
- The use of microscopy techniques to study microbe's manipulation of host cells, and the consequent cell responses and how are they are applied in a laboratory.
- The fundamentals and application of flow cytometry and immunoassays in the study of infection and immunity.
- Design of relevant experimental strategies utilized to study microbe-host cells interactions.
- Relevant trending and controversial topics related to the field.

Rationale:

This course is being proposed for the following reasons:

1. Our current curriculum did not offer any lecture/laboratory course in cell biology techniques applied to infection and immunity at UTSC. This was also not available at the St. George or Mississauga campuses. The major impetus for the development of new labs was to expand our ability to provide more advanced laboratory courses. The renovations of our labs in 2024 have allowed us to address this and provide courses that are also critical for the health sciences world and the SAMIH initiative.
2. This course will expand the option of practical courses at the D level, as we currently offer only 1 (BIOD21H3). This will help meet the demands of increased student enrollment in the Department of Biological Science and increase access to relevant skill-developing courses.
3. This course is being proposed in tandem with the C-level course, "Looking Inside Cells: Current Methods in Cell Biology". These courses together will provide students with skillsets that will help develop job-ready and research skills much needed in the study of microbes [e.g., bacteria, viruses, etc.), immunology and biomedicine. This is critical for answering questions about health and diseases in an era where we need to be better equipped to plan and respond to pandemic scenarios.

This course will serve students in Biological Sciences, especially those in the following programs: Specialist Program in Molecular Biology and Biotechnology, and Specialist program in Human Biology. If availability permits, this course will also serve students in the Major in Human Biology and Major in Molecular Biology Immunology and Disease programs.

Consultation:

DCC September 12, 2024
Course Code Approved by the Registrar's Office by Amber Lantsman and Naureen Nizam on November 5, 2024
Registrar's Office (Lindsey Taylor) February 28, 2025
Registrar's Office (Lindsey Taylor) February 28, 2025

Resources:

The Department of Biological Sciences has requested the Office of the Vice-Principal Academic & Dean (OVPD) to provide support for the following:

1. For an enrolment of 24, 1 TA will be required for 75 hours.
2. Ancillary fee of $10.71 will be added for the first year until we determine the cost of consumables for the course.
3. One teaching stipend (Fall 2025)
    - We will also initially need a stipend as the course is being proposed to address a gap in our curriculum as it relates to cell biology, and we are now capable of mounting this companion to BIOC18H3 as our lab renovations are completed.
    - - This course does not currently have an instructor for the short term, but we would like to go ahead and offer it to our students as a capstone for Molecular Biology and Biotechnology Co-op and Non-Co-op and the Major in Molecular Biology, Immunology and Disease. We are anticipating that in the longer term the course will be taught by Professor Terebiznik (currently Chair) or a teaching stream hire being requested as part of the SAMIH initiatives.

OVPD commits in principle to provide support to the following:

1. For TA support, OVPD commits 75 TA hours for Fall 2025. This commitment is one-time-only and made with the understanding that the Department's overall FCE enrolment will increase, and that the departmental TA budget does not have sufficient funds to cover these course offerings.
2. For Ancillary fee, Biology will need to submit their request through annual ancillary fee update process.
3. For stipend needs, OVPD commits to provide one teaching stipend for Fall 2025. This is a one-time-only commitment, and it is expected that this course will be taught by a faculty member for the long term as indicated in the proposal.

Overlap with Existing Courses:

There is no overlap with courses at UTSC and no overlap with any course at the St. George or Mississauga campuses that specifically address these topics in a lecture/lab setting. Therefore, to our knowledge there is no overlap of course content with other courses.

Part of a Program Proposal:

Specialist and Major Programs in Conservation and Biodiversity (Science) Co-op and Non-Co-op
Specialist and Major Programs in Human Biology (Science) Co-op and Non-Co-op
Specialist Program in Integrative Biology Co-op and Non-Co-op
Specialist Program in Molecular Biology and Biotechnology (Science) Co-op and Non-Co-op
Major Program in Molecular Biology, Immunology and Disease (Science) Co-op and Non-Co-op
Major Program in Plant Biology Co-op and Non-Co-op
The course will be listed in the above programs as options in a bin to provide students with greater flexibility and guidelines for their timetables and program completion.

