WESTMINSTER COLLEGE

Department of Biology

Course syllabus for **Biology 202 01 –** Foundations of Biology II

Course Description: This course is a continued introduction to the fundamental concepts in biology. Emphasis is placed upon evolution as a central concept in biology, as well as animal and plant form and function. The laboratory component of this course complements lecture material and promotes practical lab skill development and independent thought.

Instructor: Dr. Marosh Furimsky
Office: 219 Hoyt Science Resources Center
E-mail: furimsmm@westminster.edu
Office phone: 724-946-7207
Office hours: Monday 1:30 to 3:00 pm and Friday 1:30 to 3:00 pm
(If your schedule conflicts with these times, please make an appointment to meet with me at another time)

Spring Semester 2012

Lecture: MWF 10:30 – 11:30 am (Hoyt 369) Lab: T 2:00 – 5:00 pm (Hoyt 342)

Required Text: Campbell and Reece *Biology* (9th Edition)

Lecture Slides: Available prior to lecture on the BIO202 01 page on My.Westminster.

Labs: Lab exercise materials will be available to you for downloading prior to the lab in the appropriate folder on My.Westminster. Each student must have and bring to each lab a composition-style, quad-lined, laboratory notebook.

Course Objectives:

By the end of this course, students should have:

- demonstrated an awareness of and appreciation for evolution as the underlying principle in the biological sciences, as well as an understanding of the relationship between form and function in plants and animals.
- developed the skills necessary to collect, analyze and interpret scientific data.
- effectively communicated scientific ideas through appropriate written presentation.

Tentative Schedule

Date	Day	Lecture/Lab Topic	Reading
01/18	W	Introduction to Course	
01/20	F	Evolution	**Ch. 22;** sections 22.1-22.2
01/23	M	Evolution	**Ch. 22;** section 22.3
01/24	T	**Lab 1**: Natural Selection	
01/25	W	Evolution of Populations	**Ch. 23;** sections 23.1-23.2
01/27	F	Evolution of Populations	**Ch. 23;** sections 23.3-23.4
01/30	M	Species and Speciation	**Ch. 24;** sections 24.1- 24.2
01/31	T	**Lab 2a**: Hominid Evolution	
02/01	W	Species and Speciation	**Ch. 24;** sections 24.3-24.4
02/03	F	History of Life on Earth **Practice Quiz #1**	**Ch. 25;** sections 25.2-25.4
02/06	M	History of Life on Earth	**Ch. 25;** sections 25.5-25.6
02/07	T	**Lab 2b**: Hominid Evolution	
02/08	W	Review - Evolution	**Review All**
02/10	F	**Test #1**	
02/13	M	Plant growth and structure	**Ch. 35**; Overview, 35.1 – 35.4
02/14	T	**Lab 3a**: Plant Structure and Function	
02/15	W	Photosynthesis	**Ch. 10;** 10.1 – 10.4
02/17	F	Transport in vascular plants	**Ch. 36**; Overview, sections 36.1-36.2
02/20	M	Transport in vascular plants	**Ch. 36**; sections 36.3- 36.5
02/21	T	**Lab 3b**: Plant Structure and Function	
02/22	W	Plant nutrition	**Ch. 37**; Overview, sections 37.1-37.3
02/24	F	Angiosperm reproduction	**Ch. 38**; Overview, section 38.1
02/27	M	Angiosperm reproduction	**Ch. 38**; sections 38.2-38.3
02/28	T	**Lab 3c**: Plant Structure and Function	
02/29	W	Plant responses	**Ch. 39**; Overview, sections 39.2-39.3 Omit paragraphs on "Systems biology and hormone interactions"
03/02	F	Plant responses **Practice Quiz #2**	**Ch. 39**; sections 39.4-39.5

03/05	M	**MARCH BREAK**	
03/06	T	**MARCH BREAK**	
03/07	W	**MARCH BREAK**	
03/09	F	**MARCH BREAK**	

03/12	M	Plant responses	**Ch. 39;** Overview
03/13	T	**Lab 4:** Botany of Desire	
03/14	W	Review - Plant Form and Function	**Review All**
03/16	F	**Test #2**	

03/19	M	Principles of animal form and function	**Ch. 40**; sections 40.1- 40.2
03/20	T	**Lab 5**: Human Physiology	
03/21	W	Principles of animal form and function	**Ch. 40**; sections 40.3
03/23	F	Principles of animal form and function	**Ch. 40**; section 40.4

