UNIVERSITY OF TORONTO SCARBOROUGH

OFFICE OF THE CAMPUS COUNCIL

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

TO: UTSC Academic Affairs Committee

SPONSOR: William Gough, Vice-Principal Academic and Dean
CONTACT INFO: 416-208-7027, vpdean@utsc.utoronto.ca

PRESENTER: Mark Schmuckler, Vice-Dean Undergraduate
CONTACT INFO: 416-208-2978, vdundergrad@utsc.utoronto.ca

DATE: March 20, 2019 for March 27, 2019

AGENDA ITEM: 8

ITEM IDENTIFICATION:

Minor Undergraduate Modifications- Science academic unit

JURISDICTIONAL INFORMATION:

University of Toronto Scarborough 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 Committee 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*).

GOVERNANCE PATH:

1. **UTSC Academic Affairs Committee [For Approval] (March 27, 2019)**

PREVIOUS ACTION TAKEN:

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

HIGHLIGHTS:

This package includes minor modifications to undergraduate curriculum, submitted by the Sciences academic units identified below, which require governance approval. Minor modifications to curriculum are understood as those that do not have a significant impact on program or course learning outcomes. They require governance approval when they modestly change the nature of a program or course.

- The Department of Biological Sciences (Report: Department of Biological Sciences)
    - 1 program change
        - Specialist (Co-operative) in Molecular Biology and Biotechnology
    - 3 new courses
        - BIOC35H3
        - BIOD55H3
        - BIOD63H3
    - 1 course change
        - BIOC15H3 – mode of delivery

FINANCIAL IMPLICATIONS:

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

RECOMMENDATION:

Be It Resolved,

THAT the minor modifications to undergraduate programs, submitted by UTSC undergraduate Sciences academic units, as described in Undergraduate Minor Curriculum Modifications for Approval, Report: Department of Biological Sciences, dated March 12, 2019, and recommended by the Vice-Principal Academic and Dean, William Gough, be approved effective Fall 2019 for the academic year 2019-20.

DOCUMENTATION PROVIDED:

1. 2019-20 Curriculum Cycle: Undergraduate Minor Curriculum Modifications for Approval Report: Department of Biological Sciences, dated March 12, 2019.

UNIVERSITY OF TORONTO SCARBOROUGH

2019-20 Curriculum Cycle
Undergraduate Minor Curriculum Modifications for Approval
Report: Department of Biological Sciences

March 12, 2019

Biological Sciences (UTSC), Department of

1 Minor Program Modification:

SPECIALIST (CO-OPERATIVE) PROGRAM IN MOLECULAR BIOLOGY AND BIOTECHNOLOGY (SCIENCE)

Enrolment Requirements:
The minimum qualifications for entry are 5.0 credits, which must include the following courses: ~~including~~ BIOA01H3, BIOA02H3, CHMA10H3, CHMA11H3,[~~(~~MATA20H3~~)~~ ~~and~~ MATA21H3~~)]~~ ~~or~~ [MATA29H3 and MATA35H3], or [MATA30H3 and MATA36H3]], [PHYA10H3 or PHYA11H3] ; and~~,~~ ~~plus~~ a cumulative GPA of ~~or~~ at least 2.75.

Current Co-op Students:

Students admitted to a Co-op Degree Program ~~POSt~~ in their first year of study (i.e. Life Sciences Co-op) may ~~must~~ request this ~~a~~ Co-op Subject POSt on ACORN only after ~~upon~~ completion of 5.0 ~~4.0~~ credits (this requirement is unique to the Specialist Co-op program in Molecular Biology and Biotechnology) ; in addition, students must meet the minimum enrolment requirements ~~qualifications~~ for entry as noted above for this program.

Prospective Co-op Students:

In addition to requesting the program on ACORN (and meeting the minimum enrolment requirements above), prospective Co-op students(i.e., those not yet admitted to a Co-op Degree POSt)must also submit a Co-op Supplementary Application Form, which is available from the Arts & Science Co-op Office (http://www.utsc.utoronto.ca/askcoop/future-co-op-students). Submission deadlines follow the Limited Enrolment Program Application Deadlines set by the Office of the Registrar each year. Failure to submit both the Supplementary Application Form and the program request on ACORN will result in that student's application not being considered.

Completion Requirements:

Program Requirements
The program requires students to complete a total of 14.5 credits.