Estimated Enrolment:

24

Instructor:

Professor M Terebiznik

Proposal Status:

Under Review

BIOD36H3: Advanced Topics in Molecular Parasitology

Impact on Programs: This Proposal triggers modifications in the unit's programs(s)

Description:

This is a lecture and seminar course that will discuss advanced topics in the molecular study of parasites. The course will cover eukaryotic parasites (helminths, arthropods, and protozoans) that affect both human and plant hosts. The material will focus on the study of host-parasite interactions at the molecular level with a focus on current literature.

Prerequisites:

BIOC35H3

Enrolment Limits:

35

Delivery Method:

In Person

Methods of Assessment:

Students will be assessed on the following criteria:

1. The largest assignment will be a group-based journal club assignment. Each student as part of a group, will be required once during the course to lead a class journal club on a paper of their choice from the literature. The assignment will be scaffolded to both structure the work and provide feedback on progress as the group selects literature, digests and critiques the paper, finds relevant literature to help explain the findings and research methodology, prepares a presentation on the topic for the class, and finally leads a class discussion. (Learning outcomes 1-5)
2. Individual assignments – including the production of an infographic based on the course content, and a response to a parasite topic as covered in the popular media, and critiques or reflections on literature covered. (Learning outcomes 1, 3, 4 and 5)
3. Final exam – covering both the material presented in class and an evaluation of a journal article that was not covered in class. (Learning outcomes 1-5)

Breadth Requirements:

Natural Sciences

CNC Allowed:

Y

Credit Value:

Fixed: 0.5

Learning Outcomes:

The course is designed to enhance student knowledge in the area of parasitology to prepare students for professional school, graduate school and careers that require related knowledge enhancing proficiency in analysis of primary literature and becoming familiar with the common concepts and techniques used in modern molecular parasitology and expands on the knowledge acquired in BIOC25 Principles in Parasitology Learning outcomes include:

1. Increased understanding of parasitological terminology, classification, the host response to infection, and parasite evolved strategies for infection and immune evasion.
2. Acquire proficiency in primary literature search on selected topics.
3. Acquire the ability to critically analyze the literature including being able to identify key techniques, identify proper controls, determine whether conclusions are properly supported, and to place the findings in the body of literature.
4. Refine science communication skills including writing for both general and scientific audiences, group discussions of scientific topics, and formal presentations.
5. Critically evaluate the effect of parasitic diseases on societies and development and appreciate the research goals and priorities within that framework. These learning outcomes support department Program leaning outcomes highlighted in a number of programs

Course Experience:

None

Topics Covered:

• Parasite biology and classification – brief overview of basics, including review of concepts from BIOC35H3
• Conducting a literature search, how to read and review primary scientific papers
• Cell and molecular biology, genetics, and genomics of parasites
• Current drug treatments and the evolution of resistance

Rationale:

For several years we have offered BIOC35H3 – Principles of Parasitology, which serves as a general introduction to the study of parasites. That course has proven very popular, and the students generally become quite engaged with the material, which leads many of them to request more in-depth courses on the topic. This course is designed to provide the missing capstone course for students who wish to explore molecular parasitology more deeply. This course will also broaden the fourth-year course offerings in areas of interest for students interested in life or health sciences, medical training, cell and molecular biology, and plant biology. The course will also support the development of programming around SAMIH and will provide another high-level course for students interested in health and disease or public health studies.

Consultation:

DCC September 12, 2024
Registrar's office course code approval by Amber and Naureen November 5, 2024
Registrar's Office (Lindsey Taylor) February 28, 2025
Registrar's Office (Lindsey Taylor) February 28, 2025

Resources:

The Department of Biological Sciences has requested that the Office of the Vice-Principal Academic & Dean (OVPD) provide support to add 35 TA hours to our base budget.

