



# IBIO\*4100 Interpreting Biodiversity II

Fall 2019

Section(s): C01

Department of Integrative Biology

Credit Weight: 1.00

Version 1.00 - June 13, 2019

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## 1 Course Details

### 1.1 Calendar Description

This is the second of two courses that explore global and local issues in biodiversity as a capstone experience for biodiversity majors. The overall goal of the course is to provide opportunities for students to engage the application of their knowledge and skills to complex problems and issues involving "real-life" biodiversity projects within academic, government, or industry spheres. The learning outcomes include the application of key skills for interpreting biodiversity, the collection and analysis of biodiversity data. This student centred experience will culminate with an oral presentation and written report to the "clients", classmates and instructors.

**Pre-Requisites:**

IBIO\*3100

**Restrictions:**

Enrolment restricted to BSCH:BIOD majors.

### 1.2 Course Description

Interpreting Biodiversity II is the second of two courses that explore global and local issues in biodiversity as a capstone experience for biodiversity majors. The overall goal of the course is to provide opportunities for BIOD students to apply their knowledge and skills to complex problems and issues involving biodiversity in academic, government, or industry spheres. The pedagogical approach utilizes "student centred service learning" where students will engage in a key uncertainty in biodiversity with an external "client," who has a need to resolve such issues. The client may be a private company, a government agency or municipality, a lab or institute on campus, or an NGO. Students will work independently and as a group with the guidance of a course instructor. Assignments will include authentic assessment of fieldwork, data collection, analysis of diversity data, an oral presentation and written research report. Faculty with relevant expertise for various parts of the project may participate as guest lecturers or faculty advisors. As a capstone experience for BIOD majors, the course will embrace a broad view of biodiversity that encompasses not only taxonomic diversity and abundance, but also ecological, evolutionary, and physiological aspects. This course also provides opportunities for undergraduates and benefit from direct project involvement with the University of Guelph's world class Biodiversity Institute of Ontario (BIO) and the Centre for

Biodiversity Genomics (CBG).

### 1.3 Timetable

Lecture: Mondays 1:00 - 2:20 pm, SSC 3440

Lab: Mondays 2:30 - 5:20 pm, SSC 3440

Timetable is subject to change. Please see WebAdvisor for the latest information.

### 1.4 Final Exam

Exam time and location is subject to change. Please see WebAdvisor for the latest information from the registrar's office.

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## 2 Instructional Support

### 2.1 Instructional Support Team

<b>Instructor:</b>	Robert Hanner
<b>Email:</b>	rhanner@uoguelph.ca
<b>Telephone:</b>	+1-519-824-4120 x53479
<b>Office:</b>	SSC 2448
<b>Office Hours:</b>	Mondays - 10am to 12 pm

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## 3 Learning Resources

This course will draw on articles from the primary scientific literature.

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## 4 Learning Outcomes

### 4.1 Course Learning Outcomes

By the end of this course, you should be able to:

1. Describe, comprehend and evaluate issues in biodiversity within the context of the major concepts in biodiversity at various spatial (global/local) and temporal scales (historical/future predictions).
2. Identify variation in species at the research site through the use of biodiversity sampling methods and analysis of species data from the research project.
3. Describe the biodiversity of the study area at several scales and describe in detail the biodiversity of the taxon, area, or process on which their group focused.
4. Apply critical thinking, analysis, and independent inquiry skills to complex and

interdisciplinary issues.

5. Critically contrast ideas within a team toward a common goal of solving a current biodiversity issue for an external client.
6. Synthesize knowledge and effectively communicate in both written and oral forms about a specific biodiversity issue for their client.
7. Evaluate key uncertainties and propose effective solutions for their client.