First Year
1. ~~1.~~ 1.0 Credit of Introductory Biology Courses
BIOA01H3 Life on Earth: Unifying Principles
BIOA02H3 Life on Earth: Form, Function and Interactions

2. 1.0 Credit of Introductory Chemistry Courses

CHMA10H3 Introductory Chemistry I: Structure and Bonding
CHMA11H3 Introductory Chemistry I: Reactions and Mechanisms

3. 1.0 Credit in Mathematics
Choose from:
[MATA29H3 Calculus I for the Life Sciences and MATA35H3 Calculus II for Biological Sciences] or [MATA30H3 Calculus I for Physical Sciences and MATA36H3 Calculus II for Physical Sciences]

4. 1.0 Credit in Physics
[PHYA10H3 Physics I for the Physical Sciences or PHYA11H3 Physics I for the Life Sciences]
[PHYA21H3 Physics II for the Physical Sciences or PHYA22H3 Physics II for the Life Sciences]

5. 0.5 Credit in Statistics
Choose from:
STAB22H3 Statistics I (this course could also be taken in second year)
PSYB07H3 Data Analysis in Psychology (this course could also be taken in second year)

Second Year
6. 3.0 Credits of Biology Core Courses
BIOB10H3 Cell Biology
BIOB11H3 Molecular Aspects of Cellular and Genetic Processes
~~[~~BIOB34H3 Animal ~~Physiology or (BIOB30H3) Mammalian~~ Physiology ~~I]~~
[BIOB38H3 Plants and Society or (BIOB31H3) Plant Physiology]
BIOB50H3 Ecology
BIOB51H3 Evolutionary Biology

7. 0.5 Credit of Biology Core Labs
BIOB12H3 Cell and Molecular Biology Laboratory

8. 1.0 Credit of Organic Chemistry Courses
CHMB41H3 Organic Chemistry I
CHMB42H3 Organic Chemistry II

Computer Science might be taken in this year and will enhance Co-op placement options.

Third Year
9. 3.5 Credits of Biology C-level Courses
BIOC12H3 Biochemistry I: Proteins and Enzymes
BIOC13H3 Biochemistry II: Bioenergetics and Metabolism
BIOC15H3 Genetics
BIOC17H3 Microbiology
BIOC20H3 Principles of Virology
BIOC23H3 Practical Approaches to Biochemistry
BIOC39H3 Immunology (can be completed in third or fourth year)

10. 0.5 Credit in Computer Science
Choose from:
CSCA08H3 Introduction to Computer Science I (most appropriate course for computer science students)
CSCA20H3 Introduction to Programming (most appropriate course for non-computer science students)
PSCB57H3 Introduction to Scientific Computing

Third/Fourth Year
11. 0.5 Credit of Cognate Biology Courses
Choose from:
BIOC10H3 Cell Biology: Proteins from Life to Death
BIOC14H3 Genes, Environment and Behaviour
BIOC19H3 Animal Developmental Biology

BIOC21H3 Vertebrate Histology: Cells and Tissues
BIOC31H3 Plant Development and Biotechnology
BIOC35H3 Principles of Parasitology
BIOC40H3 Plant Physiology
BIOD37H3 Biology of Plant Stress

Fourth Year
12. 0.5 Credit in Advanced Molecular Techniques
BIOD21H3 Advanced Molecular Biology Laboratory

13. 0.5 Credit of D-level Research-Oriented "Cell & Molecular" Course Work
Choose from:
BIOD12H3 Protein Homeostasis
BIOD17H3 Seminars in Cellular Microbiology
BIOD19H3 Epigenetics in Health and Disease
BIOD20H3 Special Topics in Virology
BIOD22H3 Molecular Biology of the Stress Response
BIOD23H3 Special Topics in Cell Biology
BIOD25H3 Genomics
BIOD26H3 Fungal Biology and Pathogenesis
BIOD27H3 Vertebrate ~~Molecular~~ Endocrinology
BIOD29H3 Pathobiology of Human Disease
BIOD30H3 Plant Research and Biotechnology: Addressing Global Problems
BIOD95H3 Supervised Study in Biology
BIOD98Y3 Directed Research in Biology
Note : Any of these courses not used to satisfy this requirement can be used to fulfill the '0.5 credit ~~Credit~~ of Cognate Biology Courses.'