OVPD commits in principle to provide 35 TA hours for Fall 2025. This commitment is one-time only and made with the understanding that the Department's overall FCE enrolment will increase, and that the departmental TA budget does not have sufficient funds to cover these course offerings.

Overlap with Existing Courses:

None

Part of a Program Proposal:

Specialist and Major Programs in Human Biology (Science) Co-op and Non-Co-op
Specialist Program in Integrative Biology Co-op and Non-Co-op
Specialist Program in Molecular Biology and Biotechnology (Science) Co-op and Non-Co-op
Major Program in Molecular Biology, Immunology and Disease (Science) Co-op and Non-Co-op
Major Program in Plant Biology Co-op and Non-Co-op
The course will be listed in the above programs as options in a bin to provide students with greater flexibility and guidelines for their timetables and program completion.

Estimated Enrolment:

35

Instructor:

Professor Adam Mott

Proposal Status:

Under Review

2 Course Modifications

BIOB90H3: Integrative Research Poster Project

Description:

In this course, students will develop scientific communication skills by working collaboratively with peers to create an informative scientific poster that will be presented in a poster session modelled on those held at most major scientific conferences. Successful posters will engage the interest of the audience in the topic, clearly and concisely outline understanding gained from the primary literature and discuss how understanding is enhanced by integrating knowledge.

Note~~s~~: ~~1.~~ Students in all Specialist/Specialist Co-op and Major programs in Biological Sciences are required to complete BIOB90H3 prior to graduation. ~~In order to enroll in BIOB90H3, students must be concurrently enroled in at least one of the corequisites listed.~~
~~2. No specific grade will be assigned to BIOB90H3 on transcripts; instead, the grade assigned to work in BIOB90H3 will constitute 10% of the final grade in each of the corequisite courses that the students are concurrently enrolled in.~~
~~3. Students must receive a grade of 50% or higher for work in BIOB90H3 in order to fulfill this graduation requirement.~~

Prerequisites:

~~Restricted to students in the Specialist / Specialist Co-op programs and Major Programs in Biological Sciences.~~

Corequisites:

~~Concurrently enrolled in at least one of the following: BIOB10H3, BIOB11H3, BIOB34H3, BIOB38H3, BIOB50H3 or BIOB51H3~~

Methods of Assessment:

~~The grade assigned to work in BIOB90H3 will constitute 10% of the final grade in each of the co-requisite courses (please see co-requisites above) that the students are concurrently enrolled in during that semester (e.g., a student enrolled in both BIOB10H3 and BIOB50H3 in the Fall will have their BIOB90H3 grade count towards 10% of their final grade in BIOB10H3 and in BIOB50H3). Students must receive a grade of 50% or higher for work in BIOB90H3 in order to fulfill this graduation requirement.~~ ¶
The grade for BIOB90H3 will be based on the final poster presentation in Week 12 of each semester. Students will be required to complete multiple tasks, including four mini-deadlines, during the semester leading up to the poster presentation day. ~~A penalty of 2% (of the final grade) will be applied for each mini-deadline that is not completed on time.~~ ¶
The attached syllabus style information document contains a grading rubric that provides a detailed breakdown of the final assessment, which aligns with each of the learning outcomes for BIOB90H3.

Rationale:

These modifications aim to provide clarity by refining the notes, removing prerequisites and corequisites, and revising the methods of assessment, accordingly, creating a more streamlined and transparent approach for students. This will simplify students' understanding of the role of BIOB90H3 in fulfilling program requirements.

Consultation:

DCC September 12, 2024
Registrar's Office (Lindsey Taylor) February 28, 2025
Registrar's Office (Lindsey Taylor) February 28, 2025

Resources:

The Department of Biological Sciences has requested support from the Office of the Vice-Principal Academic & Dean (OVPD) for 20 additional TA hours, bringing the total to 70. This request is due to program enrolment increases, driven by first year enrolment increasing by 500 students and SAMIH initiatives. This course is required for all Biological Sciences program students to convocate. We are not able to cover this increase with our existing budget.

