**Biology 204**

### Introduction to Ecology

**Fall 2019**

**10:30-11:20 Tuesday (K9500), and 9:30-11:20 Thursday**

**(C9002)**

#### Instructor

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| **Dr. Wendy Palen**  wpalen@sfu.ca  778-782-4063 (urgent matters only, email is best)  Office: SSB 8277  Office Hours: Tuesday 11:45a-1:00p, or by appt. |

## Teaching Assistants

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| Nico Muñoznicom@sfu.ca Tutorials: Thurs 11:30a, 12:30p, 1:30p, 2:30p  Office hour: Mon. 11:00a-12:00p  MBB Lounge 6000-level | **Rylee Murray**  ryleem@sfu.ca  Tutorials: Tues 9:30a, 11:30a, 12:30p  Office hour: Thurs 11:30a-12:30p  MBB Lounge 6000-level |

**Biology 204** (*Introduction to Ecology*) emphasizes understanding species interactions in biological communities and the relationships between communities and the environment. Serves as a prerequisite to 300- and 400-level courses and senior seminars in ecology, population, and conservation biology. Prerequisite: either BIOL 102 or BIOL 180.

Grades for this course will be based on student performance on a variety of in-class activities and exams, out-of-class homework assignments, and participation in tutorials as described below.

***1. Exams*:** There will be three exams distributed throughout the semester. The exams are not cumulative and will only test the material covered in the previous third of the course. The contribution of each exam to your final grade is weighted by the amount of material that will be covered in that section of the course. Exams will use a variety of question types (e.g., true/false, definitions, graphical interpretation, short essays) to evaluate your knowledge of the material covered in the course, and will demand critical thinking more than memorization.

***2. In-class activities:*** There will be four activities run during class time throughout the semester that students will either finish and turn in before the end of the class period that day, or be allowed to work on until the next class period (we will tell you which beforehand). These activities involve tasks that will require working in small groups, but each student is responsible for handing in their own assignment for grading. Each of these activities will require some data analysis, calculations, and interpretation. These assignments will be handed back and discussed in tutorial, usually the following week.

***3. Paper review & presentation:*** Students are required to write a short (2-page) review of a paper from the primary literature and present their review orally to their tutorial session (3 min). Each review should provide a concise overview of the key question(s) addressed in the paper, the results, and a brief discussion of the broader implications of the study for general ecological understanding. We expect that reviews will be written with proper grammatical structure, and points will be deducted for poor grammar. More detailed instructions will be given in tutorial during the week of September 9th.

***4***. ***Graphical analysis:*** You will learn some basic tools of how to use spreadsheets (Excel) in order to manage, analyze, and graph ecological data. We will provide raw data from an ecological experiment and a survey for you to analyze and provide graphical summaries to address an ecological hypothesis. You will be expected to manipulate the data to address this hypothesis and then provide graphical representations and a brief summary of the relevant patterns you observe in the data. This assignment will be explained in more detail in tutorial several weeks prior to the due date.

***5. Tutorial sections:*** Students should be enrolled in one of the 7 tutorial sections, and are expected to attend and be *active* participants each week. Attendance will be taken and count towards your participation grade. Upcoming assignments will be introduced in detail during tutorial, and sessions will also provide an opportunity for students to clarify their understanding of the lecture material with the TA’s. Graded in-class activities will be returned in tutorials and discussed usually the week following the due date. In addition to specific assignments, tutorials are your primary opportunity to gain feedback on your work throughout the semester, and you will achieve a higher grade by attending and participating in these weekly meetings.

**Textbook**

This course will *in part* follow material outlined in *Economy of Nature* (8th edition) by Ricklefs and Relyea. This text is available at the SFU bookstore and is recommended. However, lectures will not follow the text. They will draw on material from a variety of sources, the textbook being only one (primary literature, other texts, personal datasets, etc.). This syllabus outlines suggested readings from the text that should help reinforce many, but not necessarily all, of the material presented in lecture (hint: come to lecture!). In addition to course lectures and these assigned readings, we expect that students will read and be accountable for any handouts or papers distributed in class, tutorials, or over the website.

##### Course Website

This course will not use CANVAS. ***Students are required to access a stand-alone course website to obtain the necessary information and materials for this course***. Lecture slides, notes, instructions for assignments, and other supporting materials will be uploaded throughout the semester. The course website is: [www.sfu.ca/biology/courses/bisc204/](http://www.sfu.ca/biology/courses/bisc204/)

**Academic Misconduct**

Acts of dishonesty in any work constitute academic misconduct. This includes, but is not limited to, cheating, plagiarism, fabrication of information, misrepresentations, and abetting of any of the above. We expect you to follow SFU’s guidelines on academic honesty at all times (https://www.sfu.ca/biology/academic-honesty.html). We take academic misconduct very seriously in this course and at a *minimum,* acts of dishonesty will result in a zero grade for that assignment. Repeat offenders will risk course failure and further action by the University.