Co-op Work Term Requirements
Students must satisfactorily complete two Co-op work terms, each of four-months duration. To be eligible for their first work term, students must be enrolled in the Specialist (Co-op) Program in Molecular Biology and Biotechnology and have completed at least 10.0 credits, including BIOA01H3, BIOA02H3, CHMA10H3, CHMA11H3, ~~[(MATA20H3) and (MATA21H3)] or~~ [MATA29H3 and MATA35H3] or [MATA30H3 and MATA36H3], [PHYA10H3 or PHYA11H3], BIOB10H3, BIOB11H3, BIOB12H3, CHMB41H3 and CHMB42H3.

In addition to their academic program requirements, Co-op students complete up to four Co-op specific courses. These courses are designed to prepare students for their job search and work term experience, and to maximize the benefits of their Co-op work terms. They cover a variety of topics intended to assist students in developing the skills and tools required to secure work terms that are appropriate to their program of study, and to perform professionally in the workplace. These courses must be completed in sequence, and are taken in addition to a full course load. They are recorded on transcripts as credit/no credit (CR/NCR) and are considered to be additive credit to the 20.0 required degree credits. No additional course fee is assessed as registration is included in the Co-op Program fee.

Co-op Preparation Course Requirements:

1. COPD01H3 – Foundations for Success in Arts & Science Co-op
- Students entering Co-op from outside of UTSC (high school or other postsecondary) will complete this course in fall of their first year at UTSC
- Current UTSC students entering Co-op in April/May will complete this course in the summer term
- Current UTSC students entering Co-op in July/August will complete this course in the fall term

2. COPD03H3 – Preparing to Compete for your Co-op Work Term
- Prerequisite: COPD01H3
- This course will be completed eight months in advance of the first scheduled work term

3. COPD11H3 – Managing your Work Term Search & Transition to Work
- Prerequisite: COPD03H3
- This course will be completed four months in advance of the first work scheduled work term

4. COPD12H3 – Integrating Your Work Term Experience Part I
- Prerequisite: COPD11H3 and one Co-op work term
- This course will be completed four months in advance of the second scheduled work term

Students must be available for work terms in each of the Fall, Winter and Summer sessions and must complete at least one of their required work terms in either a Fall or Winter session. This in turn requires that students take courses during at least one Summer session.

For information on fees, status in Co-op programs, and certification of completion of Co-op programs, see Section 6B.5 of the UTSC *Calendar*.

Description of Proposed Changes:
1. Enrolment Requirements/Co-op Work Term Requirements: (1) [(MATA20H3) and (MATA21H3)] has been removed from the list of courses that students must complete prior to applying to the program; the requirements for Current Co-op students have been updated to correct an error - current Co-op students must complete 5.0 credits before applying to the program.
2. Requirement 6: (BIOB30H3) has been deleted as optional course from this requirement
3. Requirement 11: BIOC35H3 has been added as optional course to this requirement
4. Requirement 13: BIOD27H3 title change

Rationale:
1. Enrolment Requirements/Co-op Work Term Requirements: [(MATA20H3) and (MATA21H3)] have been removed as optional courses because these courses were last offered 10 years ago and are no longer relevant to this program.
3. Requirement 6: (BIOB30H3) course has been deleted as optional course because this course was last offered 8 years ago and is no longer relevant to the program.
4. Requirement 11: BIOC35H3 has been added as optional course to expand organismal biology options available to students to satisfy this program requirement.
5) Requirement 13: the course title for BIOD27H3 has been changed, thus to keep the Calendar consistent, it was necessary to update course title in this program.

Impact: None

Consultation: DCC Approval: September 27, 2018
Consulted with the Arts and Science Co-op Office: September 27, 2018.

Resource Implications: None

3 New Courses:

BIOC35H3: Principles in Parasitology

Description:

This course introduces principles in parasitic lifestyles. Topics that will be covered include common parasite life strategies, host-parasite interactions and co-evolution, parasite immune evasion strategies, impacts on public health, and treatment and prevention strategies.