OVPD commits in principle to provide 20 additional TA hours for Fall 2025. This commitment is one-time only and made with the understanding that the Department's overall FCE enrolment will increase, and that the departmental TA budget does not have sufficient funds to cover these course offerings.

Estimated Enrolment:
300

Instructor:
Professor Jason Brown

Proposal Status:
Under Review

BIOC90H3: Integrative Multimedia Documentary Project

Description:

In this course, students will produce engaging, documentary-style multimedia narratives that relay scientific evidence on a topic of interest to a lay audience. In order to create their documentaries, students will distill research findings reported in the primary literature and integrate knowledge from multiple fields of biology
Notes: ~~1.~~Students in all Specialists/Specialist Co-op and Major programs in Biological Sciences are required to complete BIOC90H3 prior to graduation.~~ In order to enroll in BIOC90H3, students must be enrolled in at least one of the following corequisite courses listed.~~
~~2. No specific grade will be assigned to BIOC90H3 on transcripts; instead, the grade assigned to work in BIOC90H3 will constitute 10% of the final grade in one of the corequisite courses that the students are concurrently enrolled in.~~
~~3. Students must receive a grade of 50% or higher for work in BIOC90H3 in order to fulfill this graduation requirement.~~

Prerequisites:

BIOB90H3~~. Restricted to students in the Specialist/Specialist Co-op programs and Major Programs in Biological Sciences.~~

Corequisites:

~~Concurrently enrolled in at least one of the following: BIOC12H3, BIOC14H3, BIOC20H3, BIOC32H3, BIOC34H3, BIOC39H3, BIOC40H3, BIOC54H3, or BIOC61H3.~~

Methods of Assessment:

~~BIOC90H3 constitutes 10% of the final grade for students in one of the co-requisite courses (please see co-requisites above) that the students are concurrently enrolled in. If students are enrolled in multiple C-level co-requisite courses, they would choose one C-level course to which the 10% value would be assigned. Students must receive a grade of 50% or higher for work in BIOC90H3 in order to fulfill this graduation requirement.~~ ¶
The grade for BIOC90H3 will be based on the final video documentary submitted in Week 11 as well as a series of deliverables over the course of the semester. A list of all deliverables and their grade values is provided below. ¶

Deliverables: ¶
1. Team planning worksheet, including details on how the group members will communicate and schedule meetings outside of class time. Value = 10% of assignment grade. ¶
Due date: Sunday at the beginning of Week 4. ¶
2. Detailed team plan for their assignment, including topic selection and a draft title.
Due date: Sunday at the beginning of Week 5. Value = 10% of assignment grade. ¶
3. Video outlines that include draft script or storyboard, visuals, interview plans and a timeline. Read a short guide on citing video and images; complete Quercus quiz. ¶
Due date: Monday after reading week. Value = 20% of assignment grade. ¶
4. Final videos and final scripts are uploaded to relevant submission links on Quercus. ¶
Due date: Sunday at the beginning of Week 12. Value = 50% of assignment grade. ¶
5. If the final video includes interview clips or clips of people, interview consent forms must be handed in along with the final video and script in Week 12. If this is not provided, the final video will not be graded. The penalty is hence 50% of assignment grade. ¶
6. Group work assessment must be turned in at the same time as final videos and scripts via links on Quercus. Value =10% of assignment grade.

Rationale:

These modifications aim to provide clarity by refining the notes, removing prerequisites and corequisites, and revising the methods of assessment, accordingly, creating a more streamlined and transparent approach for students. This will simplify students' understanding of the role of BIOC90H3 in fulfilling program requirements.

Consultation:

DCC September 12, 2024
Registrar's Office (Lindsey Taylor) February 28, 2025

Resources:

No additional resources required beyond the current TA hours already allocated, which will be covered by the department's existing budget.