03/26	M	Principles of animal form and function	**Ch. 40**
03/27	T	**Lab 6a:** Cardiac Physiology	
03/28	W	Animal Hormones	**Ch. 45**; sections 45.1-45.2
03/30	F	Nervous systems	**Ch. 48;** section 48.1 **Ch. 49;** section 49.1

04/02	M	Animal nutrition **Practice Quiz #3**	**Ch. 41**; Overview, sections 41.1-41.3
04/03	T	**Lab 6b**: Cardiac Physiology	
04/04	W	Animal nutrition	**Ch. 41**; sections 41.4-41.5
04/06	F	**EASTER BREAK**	

04/09	M	**EASTER BREAK**	
04/10	T	Animal Nutrition (Monday classes meet) **No lab this week**	**Ch. 41**
04/11	W	Animal Nutrition	**Ch. 41**
04/13	F	**Test #3**	

04/16	M	Circulation and gas exchange	**Ch. 42**; Overview, sections 42.1-42.3
04/17	T	**Lab 6c:** Cardiac Physiology	
04/18	W	Circulation and gas exchange	**Ch. 42**; sections 42.3-42.6
04/20	F	Circulation and gas exchange	**Ch. 42**

04/23	M	Animal Reproduction	**Ch. 46;** sections 46.1-46.3
04/24	T	**No lab this week**	
04/25	W	**Undergraduate Research Day**	
04/27	F	Animal Reproduction **Practice Quiz #4**	**Ch. 46;** sections 46.4-46.5

04/30	M	Animal Development	**Ch. 47;** sections 47.1 – 47.2
05/01	T	**Lab Group Oral Presentations & Discussion**	
05/02	W	Animal Development	**Ch. 47;** sections 47.3
05/04	F	Last Class - Review & Course Evaluations	

05/07	M	**Final Period Begins**	
05/09	W	**Reading Day**	
05/10	R	**Comprehensive Final Exam** **(3:00 – 5:30 PM)**	

Grading:

Exams (3 x 100 points)	300
Final comprehensive exam	200
Lab - pre-lab quizzes (5 x 5 points = 25) - lab worksheets (4 x 25 points = 100) - research papers (3 x 60 points = 180) - lab book organization (2 x 20 points = 40) - group presentation (1 x 25 points = 25)	370
In class quizzes (4 x 15 points)	60
Seminars (2 x 10 points)	20
Undergraduate Research Day	25
	975

Grading Scale: A > 93%, A^- 90-93%, B^+ 87-90%, B 83-87%, B^- 80-83%, C^+ 77-80%, C 73-77%, C^- 70-73%, D^+ 67-70%, D 63-67%, D^- 60-63%, F < 60%.

Methods of Instruction

1. **Lectures**: Lectures will follow the schedule printed above and consist of a combination of formal lecturing by the professor as well as class discussion.

2. **Reading**: We will be covering the chapters in the textbook indicated in the schedule printed above. It is to your advantage to keep up with the reading since the material will accumulate and become more difficult to comprehend if read just prior to an exam. You are also strongly encouraged to attempt the questions at the end of each chapter as part of your studies.

3. **Laboratories**: Lab exercises will complement and enhance the material being covered in class. Lab sessions are an opportunity for a "hands-on" experience and for development of laboratory skills. Lab handouts should be read before the lab session and appropriate introductory preparation (i.e. intro, flow chart, tables, etc.) should be apparent in your lab notebook. Lab notebooks must also be kept up to date and will be collected periodically for grading. Lab reports are completed as either research papers or worksheets and are due the lab session following the completion of the experiment unless instructed otherwise. Late lab reports will be deducted 20% of the total points per day past the due date.

4. **Group lab presentations and discussion:** The purpose of the presentations is three-fold; (1) understand and analyze results from lab experiments in depth, (2) familiarize students with scientific literature and incorporate it into the final analysis, and (3) practice the art of scientific presentation. One lab period has been reserved for group oral presentations and discussion of specific labs. Your group will prepare a 15-20 minute presentation of the specified lab. Each group presentation will be worth 50 points and each member of the group will earn a group grade (plus or minus a few points as determined by the instructor). During the presentation, each lab group will present their experiment (hypothesis and results) along with a detailed discussion of their conclusions to the rest of the class. Each presentation must incorporate outside sources. The use of PowerPoint is not allowed. Groups are limited to using the whiteboard and handouts of data (graphs, tables, etc.). It is important that you realize the differences and similarities between scientific presentations and presentations or performances in the arts and humanities. For the period that your group is not presenting, after each presentation your group must discuss the results of the presentation amongst yourselves and then come up with 2-3 well-thought out questions that pertain to the presentation.

