

**COURSE INFORMATION**

Course Title	Course Code Number	Credit Value
Issues in genomics and environment	CONS 302	3

**PREREQUISITES**

No prerequisite

**COREQUISITES**

No corequisites

**CONTACTS**

Course Instructor(s)	Contact Details	Office Location	Office Hours
Tongli Wang	Email: Tongli.wang@ubc.ca	NA	Office hours: Tuesdays 4 - 5 pm

**COURSE INSTRUCTOR BIOGRAPHICAL STATEMENT [OPTIONAL]**

Dr. Tongli Wang is an Associate Professor at the Department of Forest and Conservation Sciences University of British Columbia. He is also an Associate Director at the Centre for Forest Conservation Genetics. He is interested in forest genetics, genomics, genecology, genetic conservation and adaptation to climate change.

**OTHER INSTRUCTIONAL STAFF**

Course TA(s)	Contact Details	Office Location	Office Hours
Lambert Ye	Email: zylambert.ye@alumni.ubc.ca	NA	

**COURSE STRUCTURE**

This course aims at a broader perspective beyond the technical aspects of genomics. We will guide you to tour the genomic world with ease and fun. We will first equip you with the basic knowledge of genetics and genomics and then navigate the major fields of genomics, including epigenomics, metagenomics, genome editing, ecological genomics, and conservation genomics. We will also examine and discuss the related issues and potential applications of genomics to improve our life and environment, including adaptation to climate change. This course will make it easy for non-major students to know the genomic world and fun for students with some background to expand their scope in this field.

We will use a combination of lectures and selected readings from scientific and the “lay” (non-science) literature. There will be a discussion class at the end of each module, in which students will work in groups to give a short presentation on an assigned topic. A group project will also be conducted and presented at the end of the course on a self-chosen topic.

**SCHEDULE OF TOPICS**

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- Introduction to the Course (week 1)
- Module I. The space of genomics (week 2-3)
- Module II. Genomic determinism and environment (week 4)
- Module III. Diversity of genomes (week 5-6)
- Module IV. Applications of genomics (week 7-9)
- Module V. Adaptation and climate change (week 10-12)
- Module VI. Group project (week 13-14)
- Review and Wrap up (Week 15)

**LEARNING OUTCOMES**

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Rapid advances in genomics have created new possibilities for improving our life and environment; however, they have also raised new issues and concerns. Knowledge about genomics and its applications will be essential for informed discussions and decisions. This course will introduce students to the space of genomics in the context of genetics and epigenetics, and examine current and topical issues related to genomics and the environment. At the end of this course, students will

- (a) Acquire basic knowledge of the science and technology of genomics;
- (b) Build a fundamental knowledge of issues related to genomics and the environment
- (c) Develop skills to communicate this knowledge

**LEARNING ACTIVITIES**

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This course will be synchronously delivered online using Zoom. Students are expected to participate in class (Zoom) for lectures, quizzes, group discussions, and a problem-based learning project. Small groups (6-7 students per group) will be formed. Each group will have a chance to present a discussion topic to the entire class and to complete and present a group project. Questions and comments are expected from other groups. Readings will be assigned to groups in advance for discussions.

Lecture slides will be uploaded before each lecture so that students can make notes on them. Reading the slides are encouraged but not required. Online lectures will be recorded and posted on Canvas. Quizzes are often followed at the beginning of the next lecture.

**LEARNING MATERIALS**

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No textbook is required for this course. Publications and online materials will be provided to students through Canvas in advance or following a lecture.

### ASSESSMENTS OF LEARNING

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Course grades are tentatively assigned as

1. Quizzes 20%
2. Class discussions 15%
4. Group Problem Based Learning 15%
5. Midterm 20%
6. Final examination 30%

A quiz (4 points) will be conducted in Canvas at the end of each of the first five Modules. Students will spend 10 minutes to complete 10 questions related to the topics in the module. Correct answers will be provided after the completion of the quiz.

There will be four class discussions on assigned topics. Three of the six groups will present at each discussion. There are 12 presentations in total. Each group will have two presentations throughout the course. For the non-presenting groups, each will be given one chance to ask a question or provide a comment for 0.5 points. Five points are assigned to each presentation as the base grade, which will be multiplied by score (0-1) from the class in a Zoom poll. Each group will get 15 points in full. The instructor may need to adjust the grade if necessary. The grade from a group to individuals will be weighted by the individual contribution score (0-1) determined anonymously within each group in Canvas.

For the group project (15 points), it will be evaluated based on the group presentation by the audience (zoom poll) and individual contribution in Canvas. More details are in Modules.

Midterm has multiple-choice questions and short-answer questions. Final Exams will have multiple-choice questions, definition matching, short- and medium-answer questions. They will be conducted in Canvas.

### COMMUNICATIONS

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If you absolutely need to contact the Instructor or TA, please follow this order: 1) ask questions directly during live lectures and discussions; 2) post the question in Piazza; 3) book a one-on-one appointment on the select slots (system to be provided); 4) email the question or book an appointment if none of the slots work (you can use the Canvas messaging system for that).

Also, make sure you know who to contact regarding specific matters. Contact the TA regarding: participation, group arrangement, medical notes and concessions, etc.. Contact the instructor regarding: lecture material and theory, quizzes, midterm and exam.

### UNIVERSITY POLICIES

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UBC provides resources to support student learning and to maintain healthy lifestyles but recognizes that sometimes crises arise and so there are additional resources to access including those for

survivors of sexual violence. UBC values respect for the person and ideas of all members of the academic community. Harassment and discrimination are not tolerated nor is suppression of academic freedom. UBC provides appropriate accommodation for students with disabilities and for religious observances. UBC values academic honesty and students are expected to acknowledge the ideas generated by others and to uphold the highest academic standards in all of their actions.

Details of the policies and how to access support are available on [the UBC Senate website](#).

If you or one of your family members has the COVID-19 virus, please contact Student Services immediately, so that we can explore concessions (if needed) that will not impact your grades negatively.

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### OTHER COURSE POLICIES

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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>

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### LEARNING ANALYTICS

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In this course, analytics data from quizzes, class participation, and the midterm will be used to follow overall class progress.

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### LEARNING RESOURCES

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Not applicable

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### COPYRIGHT

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All materials of this course (course handouts, lecture slides, assessments, course readings, etc.) are the intellectual property of the Course Instructor or licensed to be used in this course by the copyright owner. Redistribution of these materials by any means without the permission of the copyright holder(s) constitutes a breach of copyright and may lead to academic discipline. Video recording is not permitted in the class.