Proposal Status:
Under Review

1 Course Revision

BIOA12H3: General Biology: Concepts and Processes of Biological Systems

Note:

~~(1)~~ 1. Students enrolled in Life Science degree posts may not take this course for credit towards any program.
~~(2)~~ 2. Priority will be given to students ~~planning to major or specialist in Psychology.~~ who do not have Grade 12 Biology completed and wish to pursue programs in Psychology, Mental Health Studies or certain programs in Physical & Environmental Sciences that require high school biology. Students across all disciplines will be admitted if space permits.
~~(3)~~ 3. Students who have passed BIOA12H3 will be permitted to take BIOA01H3 and BIOA02H3.

~~(4)~~ 4. Please refer to the requirements of your intended program to determine whether this course is appropriate for your degree. Specifically, students intending to join a program in Health and Society should enroll in BIOA11H3 instead.

Rationale:

As discussed in AAC Cycle 4, revisions to this program are required to update the Notes section as follows:

1. Formatting Update: Brackets around numbered bullet points were removed to ensure AODA compliance.
2. Editing the Note 2 section per Department of Psychology request to include Mental Health Studies and DPES related programs.

Consultation:

Dept. of Health and Society: February 26, 2025 (on keeping exclusion of grade 12 Biology in and new note.)
Dept. of Psychology February 26, 2025 (on modifying the note.)
Biology Chair Approval – March 3, 2025

Proposal Status:

Under Review

Computer & Mathematical Sciences (UTSC), Department of

2 Program Modifications

SCMIN2295: MINOR PROGRAM IN APPLIED STATISTICS (SCIENCE)

Enrolment Requirements:

Enrolment in the Minor in Applied Statistics is limited.

Students may apply to the program after completing [STAB27H3 or PSYC08H3 or MGEB12H3 or STA221H1].

Students who meet the following requirements will be admitted to the Minor in Applied Statistics POSt:

- A cumulative grade point average (CGPA) of at least 2.7 over [STAB22H3 or PSYB07H3 or MGEB11H3 or STA220H1] and [STAB27H3 or PSYC08H3 or MGEB12H3 or STA221H1]
- An overall CGPA of 2.50 at the time of application

Application for admission will be made to the Office of the Registrar through ACORN, during the Limited Program application periods. For more information on applying to limited enrolment programs, please visit the Office of the Registrar

For more information about the admission requirements, please visit the following CMS webpage.

Description of Proposed Changes:

We propose to:

1. Convert the program from unlimited enrolment to limited enrolment.
2. Introduce enrolment requirements based on students' performance in the program's introductory courses and on their overall academic performance.

Rationale:

1. Due to its unlimited enrolment and popularity, the program has increased dramatically in size: from 169 students in 2016-17 to 434 in 2023-24. The department is struggling to properly serve the program: there are long waitlists and a need for multiple sections in upper-level courses, for which CMS does not have sufficient resources.
2. Many students who self-enrol in the program do not have the necessary preparation and aptitude to succeed in the upper-level quantitative course requirements. The proposed enrolment requirements will ensure that students joining the program are likely to succeed. Based on historical data, the two courses used and overall CGPA are good predictors of upper-level course marks.

Impact:

The proposed enrolment controls will limit the number of new students joining the program, which will help to gradually bring the total program enrolment within the department's capacity.

Consultations:

Approved by DCC on September 10, 2024
OVPD and RO Consultations: December 16, 2024
Registrar's Office (Lindsey Taylor) February 28, 2025

Resource Implications:

The proposed enrolment controls will not require any additional resources. They will ensure that the number of students in the program are within the department's capacity. The program supervisor will select the students to be admitted to the program during the two subject POSt application periods (April & August), using the subject POSt system.

Proposal Status:

Under Review

SCMIN2289: MINOR PROGRAM IN STATISTICS (SCIENCE)

Enrolment Requirements:

Enrolment in the Minor in Statistics is limited.

Students may apply to the program after completing [CSCA08H3 or CSCA20H3] and [MATA22H3 or MATA23H3] and [MATA36H3 or MATA37H3].

Students will be admitted to the program based on their cumulative grade point average (cGPA) over the courses: [CSCA08H3 or CSCA20H3] and [MATA22H3 or MATA23H3] and [MATA36H3 or MATA37H3]. The required cGPA will change each year depending on available spaces and the pool of eligible applicants.