5. **Exams**: There will be four tests during the course of the semester including one final comprehensive exam to evaluate knowledge of the course material. Exams will consist of multiple choice, true or false, short answer and essay type questions.

6. **Quizzes**: There will be four in class quizzes given over the course of the semester relating to the material we are covering in class. They will be given as an opportunity to work through questions individually and as a group prior to midterm tests and the final exam.

7. **Biology seminars**: You are required to attend two biology seminars this semester. Immediately after each seminar, you will submit two questions that occurred to you as you listened to the presenter(s).

8. **Undergraduate Research Day**. You are required to attend sessions at this event where senior capstone, honors and independent study students present their work. An assignment will be distributed to be completed by you.

Policies

Attendance: The structure of this course is such that lectures do not serve the purpose of providing students with pages of notes, but rather serve as the venue to reinforce and learn material that should have been read and prepared prior to class. So, attendance, though not mandatory, is very strongly encouraged to ensure the highest level of success in this course. Missed lab assignments cannot be made up at a later date, so missing a lab without a valid medical reason will result in a grade of 0 for that weeks work.

Academic Honesty: No form of academic dishonesty will be tolerated. Practice of plagiarism or any other form of academic dishonesty will result in a grade of zero for the assignment and formal notification of the offense to the Dean of the College. Repeat violation of the integrity policy will result in suspension and expulsion from the College. Please read, and be very familiar with, the college policy on academic integrity (in the Student Handbook). It is especially important when dealing with scientific writing. In the Sciences, one rarely quotes text from a source. Thus all descriptions, evaluations, discussions must be in your own words, and the ideas that you write about should be attributed to the original author at all times (unless of course, they are your own). When in doubt, ask. Written labs and assignments will be regularly scrutinized using <turnitin.com> that compares submitted work against an existing database.

Classroom Etiquette: The classroom is the place where students will gain the most from this course, so it is imperative that we create and maintain an appropriate learning environment. In order to do so, it is important that one person speaks at a time. When I am speaking, I should have your full attention in class. If you have a question, please lift up your hand and the floor is yours. Your classmates should not be talking while you are asking your question. Any items or activities that may be disruptive to the class will not be tolerated. This includes the use of cell phones, text messaging, instant messaging, email, MP3 players, etc. All cell phones must be switched off before you enter the class or lab. Please keep in mind that disruptive behavior of any kind in the classroom or lab constitutes an academic integrity violation.

Suggestions for doing well in this class:

- As with BIO 201, some of what we cover may be familiar to you from high school biology classes, but we will be covering lots of material and with some degree of detail. We move quickly and it is easy to get behind. Reading the assigned lecture material ***prior*** to the lecture can be very helpful. It is important that you attend each class and laboratory session.

- Have, or try to develop, a positive attitude about the course and learning the material. Examine the feelings and attitudes you're bringing to this course. Are they constructive? Realize that this course is designed to prepare you for a successful career in the natural sciences or something that involves the natural sciences. The faculty teaching this course have selected and developed the assignments and lab exercises to enhance student learning and critical thinking

- Take good class notes. If you have difficulty with this, check your notes with one or more students in the class. Don't hesitate to ask other students or the professor questions—it will probably help clarify things for everyone in the classroom.

- Whenever you have any questions or problems with understanding the textbook, readings, or my lectures, stop by my office early on in the course. Remember, I am here to help and guide you, but I will **not** do it for you. Take advantage of the Learning Center whenever possible.

- Plan ahead for a test. Spend at least 5-7 days (yes, that's **5-7 days**) preparing for the test, 2 hours each night, then get a decent night's sleep the night before the test.

- Study where you're free from distractions (e.g. noise, TV, roommates). To study means to concentrate, *understand*, and commit certain material to memory. Memory can be facilitated *by understanding concepts*, organizing material in a manner that makes sense to *your* learning style, repeating words and ideas out loud, and writing them down repeatedly. Occasionally take a break, walk around and reward yourself for your efforts.

- Form a study group with those who are taking the same class, sit next to in class, or have as lab partners. Cover your notes and quiz yourself or each other as you study. Encourage each other to study rather than talk gossip. Studying in college can be fun and should build a network of trusted friends. You only need to get together for a short while. Then you can go back and brush up on material that you might have missed or that requires more studying.

- Compose your own test questions, especially for multiple choice and essay questions. The purpose of this exercise is not to guess what questions are going to be on the test. Instead, think about it as a way to arrange material and prepare your mind to read and answer specific types of questions.