BIOL 111: Introduction to Modern Biology
General Course Syllabus

COURSE DESCRIPTION: Structure and functioning of cells and multicellular organisms.

Eligible students: Open to students that do ***not*** have Biology 12, AP, BP, or BIOL 112 and require BIOL 111 as a prerequisite for BIOL 112, 121, and 140.

Required textbook: *Campbell Essential Biology with Physiology 5th Ed*., 2015, Eric J. Simon, Jean L. Dickey, Kelly A. Hogan and Jane B. Reece.

Course content:
The topics and materials included in this course have been chosen because they encompass issues that are relevant to the general population. You may read items in the news that sound related to biology and may not appreciate the underlying biological principles. In this course we hope you will begin building a framework of biological concepts and develop the ability to critically evaluate scientific evidence reported in the media on biological issues.

Goals for Biology 111:

1. Increase their **scientific literacy** and become more objective in their appraisal of biologically related news items.

2. Develop a **framework of biological knowledge** into which they can integrate their life experiences and new information.
3. Develop an appreciation of **science as a cumulative, investigative process**.

4. Acquire means of **accessing scientifically reliable information**.

5. **Work cooperatively** in a team to discuss, debate and problem-solve in-class exercises, current issues assignments and case studies.

6. Develop self-confidence in evaluating biological issues facing society, forming biologically sound opinions and become aware of **constructive alternatives**.

Active learning approach:
One of the most effective ways for students to learn is to be engaged in the course material. This course has been crafted with in-class group discussions and activities as well as group out-of-class assignments. Working together with other students means that you will be discussing the material with others as you work through assignments and clicker questions. The hope is that in addition to working together you will develop a network of colleagues to support you in your learning.

I will not go through everything in the lecture notes during class time. It is a poor form of information transfer. Instead, it is up to you to tell me **in advance** through the CONNECT discussion board what you find tricky so that I can focus our class time to clarify problem areas as well as big concepts.

Evaluation and policies:

Date	Form of Assessment	Mark Allocation
Various weeks	Survey completion (participation marks) (~0.5%)* Reading quizzes (~4%)* In-class clicker questions (~4.5%)* Weekly homework question (participation marks) (~4%)* Individual and group assignments (~12%)* **These marked components within the 25% are approximate and could change slightly in value*	25%
October 3rd	Midterm 1 Exam	10%
October 31st	Midterm 2 Exam	20%
Dec	Final Exam	45%

All surveys, quizzes and assignments will have specified dates of completion and submission. Online surveys and quizzes will no longer be available past the due date. Late group assignments will be accepted but with a penalty of 10% per day late.

Exams, both midterms and final require that you prepare and submit a one page (single-sided) handwritten summary sheet of notes that can be used in the exam.

Students are required to write the midterm and final exam on the designated dates and in their registered section. Documentation from a medical doctor or legal authority is required before any concessions will be considered. Do not schedule flights in December before the end of the exam period as no concessions will be granted to write early for any of your classes.

Students who do not fulfill the course requirements during the term (including not writing the midterms) and then miss the final exam will be considered ineligible for a deferred exam.

****The reading is still to be determined but on the final syllabus when classes start**

Section 102 ***Tentative* Course Schedule** **Fall 2015**

Weeks	Units and Learning Outcomes	Readings** and Assignments
1. Sept. 9, 11 ***Introduction survey***	**Introduction and Biology as a Science** 1. Devise testable scientific hypotheses. 2. Assess information and data in the media using scientific reasoning.	***Campbell Essential Biology 5th Edition*** Chapter 1: ____ In-class Assignment: Scientific Evidence
2.Sept. 14, 16, 18	**Life as we Define and Name It** 1. Identify differences among kingdoms and domains that help classify them into different groups. 2. Name common species using scientific nomenclature. 3. Identify 15 common local plant, animal, and fungal species. 4. Effectively use a dichotomous key to identify species. 5. Interpret a phylogenetic tree to determine the degree of relatedness. 6. Identify different characteristics of organisms useful for constructing phylogenetic trees	1: _____ 14: _____ 15:_____ 16:_____ 17:_____ **Group Assignment:** Digital collection (Field trip Sept 19)
3. Sept. 21, 23, 25	**Surviving, the Physical Environment** 1. Identify abiotic factors affecting organisms in their environment. 2. Describe the range of an abiotic factor locally. 3. Describe habitat requirements of local species. 4. Define the composition of biological communities. 5. Describe the effect of changing abiotic factors on the regional or geographic species distribution.	18: _____ 20:____(carbon cycle)