## 4.2 Skills

The course has the following as primary goals with respect to the development of specific skills:

1. To develop a productive philosophy for learning.
2. To develop capabilities for independent study and research, including the use of library, primary literature, and online resources.
3. To develop the ability to critically assess and analyze issues in biodiversity.
4. To develop skills for interpreting biodiversity including expertise in specific taxonomic groups of interest and methods for measuring and analysing diversity.
5. To develop expertise for working in groups cooperatively and efficiently.
6. To develop effective communication skills (written and oral).
7. To develop a level of comfort with the complexity and uncertainty inherent in biological science.
8. To develop the ability to design a project that provides solutions for an external client who is dealing with a specific biodiversity issue

# 5 Teaching and Learning Activities

## 5.1 Format

In-class Interactive Lectures (one 80 min. sessions/wk)

This course will not include lectures in the traditional sense. Instead, in-class interactions with the instructor and guest speakers will mainly function to guide students through the analysis of issues and concepts in biodiversity. These will be made as interactive as possible, using specimens and data as “learning objects” from current research projects that the guest speakers will present. Issues and concepts in biodiversity will be selected that involve complex biological problems, which allow for the exploration of key concepts in evolution, ecology, and organismal biology.

Labs (1 – 3 hour session per week)

These Labs will address learning outcomes in both “Analyzing” and “Evaluating” biodiversity. Labs will include field and lab work that will represent a forum for student-directed discovery involving small group interaction with TAs and faculty. These will involve discussions of ideas and issues arising through group projects and critical evaluation of peer-reviewed research. They will also provide an engaging environment in which to carry out a group-based project (which will also involve interaction outside of the lab). Skills that will be developed on-line will be reinforced during the labs.

### On-Line independent learning (weekly on-line assignments)

In addition to the lecture and lab components, students will engage in activities aimed at promoting self-assessment, skills development, background concepts and independent learning. These include the use of on-line tool such as D2L, Wiki, and concept mapping. Throughout the course, students will be encouraged to developing concept maps related to their project and the major learning outcomes\* in the course. Concept mapping is a “learning object” that provides a mechanism of engagement in learnercentredness for complex learning outcomes making this an ideal tool of a senior course with many complex concepts. The University of Guelph Teaching Support Services (TTS) has adopted on-line software that will be available for the students. This is the same software used in first biology BIOL 1070 and therefore reinforces this skill.

The in-class interactions will focus on biodiversity issues that explore both skills and major concepts. The lab will emphasize skills development and small group interactions.

## 5.2 Central Concepts

**I. UNDERSTANDING BIODIVERSITY:** Describe, comprehend and evaluate issues in biodiversity within the context of the major concepts in biodiversity at various spatial and temporal scales.

**II. ANALYZING BIODIVERSITY:** Identify variation in species and perform biodiversity sampling methods and analysis utilizing data from real collections or surveys.

**III. EVALUATING BIODIVERSITY:** Evaluate key uncertainties and propose and effective solutions within a student centred service/experiential learning project. Describe the biodiversity of the study area at several scales and describe in detail the biodiversity of the taxon, area, or process on which their group focused. Apply critical thinking, analysis, and independent inquiry skills to complex and interdisciplinary issues. Synthesize knowledge and effectively communicate in both written and oral forms about a specific biodiversity issue to the client.

## 6 Assessments

### 6.1 Marking Schemes & Distributions

**\*Please note:** Due dates for assignments are TBD in-course with student and client input

Name	Scheme A (%)
Data Collection	15
Data Analysis and Interpretation	15
Authentic Assessment (Cumulative–Evaluating biodiversity scenarios)	15
Biodiversity Project Oral Presentation	25
Biodiversity Project Written Report	30
Total	100

## 6.2 Assessment Details

**Data Collection (15%)**

**Data Analysis and Interpretation (15%)**

**Authentic Assessment (Cumulative–Evaluating biodiversity scenarios) (15%)**

**Biodiversity Project Oral Presentation (25%)**

**Biodiversity Project Written Report (30%)**

# 7 Department of Integrative Biology Statements

## 7.1 Academic Advisors

If you are concerned about any aspect of your academic program:

- Make an appointment with a program counsellor in your degree program. [B.Sc. Academic Advising](#) or [Program Counsellors](#)

## 7.2 Academic Support

If you are struggling to succeed academically:

- Learning Commons: There are numerous academic resources offered by the Learning Commons including, Supported Learning Groups for a variety of courses, workshops related to time management, taking multiple choice exams, and general study skills. You can also set up individualized appointments with a learning specialist. <http://www.learningcommons.uoguelph.ca/>
- Science Commons: Located in the library, the Science Commons provides

support for physics, mathematic/statistics, and chemistry. Details on their hours of operations can be found at: <http://www.lib.uoguelph.ca/get-assistance/studying/chemistry-physics-help> and <http://www.lib.uoguelph.ca/get-assistance/studying/math-stats-help>