Prerequisites: BIOB11H3

Corequisites:

Exclusions:

Recommended Preparation:

Enrolment Limits:

Note:

Learning Outcomes:
The specific goal of this course is for students to understand parasitism, the most common life-style on earth. This course will introduce parasitism to students and expand on the underlying principles of how these organisms interact with their host environment. The course will concentrate primarily on eukaryotic parasites. Students will gain insight into the complexities of host-pathogen interactions, an appreciation of the unique biology of eukaryotic parasites and how they differ from bacterial and viral pathogens. Moreover, the students will gain the knowledge base and understanding of the possibilities of using parasites in the study of biology broadly.
Upon completion of the course, students will be able to:
1) Understand the ubiquity of parasitism as a life-style, and contrast it with commensalism and mutualism.
2) Correctly use scientific terminology to describe parasites and their life-cycles, the host-parasite interaction, and the host response to infection.
3) Identify the general strategies of immune evasion used by parasites and compare and contrast these to the strategies used by other microbial pathogens.
4) Understand the public health importance of these organisms, how they are controlled, and compare control methods to those used against other classes of microbes.
5)Identify the unique aspects of parasite biology that present challenges for their control by hosts and human interventions, while making them excellent systems for the study of many facets of biology.
6) Analyze the various strategies employed for parasitism and compare and contrast alternative life-styles. Use this understanding to design a parasite of their own and to support their design decisions in writing. This exercise will develop critical thinking skills, including data interpretation, and application along with written communication.
The course learning outcomes will support program learning outcomes by providing additional breadth in the discipline of molecular biology, cell biology, immunology, and infectious diseases.

Topics Covered:
1) Trophic modes - parasitism, commensalism, and mutualism
2) Parasite classification and life-cycles
3) Parasite pathology and immune evasion, with a focus on unique aspects of each class
4) Comparisons between parasite strategies and those used by other classes of microbial pathogen
5) Treatment and control options - vaccines, chemotherapies, and interventions
6) Impact of parasitism on host ecology, the evolution of parasitism and complex life-cycles

Methods of Assessment:
Students will be assessed based on 3 criteria:
1) Quizzes (15% total, there will be 10 quizzes available based on lectures and readings): These will mainly be multiple choice quizzes to test knowledge acquisition from the reading material. This will ensure that students are acquiring the necessary terminology and concepts to support higher level learning objectives. They will also provide feedback to the students about their progress in the course.
2) Midterm exam (35%): This will include several evaluation methods including multiple choice, diagram, and short-answer questions. Multiple choice and diagram questions will ensure mastery of subject matter and terminology, as well as

critical thinking skills and the ability to conceptualize course content. Short-answer questions will assess student's critical thinking skills, the ability to synthesize knowledge and apply that learning to unfamiliar systems, the ability to evaluate data presented, and writing skills.
3) Final exam (50%): This will include several evaluation methods including multiple choice, diagram, short-answer questions, and a multi-part short answer question series that will focus on the analysis of a theoretical parasite using the knowledge and themes discussed in the course. Multiple choice and diagram questions will ensure mastery of subject matter and terminology, as well critical thinking skills and the ability to conceptualize course content. Short-answer questions will assess student's critical thinking skills, the ability to synthesize knowledge and apply that learning to unfamiliar systems, the ability to synthesize the information and themes presented in the course to analyze the biology of a theoretical parasite presented. This will require the student to critically analyze the information presented and design other aspects of the parasite biology, to critique the assumptions presented during the course of the question, and to construct rigorously structured arguments.

Mode of Delivery: In Class

Breadth Requirements: Natural Sciences

Rationale:
This course represents a unique addition to the Department of Biological Sciences as the first course that will focus on eukaryotic parasites. The addition of this course helps expands the suite of courses at a third year level which include Microbiology, Virology and Immunology that present an organismal approach to major classes of human and animal pathogens and their impact on host biology and immunology. The topics covered in this course will also demonstrate the interconnected nature of biology and integrate lessons from molecular and cellular biology, immunology, evolution and genetics, and infectious diseases.

Consultation: DCC Approval: September 6, 2018
RO Course Code Approval: September 24, 2018

Resources:
Faculty: The course will be taught by a new, full-time, faculty member as part of their regular teaching load.
T.A. Support: 70 hours of T.A. support is needed to assist the instructor with marking quizzes and midterm/final exams, as well as grades administration. This support will be covered by the department's existing budget.
Space/Infrastructure: No special space/infrastructure needs exist.

BIOD55H3: Experimental Animal Behaviour

Description:

A hands-on course emphasizing the logic, creative thinking, and careful methodology required to conduct rigorous research on animal behaviour from an evolutionary perspective. Students will devise and run behavioural experiments, primarily using invertebrate models.