	6. Predict the consequences of environmental disturbances on communities.	
4. Sept. 28, 30, Oct 2	**Interactions, to Eat or What to Eat** 1. Describe the different ways in which organisms interact. 2. Identify the energy sources of different groups of organisms. 3. Distinguish among different types of predation and feeding. 4. Arrange organisms into a food chain or food web. 5. Predict the consequences of food web perturbation. 6. Describe the implications of biomagnification. 7. Assess the efficiency of energy transfer among different food sources.	20:_____ ; Ecosystem Ecology _____ (not the Phosphorus cycle) **Group Assignment:** Outline a local food web
5. Oct. 5, 7	**Population Potential** 1. Identify factors that affect population. 2. Explain what factors determine carrying capacity. 3. Compare real population growth curves to models. 4. Given specific examples, predict the change in population size due to different abiotic or biotic factors.	19:_____ Interview with Lester Brown "World in the Balance" (website link in Week 5 in Connect)
Midterm Oct. 9	**[Units 1 - 4, including energy transfer]**	
Mon. Oct. 12	**Thanksgiving Holiday**	
Oct. 14, 16	**HIPPO** 1. Explain how HIPPO factors contribute to changes in natural populations. 2. List factors that contribute to ecological footprints. 3. Calculate your ecological footprint and identify ways to reduce it.	20:_____, 19: _____ **Group Assignment:** TBA
7. Oct. 19, 21, 23 ***Middle-of-term feedback survey***	**A Catchy Unit** 1. Categorize diseases by causation. 2. Describe basic cell structures and explain their functions. 3. Distinguish among bacteria, viruses and eukaryotic cells. 4. Explain how bacteria and viruses can disrupt regular cellular or body functions.	**4:** _____, not microscopes) **5**: ____, **10:**_____, Supplementary reading on disease
8. Oct. 26, 28, 30	5. Describe how infectious diseases spread. 6. Explain how immune systems respond to infections.	24: _____) **Assignment:** Investigate a disease, for midterm exam
9. Nov 2, 4	**Cell division, Disrupted** 1. Describe the organization of genetic material in a cell. 2. Describe the events that occur during the cell cycle including DNA replication and mitosis 3. Explain how mutations contribute to errors in cell cycle regulation and cancer.	8:_____ 10:_____
Midterm II: Nov. 6	**[Units 5 - 8, including immunity]**	
10. Nov. 9, 13 **Wed Nov 11th = Remembrance Day Holiday (no class)**	**You and your genes** 1. Distinguish between genotype and phenotype. 2. Explain how genes are expressed: From DNA to RNA to protein. 3. Explain how the environment contributes to phenotype. 4. Explain how gene expression is regulated and how cells become differentiated. 5. Explain how dominant and recessive alleles in a genotype contribute to phenotype.	10: _____; 3: _____ 11:_____ (not gene reg. in bacteria), 8:_____ (not origins of genetic variation) 9:_____,
11. Nov. 16,18, 20	6. Describe how diploid cells produce haploid cells through meiosis. 7. Explain how meiosis and sexual reproduction contributes to genetic variation. 8. Analyze patterns of inheritance (Punnett Square). 9. Predict what happens if mutations occur in specific genes that control the	8: _____ 9: _____ 11: _____

	cell cycle. 10. Explain what it means to inherit a risk of developing cancer.	
12. Nov. 23, 25, 27	**Manipulating Genes and Genotypes** 1. Describe how genetic material and cells can be manipulated for whole organism cloning. 2. Describe how stem cells are used therapeutically. 3. Distinguish among biotechnological methods for adding genes to organisms. 4. Identify areas of concern related to genetically modified organisms.	11: _____ 12:_____ In-class assignment: Concerns/benefits of adding a specific gene
13. Nov. 30, Dec 2, 4	**Selection In Action** 1. Explain how breeding practices lead to diverse phenotypes. 2. Describe how the natural environment contributes to the selection of phenotypes. 3. Explain how natural selection acts on individuals to shape the characteristics of populations.	13:_____ 18:_____ **Assignment:** Prepare an answer for final exam