## 7.3 Wellness

If you are struggling with personal or health issues:

- Counselling services offers individualized appointments to help students work through personal struggles that may be impacting their academic performance. <https://www.uoguelph.ca/counselling/>
- Student Health Services is located on campus and is available to provide medical attention. <https://www.uoguelph.ca/studenthealthservices/clinic>
- For support related to stress and anxiety, besides Health Services and Counselling Services, Kathy Somers runs training workshops and one-on-one sessions related to stress management and high performance situations. <http://www.uoguelph.ca/~ksomers/>

## 8 University Statements

### 8.1 Email Communication

As per university regulations, all students are required to check their e-mail account regularly: e-mail is the official route of communication between the University and its students.

### 8.2 When You Cannot Meet a Course Requirement

When you find yourself unable to meet an in-course requirement because of illness or compassionate reasons please advise the course instructor (or designated person, such as a teaching assistant) in writing, with your name, id#, and e-mail contact. The grounds for Academic Consideration are detailed in the Undergraduate and Graduate Calendars.

Undergraduate Calendar - Academic Consideration and Appeals

<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-ac.shtml>

Graduate Calendar - Grounds for Academic Consideration

<https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/index.shtml>

### 8.3 Drop Date

Courses that are one semester long must be dropped by the end of the fortieth class day; two-semester courses must be dropped by the last day of the add period in the second

semester. The regulations and procedures for course registration are available in the Undergraduate and Graduate Calendars.

Undergraduate Calendar - Dropping Courses

<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-drop.shtml>

Graduate Calendar - Registration Changes

<https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/genreg-reg-regchg.shtml>

## 8.4 Copies of Out-of-class Assignments

Keep paper and/or other reliable back-up copies of all out-of-class assignments: you may be asked to resubmit work at any time.

## 8.5 Accessibility

The University promotes the full participation of students who experience disabilities in their academic programs. To that end, the provision of academic accommodation is a shared responsibility between the University and the student.

When accommodations are needed, the student is required to first register with Student Accessibility Services (SAS). Documentation to substantiate the existence of a disability is required; however, interim accommodations may be possible while that process is underway.

Accommodations are available for both permanent and temporary disabilities. It should be noted that common illnesses such as a cold or the flu do not constitute a disability.

Use of the SAS Exam Centre requires students to book their exams at least 7 days in advance and not later than the 40th Class Day.

More information can be found on the SAS website

<https://www.uoguelph.ca/sas>

## 8.6 Academic Integrity

The University of Guelph is committed to upholding the highest standards of academic integrity, and it is the responsibility of all members of the University community—faculty, staff, and students—to be aware of what constitutes academic misconduct and to do as much as possible to prevent academic offences from occurring. University of Guelph students have the responsibility of abiding by the University's policy on academic misconduct regardless of their location of study; faculty, staff, and students have the responsibility of supporting an environment that encourages academic integrity. Students need to remain aware that instructors have access to and the right to use electronic and other means of detection.

Please note: Whether or not a student intended to commit academic misconduct is not relevant for a finding of guilt. Hurried or careless submission of assignments does not excuse students from responsibility for verifying the academic integrity of their work before submitting it. Students who are in any doubt as to whether an action on their part could be

construed as an academic offence should consult with a faculty member or faculty advisor.

Undergraduate Calendar - Academic Misconduct

<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-amisconduct.shtml>

Graduate Calendar - Academic Misconduct

<https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/index.shtml>

## **8.7 Recording of Materials**

Presentations that are made in relation to course work - including lectures - cannot be recorded or copied without the permission of the presenter, whether the instructor, a student, or guest lecturer. Material recorded with permission is restricted to use for that course unless further permission is granted.

## **8.8 Resources**

The Academic Calendars are the source of information about the University of Guelph's procedures, policies, and regulations that apply to undergraduate, graduate, and diploma programs.

Academic Calendars

<https://www.uoguelph.ca/academics/calendars>

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