**Missed Assignments or Exams**

Students are expected to attend all lectures and tutorial sessions. If conflicts are unavoidable for medical or other reasons, students must get permission from the instructor ***IN ADVANCE***of missing assignments, exams, or tutorials, otherwise they will receive a zero grade for the missed assignment or exam, and have an un-excused absence recorded for tutorial. For unpredictable absences due to illness, students are required to provide the instructor with a copy of **SFU’s Certificate of Illness** filled out by their regular health provider as soon as possible, and ideally on the day that they miss class ([https://www.sfu.ca/content/dam/sfu/students/pdf/healthcare-statement-general.pdf](https://www.sfu.ca/content/dam/sfu/students/pdf/healthcare-statement-general.pdf_" \t "_blank)).

**Grading Scheme and Timeline**

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| --- | --- | --- |
| **Activity** | **Date** | **Percent of final grade** |
| **Exams** |  |  |
| **1** | **Thursday – Sept. 26** | **15** |
| **2** | **Thursday – Oct. 24** | **15** |
| **3** | **Friday – Dec. 5** | **25** |
| **Paper review** |  |  |
| **Rough draft & peer review** | **Week of Oct. 1 (tutorial)** | **\*** |
| **Final draft** | **Week of Oct. 7 (tutorial)** | **5** |
| **Presentation** | **Weeks of Oct. 28th/Nov. 4th (tutorial)** | **5** |
| **In-class exercises (4)** |  |  |
| **Estimating population size** | **Thursday – Sept. 12** | **5** |
| **Population dynamics** | **Thursday – Sept. 19** | **5** |
| **Community ecology experiments** | **Thursday – Oct. 17** | **5** |
| **Nutrient budgets** | **Thursday – Nov. 21** | **5** |
| **Graphical Analysis** | **Thursday – Nov. 28** | **5** |
|  |  |  |
| **Tutorial attendance & participation** | **Ongoing** | **10** |
|  |  |  |
| **TOTAL** |  | **100** |

**Class Schedule, Introduction to Ecology (BISC 204), Fall 2019**

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| --- | --- | --- | --- | --- | --- | --- | --- |
|  | |  | | **Lecture Topics** | **Ricklefs Chapters** | **Assignment** | |
| Tues | | Sep 3 | | Introduction & Course Overview | 2, 3 | \***No tutorials the first week**\* | |
| Thurs | | Sep 5 | | Physical Environment & Biomes | 5, 6 |  | |
| Tues | | Sep 10 | | Study Design | 1, web |  | |
| Thurs | | Sep 12 | | Life Histories & **IN-CLASS #1** | 8, 9 | [Population size estimation] | |
| Tues | | Sep 17 | | Populations I | 11 |  | |
| Thurs | | Sep 19 | | Populations II & **IN-CLASS #2** | 12 | [Population dynamics] | |
| Tues | | Sep 24 | | Populations III | | 13 |  |
| Thurs | | Sep 26 | | **EXAM 1** |  |  | |
| Tues | | Oct 1 | | Foraging | 4 (p. 103-) | Rough Draft Paper Review DUE | |
| Thurs | | Oct 3 | | Predation | 14 |  | |
| Tues | | Oct 8 | | Guest Lecture #1 | TBA | Final Draft Paper Review DUE | |
| Thurs | | Oct 10 | | Competition | 16 |  | |
| Tues | | Oct 15 | | Community Structure | 18 |  | |
| Thurs | | Oct 17 | | **IN-CLASS #3** |  | [Community ecology experiments] | |
| Tues | | Oct 22 | | Other Interactions | 17 |  | |
| Thurs | | Oct 24 | | **EXAM 2** |  |  | |
| Tues | | Oct 29 | | Disease Ecology | 15 |  | |
| Thurs | | Oct 31 | | Disturbance and succession | 22 |  | |
| Tues | | Nov 5 | | Guest Lecture #2 | TBA |  | |
| Thurs | | Nov 7 | | Patterns of diversity & Isl. biogeography | 20 |  | |
| Tues | | Nov 12 | | Ecosystems I | 21 |  | |
| Thurs | | Nov 14 | | Ecosystems II | 21 |  | |
| Tues | | Nov 19 | | Guest Lecture #3 | TBA |  | |
| Thurs | | Nov 21 | | **IN-CLASS #4** |  | [Nutrient budgets] | |
| Tues | | Nov 26 | | Global ecology | 22 |  | |
| Thurs | | Nov 28 | | Climate Change | 23 | Graphical Analysis DUE | |
| Thurs | | Dec 5 | | **EXAM 3** (8:30-11:30am) |  |  | |