Application for admission will be made to the Office of the Registrar through ACORN, during the Limited Program application periods. For more information on applying to limited enrolment programs, please visit the Office of the Registrar

For more information about the admission requirements, please visit the following CMS webpage.

Description of Proposed Changes:

1. Convert the program from unlimited enrolment to limited enrolment.
2. Introduce enrolment requirements based on students' performance in the program's introductory courses and on their overall academic performance.

Rationale:

1. Due to its unlimited enrolment and popularity, the program has increased dramatically in size: from 111 students in 2016-17 to 384 in 2023-24. The department is struggling to properly serve the program: there are long waitlists and a need for multiple sections in upper-level courses, for which CMS does not have sufficient resources.
2. Many students who self-enrol in the program do not have the necessary preparation and aptitude to succeed in the upper-level quantitative course requirements. The proposed enrolment requirements will ensure that students joining the program are likely to succeed.

Impact:

The proposed enrolment controls will limit the number of new students joining the program, which will help to gradually bring the total program enrolment within the department's capacity.

Consultations:

Approved by DCC on September 10, 2024
OVPD and RO Consultations: December 16, 2024
Registrar's Office (Lindsey Taylor) February 28, 2025

Resource Implications:

None

Proposal Status:

Under Review

1 New Course

CSCD21H3: Blockchains and Decentralized Applications

Description:

The course is meant to expose students to Web3 by covering the technical aspects of blockchain technologies and smart contracts. The course will have three learning outcomes. First, the students will learn how to build blockchains based on different consensus. Secondly, they will learn how to develop decentralized applications using smart contracts. Finally, they will learn about the current challenges of blockchain technologies such as scalability, interoperability and privacy.

Prerequisites:

CSCC09H3

Methods of Assessment:

Assignments: 30% (2 assignments, 15% each)
Project: 40%
Participation: 5%
Final Exam: 25%

Breadth Requirements:

Quantitative Reasoning

CNC Allowed:

Y

Credit Value:

Fixed: 0.5

Learning Outcomes:

Upon successful completion of this course, students will be able to:
- explain how blockchain work internally
- explain different consensus mechanisms such as Proof of Authority, Proof of Work and Proof of Stake - compare the different blockchain designs
- write and debug blockchain code
- write and debug smart contract applications on EVM blockchains
- understand the current challenges of blockchain technologies such as scalability, interoperability and privacy

Course Experience:

None

Topics Covered:

- The blockchain crypto toolbox: hashing, Merkle trees, public-key cryptography, digital signature and key derivation
- P2P networks and the byzantine general problem
- Blockchain basics
- Consensus: Proof of Authority, Proof of Work and Proof of Stake
- Hierarchical Deterministic (HD) Wallet
- Bitcoin Internals
- Concept of Decentralized Applications
- Ethereum Smart Contracts
- Oracles and Bridges
- Scalability
- Blockchain Interoperability
- Privacy (including Zero-knowledge proofs)

Rationale:

A course on blockchain and decentralized applications is important today because it:
- Offers career opportunities in a rapidly growing field
- Provides a deeper understanding of emerging technology
- Enables individuals to navigate the changing economic and digital landscape
- Empowers people with knowledge about decentralization and security
- Prepares individuals for potential disruption in various industries

NOTE: This course has been offered twice already (Fall 2022 and 2023) as a topic in course in computer science (CSCD71H3). The course website is here: https://thierrysans.me/CSCD71/

Consultation:

Proposal approved by DCC: September 10, 2024
Course code approved by Office of the Registrar (Amber Lantsman): September 28, 2024.
Registrar's Office (Lindsey Taylor) February 28, 2025

Resources:

None

Overlap with Existing Courses:

Some topics such as cryptography are covered in MATD16 Coding Theory and Cryptography and in CSCD27 Computer and Network Security.

Programs of Study for Which This Course Might be Suitable:

Computer Science

Instructor:

Thierry Sans

Proposal Status:

Under Review