Prerequisites: BIOC54H3

Corequisites:

Exclusions:

Recommended Preparation:

Enrolment Limits: 20

Note:

Learning Outcomes:
General competencies and skill sets acquired:
-Reading, critiquing and analyzing the primary literature
-Data collection & analysis
-Making & supporting logical inferences using quantitative data
-Scientific writing
Core competencies developed:
-Students will be able to explain how evolutionary hypotheses about animal behaviour can produce predictions about the sensory or physiological capacities of animals

-Students will develop the foundation for understanding how ecology and evolution shape organismal features (from morphology and physiology to behaviour)
-Students will use ecological and evolutionary perspectives to understand and predict the outcome of dynamic interactions among organisms, populations, species, and communities
-Students will obtain the knowledge base, and apply it using an integrative approach with expertise drawn from disparate biological and other disciplines to solve global challenges (e.g., climate change, emerging diseases, hunger and species extinction.

Related course learning outcomes:
-Students will be able to use Evolutionary Theory to devise and distinguish between alternative hypotheses to explain animal behaviour
-Students will be able to explain how animal behaviour is expected to vary with ecological context, and how this affects experimental design
-Students will be skilled at making clear and testable predictions from novel hypotheses;
-Students will be able to design and implement laboratory experiments to test predictions about animal behaviour

Topics Covered:
1) Evolution of Behaviour (Genes & Behaviour)
2) Experimental design in behavioural research
3) The Umwelt & Experimental Animal Behaviour (or: 'does the animal see what you see?')
4) Ethics in Animal Research
5) Replication, sample size and pseudoreplication
6) Statistical analyses of behavioural data
7) Manipulating costs & benefits
8) Predation and context-dependent decisions
9) Sexual selection: inferring competition and choice
10)Communication and discrimination
11)Dynamics of social behaviour

Methods of Assessment:
1) Lab notebook assessment (completeness, organizational structure)
2) Data analysis assignment (statistical analyses of experimental data)
3) Alternative hypothesis exercise (Hypothesis, prediction & test design)
4) 'Complete the paper' assignment (logical inference, primary literature)
5) Experimental studies (3) -experimental design, data collection & analysis, a subset will be incorporated into a formal paper
6) Term paper (all course goals)
7) Real-time peer review (scientific writing)
8) Midterm exam (logical inference, primary literature, writing, statistical analyses and interpretation)
9) Final exam (logical inference, primary literature, writing)

Mode of Delivery: In Class

Breadth Requirements: Natural Sciences

Rationale:
There is a gap in courses which support mastery of Quantitative reasoning and Scientific writing. This course will provide an avenue for students seeking high-level skills in these areas. In addition, there are few upper-level, 'mastery' courses in organismal biology in general in the department, and few courses that take this type of free-form, student-centred experimental design approach. Thus, this course will allow as an excellent follow up to the C-level course in Animal behaviour (BIOC54H3). Also, this course is designed to provide an active-learning, hands-on approach to an area students find interesting, that is a major area of active research which also complements other disciplines like Neuroscience and Psychology.

Consultation: DCC Approval: September 6, 2018
RO Course Code Approval: September 24, 2018.

Resources:
Faculty: The course will be taught by an existing full-time faculty member in the department. No impact on teaching load: This course will alternate with the theory-based, lecture course BIOD53H3.
T.A. Support: TA requirements will be similar to BIOD53H3 (35 hrs), and since this new course will alternate, no net change in TA budget is expected.

Space/Infrastructure: The lab will be conducted in SW330 which has recently been equipped with an environmental chamber (necessary for this lab).
Consumables will be relatively inexpensive and will be covered by the Biological Sciences departmental budget.

BIOD63H3: From Individuals to Ecosystems: Advanced Topics in Ecology

Description:

This lecture/seminar course will discuss advanced topics in behavioural ecology, ecosystem and landscape ecology, and evolutionary ecology, with an emphasis on the impacts of past and present species interactions. Students will work both independently and collaboratively throughout the course to strengthen their research, writing, and presentation skills.

Prerequisites: BIOB50H3 and BIOB51H3 and [0.5 credit from the following: BIOC51H3, BIOC52H3, BIOC54H3, BIOC58H3, BIOC59H3, BIOC60H3, BIOC61H3]

Corequisites:

Exclusions:

Recommended Preparation:

Enrolment Limits: 35

Note:

Learning Outcomes:
The main goal of this course is to expose students to advanced topics in ecology and to develop their critical thinking, research, teamwork and presentation skills.
At the end of this course, students will be able to:
1) Use and apply ecological concepts first introduced in prerequisite courses to new case studies.
2) Read and interpret scientific literature from the field, process information and use it to synthesize persuasive arguments in written and oral form.
3) Critically evaluate scientific literature for its scientific writing, techniques used (where applicable), data representation, and overall conclusions.
4) Communicate effectively with others during paper discussions, reflective work, debates, and collaborative assignments.
5) Create presentations based on research and present them in a class setting.
6) Apply the skills and strategies of an effective listener in both small group and a class-wide setting.