Working with a Group: Useful rules of conduct

- Be clear on what every group member is required to contribute.
- Ensure that each member is given the opportunity to contribute equally.
- When you arrange to meet, be on time and be prepared.
- Respect the view of all members and consider how their ideas can be incorporated into the assignment.
- Consider how to deal with group members that do not follow the agreed rules

HOW TO BE A SUCCESSFUL STUDENT

1. Take responsibility for your learning

- Attend lectures and be on time.
- Form a study group to support you through your learning and use the course bulletin board.
- Monitor your own progress. If you are having trouble, get help.
- If you need help with understanding content get help from
  - other students on the VISTA discussion board
  - the instructor (contact through VISTA email)
  - the peer tutor (at the learning centre or through VISTA email or discussion board) , or
  - use the AMS Tutoring Services (http://tutoring.ams.ubc.ca/).
- Be ethical, avoid **plagiarism** and other forms of academic misconduct.

In University you are expected to submit work or examinations that reflect your own learning, are written by you and in your own words. Failure to do so is PLAGIARISM and considered a form of cheating and will not be tolerated in this course. Consult the Academic Regulations section of the UBC Calendar on the web (http://www.students.ubc.ca/calendar/), and follow the path: Academic Regulations ⇒ Student Conduct and Discipline ⇒ Discipline for Academic Misconduct ⇒ Academic Misconduct) to ensure that you are familiar with the academic conduct expected and the penalties associated with misconduct.
http://www.students.ubc.ca/calendar/index.cfm?tree=3,54,111,959
The UBC Library provides a good discussion of academic integrity (http://www.library.ubc.ca/clc/airc.html).

FYI: It is a form of cheating to have another student bring your clicker to class and use it to record answers for you in your absence. If this happens, both clickers will be confiscated, both students will get zeros for this and you will be reported to the Dean for cheating. You can only use one clicker/class; -attempting to use more than one as yours in one class is also cheating.

2. Try different learning strategies until you find one that works for you

- Prepare for lectures by reading text references, lecture notes and other assigned readings. Strive to read effectively. Attempt to answer the questions within the lecture notes before class. The focus of your exams will come from the notes rather than the textbook. Consider the textbook a supplement only. Identify what you don't understand or find tricky and post it on the VISTA bulletin board **before** the topic is covered in class. This is important, because I will focus much of our class time to clarify what you do not understand.
- The highest form of learning is to be able explain the material to someone else. Try, if you can, to answer your fellow students' questions on the bulletin board. It's your education. *Tuum Est.* Get as much out of it as you can.
- Listen carefully during class time taking notes. Don't write down every word, but write key words or phrases to summarize concepts.
- Participate in class discussions and group activities.
- Organize and review your notes. Add relevant information and supplement with examples from readings.
- Actively participate in class discussions and group activities.
- Discuss questions arising from course material with other students during class activity times and after class.
- When reviewing, think about the 'big picture', think about connections among ideas and about events in the news that relate to what you are learning.
- Try to write your own potential exam questions. If you can integrate material from several learning outcomes into a potential exam question you will have had to come to a good understanding of the material and how it fits together.

3. Be realistic about what it takes to learn

- Manage your time wisely.
- Keep up, create a study plan and stick to it! Review every week during a specific time.
- Give yourself enough time to review, talk to others and get help if needed.
- Your learning should be an ongoing process. Cramming the night before is not an effective way to learn.

Learning is hard work and may be stressful at times, but if you plan carefully and follow that plan you should find learning enjoyable. If it isn't, you need to revise your learning strategy.