BIOL 121 - Ecology, Genetics and Evolution

Overall Course Objectives:

- Appreciate the central role of evolution in biology
- Understand the mechanisms of genetic inheritance
- Describe how populations and species change over time
- Explore how organisms interact with each other and their environment

Text

- Biological Science – Custom Edition for UBC by Freeman, Harrington and Sharp 2015-2016.(Many, but not all, of the same readings appear in the Canadian Editions as well as 2nd & 3rd non-Canadian Editions, but the page numbers are different and so their use is left up to the student)
- Copies of this text are available from the UBC Bookstore, Discount Books or for short-term loan from the Biology Office, BioSci Room 2521.

Evaluation:

Connect Pre-Reading Quizzes 5%
In class iClicker Questions 5%
Assignments 5%
Mid-term 1 (October 7th) 15%
Mid-term 2 (November 9th) 20%
Final Exam (date TBA) 50%

- **Group work:** You will be required to form groups of 4 or 5 students for both in-class group assignments as well as the group collaboration portion of exams.
- **Exam marks** will be 85% individual and 15% group. Your group mark can only help your individual mark, not lower it. (If your individual mark is higher it will count for the full exam mark) To demonstrate your individual achievement in the course, in order to pass the course, you must receive a cumulative grade of 50% or greater on the individual portion of your exams. This does not mean that you must pass all of the exams; it is possible to fail an exam but still receive a cumulative grade of 50% for combined exam scores.
- **Class participation**: There will be clicker questions and active group assignments during most classes. You will also be expected to complete the assigned readings and Connect quizzes. For other issues with regard to Academic Regulations, please refer to the UBC Calendar, Chapter V, Student Conduct and Discipline.

Connect website for Bio121:

- Use of the Connect website is required and can be accessed at connect.ubc.ca by using your Campus Wide Login name (CWL) and password.
- You will have reading quizzes on Connect to test your reading of material for upcoming lectures. These quizzes should be completed before the lecture, as they will no longer be accessible once each lecture begins.
- You will have two chances to take each quiz, but the order of the answers to choose from will be randomized. The higher of the two marks will count. The lowest quiz mark during the semester will be dropped.
- The discussion board on Connect is a good way to communicate with fellow class members and ask each other questions.

i**Clickers** (aka Personal Response Systems):

- The reason I use clickers is to encourage attendance, active involvement and learning in lecture, and to give you a check to see if you understand the material.
- Participation in a question will count for one mark; correctly answering a question will give you an additional mark. All of the PRS marks for the semester will be worth 5% of your final mark.
- You can miss up to two classes worth of clicker questions without an effect on your final mark.
- You are responsible for registering your clicker on the Connect website. You can visit the bookstore or Chapman Learning Commons to get the ID number if it has rubbed off.

Assignments and Outreach Project
There will be a number of in-class group assignments and at least one out-of-class assignment during the course of the semester. There will also be an organized Community Service Learning project volunteering in a Vancouver park and applying your biological knowledge. More information will be provided in class and the complete details of the individual assignment will be posted on the course Connect site when it is assigned.

Academic Honesty
Plagiarism or any form of cheating is not tolerated in this course. Please see the UBC rules on Academic Honesty and Standards at www.science.ubc.ca/students/new/conduct. These rules apply to all exams and assignments (including in class clicker questions, note that it is academic dishonesty to use an clicker that is registered to someone else).

Missed Midterm Exams
Missed midterm exams can be substituted with valid excuse (other midterms the same day is **NOT** a valid excuse). Email me **immediately** when the exam is missed. Your grade will be replaced with questions on final for that section that was missed and will count for the additional 15-20% of the final mark.

RESOURCES AND CONTACTS

Biology Program Office: BioSci Room 2521, phone 604-822-4260
Biology Learning Centre: BioSci Room 1507, see schedule on Connect
Biology program web site: (for those planning to go on in Biology): http://www.biology.ubc.ca/
Comprehensive learning support http://learningcommons.ubc.ca/
AMS tutoring services http://tutoring.ams.ubc.ca/

STEPS TO SUCCESS IN BIOL 121

1. Before lecture:
   - go to Connect website, read text references
   - do pre-quizzes, print outline to use as basis for notes
2. During lecture:
   - attend, be respectful of others, participate in activities
   - ask questions
   - take your own notes, do not just write what is on the slides
   - writing by hand might help you process the information better than typing it on a computer
   - use your iClicker
3. After lecture:
   - review notes to make sure notes are clear and complete and concepts are understood
   - review class and course outcomes and objectives to see if they were met
   - post questions you still have on Connect discussion board
   - test yourself with practice questions and by reviewing worksheets and activities
   - email/visit instructor/teaching assistant/peer tutor if concepts still unclear

Approximate Schedule
It is recommended that you download or print out the lecture outline from Connect for each week and bring it to class. See the outline for required reading and learning objectives.

TOPICS	TEXT READINGS
September 9-11: The Tree of Life and Thinking like a Biologist	**Ch 1**: Biology and the Tree of Life
GENETICS THEME	
Sept. 14: Genes and Chromosomes	**Ch 11.1**: What Is a Chromosome?
Sept. 16-21: The Cell Cycle, Mitosis and Meiosis	**Ch 11**: The Cell Cycle (including Mitosis) **Ch 12**: Meiosis
Sept. 23-25: Pedigree Anaylsis	**Ch 13.6**: Applying Mendel's Rules to Humans
Sept. 28-Oct 5: Inheritance of traits	**Ch 13.1-5**: Mendel and the Gene
Oct. 7: Midterm 1 review in class	
Oct. 8: Evening ***MIDTERM 1*** **(15%)**	**6 - 8 pm**
EVOLUTION THEME Oct. 9: Genetics and Evolution	**Ch 24**: Evolution by Natural Selection
Oct. 12: Thanksgiving	
Oct. 14-16: Evolutionary Trees	**Ch 27.1**: Phylogenetic Trees 521-524
Oct. 19: Natural Selection and Evidence for Evolution	**Ch 24**: Evolution by Natural Selection
Oct. 21-30: Population Genetics & Evolutionary Processes including Sexual Selection	**Ch 25**: Evolutionary Processes
Nov. 2-4: Speciation	**Ch 26**: Speciation
Nov. 6-9: Human Evolution	**Ch 34.4**: 733-740
Nov. 9: Evening ***MIDTERM 2*** **(20%)**	**6 - 8 pm**
Nov. 11: Remembrance Day	
ECOLOGY THEME Nov. 13: Areas of Study in Ecology	**Ch 50.1**: Introduction to Ecology
Nov. 16: Biomes and Abiotic factors	**Ch 50.2-4**: Introduction to Ecology
Nov. 18-23: Community Ecology and Ecosystems	**Ch 53.1-53.3**: Community Ecology
Nov. 25-30: Community Dynamics and Ecosystems	**Ch 52**: Population Ecology **Ch 54**: Ecosystems
Dec. 2-4: The Great Bear Rainforest Applying Genetics, Ecology and Evolution	**Ch 55**: Biodiversity and Conservation +Online materials
FINAL EXAM (50%)	Date & Time TBA (December 2-17)