Topics Covered:
Topics will be driven by the primary literature that is available (the goal is to select current papers as assigned readings), and has the potential to include:
1) Competition, competitive exclusion, and coexistence
2) Group living and social behaviour
3) Co-evolution (commensalisms, mutualisms, negative species interactions)
4) Evolutionary arm's races (predator-prey, host-parasite, chase away selection)
5) Cooperation, altruism, manipulations, and spite
6) Population dynamics and the effects of species interactions on these dynamics
7) Species interactions and community structure (effects of disturbance, competition, life histories of organisms involved)
8) Ecosystem function and restorations
9) Natural selection, sexual selection and kin selection
10)Past and present species coexistence and the effects on community structure / biodiversity
11)Mating systems and parental care

Methods of Assessment:
1) Reflective journal – students will be asked to keep a journal throughout the semester where they reflect on their experience in the course, with focus on collaborative work and skill development and their feelings regarding these things. This supports all the learning outcomes, especially outcome 4, because students will reflect on the journey they take during this course, and on how their skills develop throughout this journey. This journal will be assessed at multiple points throughout the course.
2) Paper Discussions – students will be asked to lead paper discussions and will be graded on the papers they select, their preparedness to lead the discussion, and their understanding of the papers they have selected. They will turn in a written

summary of the paper as part of this grade. This supports learning outcomes 2-6 because it asks students to read, interpret, and critically evaluate an article, and then to lead a class discussion on it, and it also requires them to be effective listeners during both their discussion and the discussions led by other students. Part of this grade will also be on their preparation for, and participation in, the paper discussions of other students.
3) Written/oral Tutorial Assignments - there will be multiple smaller assignments which will include a mini review of scientific papers, tutorial work sheets that emphasis key concepts and short oral presentations.
Assignments will be designed to support all of the learning outcomes. Some of these assignments will also be used to allow students to explore potential topics for their final papers (see #4).
4) Final Papers and Presentations - students will prepare a literature review on the topic of their choice and will submit a written paper on this topic as well as present it in class as their final project. Students will prepare a draft part-way through the course and provide peer-review on the drafts of others. They will also submit them to me for feedback. This activity will support development of critical thinking skills and communication skills supporting all learning outcomes.
5) Final exam – the final exam will include short answer and essay questions and will assess students on their understanding of the topics covered, as well as their ability to interpret scientific literature. Essay questions will be assigned in advance and students will be asked to research the topic in preparation for the exam. These exams will test whether or not students have met learning outcomes 1-6.

Mode of Delivery: In Class

Breadth Requirements: Natural Sciences

Rationale:
BIOD63H3 will fill gaps that currently exist in the curriculum. It will build on what students have learned about ecology as well as strengthen their reading and discussion skills they have started to develop by third-year. This course will increase their exposure to primary literature and enhance their ability to critically read scientific papers and synthesize arguments from it, and will also give students background in understanding biodiversity and its impact on humanity. This course will also benefit students who go on to consulting careers, or who pursue further education, as they will have an enhanced ability to understand/explain scientific papers to themselves and to others.

Consultation:
DCC Approval: September 6, 2018
RO Course Code Approval: September 24, 2018

Resources:
The course will be taught by an existing full-time faculty member as part of their regular teaching load. The course will require 35 hours of T.A. support; the TA will assist in guiding class discussions, aiding student group work in class, aiding the instructor in grading assignments, and exam invigilation. This support will be covered by the department's existing budget.
No additional space/infrastructure is needed.

1 Course Modification:

BIOC15H3: Genetics

Mode of Delivery:
Previous: ~~In Class~~

New: Hybrid

Rationale:
BIOC15H3 will be moving forward to a blended (hybrid) format, the class will move to two hour per week meeting and most of the concepts will be provided to students online (as texts, notes, and videos). Class time will be used for reviewing difficult concepts and difficult problem solving questions. This will provide students with more flexibility around practice time and be an efficient use of class time to review questions.

Consultation: DCC Approval: June 20, 2018

Resources: None