### Biological Concept - Unity (Bio 105) Lab Syllabus A04L (Tues 1:20), A05L (Wed 10:20), B07L (Thu 1:20), Halsey 211 Spring 2012

#### Instructor: Dr. Toivo Kallas

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- **Office hours:** Mon 1:50 2:50, Tues & Thu 3:30 5:00. Other times by appointment. Anytime by phone or e-mail.
- Lab Manual: Bio-105 Concepts in Biology: Unity, Laboratory Manual (Spring 2012 edition). Bring it (and your lecture text) to every laboratory meeting.

**Objectives of the Bio-105 Labs and Statement of the Liberal Arts:** The goal of these labs it to provide you, the student, with 1) 'hands-on' exposure to lab work in introductory cellular and molecular biology and 2) practical experience in the process of science. Our goal is to understand how scientists use hypotheses, make predictions, and design experiments to answer questions in biology. A basic understanding of biology and methods of science is essential for members of society to make informed decisions about environmental, medical, and ethical issues that greatly influence the modern world. A central goal of this course is to contribute toward that understanding.

Attendance: Students must attend all lab sessions -- <u>Missed labs cannot be made up</u> <u>easily</u>. If you have a valid excuse (participation in university sponsored athletic or academic event, loss of an immediate family member, or verified medical condition) YOU must arrange in advance with another lab instructor to attend their lab session. Labs can only be made up during the week as the scheduled lab. A schedule is posted outside of the lab room that shows when other lab sections meet. Students who miss labs or leave before finishing lab exercises will receive zero credit for that week.

**Lab grade:** Your lab grade will be based on lab exams that will be taken either during lecture or lab periods. These will be announced. In addition, a "lab performance grade" will be based on lab reports and quizzes taken during lab periods. At the end of the semester I will normalize your lab performance scores as a percentage of 100 possible points and this will be reported to your lecture instructor. See your lecture syllabus for details about the percentage of your total grade determined by your lab grade.

#### Lab materials:

- 3-ring binder or folder for lab manual, note book paper
- 15 cm ruler, calculator, #2 pencils and erasers

#### **Policies:**

- No food or drink is permitted in the laboratory
- Clean your work area before you leave.
- Cell Phones and electronic devices must be turned off while in lab. Texting, tweeting, twittering, etc. will not be permitted. If you must leave your phone on in case of an EMERGENCY (i.e. in a life or death situation), set it to vibrate. Cell phones going off during the lab will be confiscated and broken into small pieces!

#### To succeed in Bio-105 lab:

- Read (and think about) the exercise before coming to class
- Understand the rationale behind each exercise
- Understand why the experiments are done the way they are. What does each reagent do? What is the purpose of each procedure?
- Understand how your results support or refute the hypotheses being tested
- Connect exercises in lab with material covered in lecture
- Participate in class discussion -- Ask questions and take notes!
- Success in lab requires time for study. You may have to work hard to cover each of the points listed above. Simply showing up and going through the experiments will not earn you a good grade in lab!

**Lab reports**: I will require lab reports for some of the exercises and will usually ask for a group lab report. Students will work in groups of 3-4. Lab report forms are in the back of your lab manual. The lab report form is short BUT you must think carefully about how to word your responses. You must be concise and clear and go straight to the point. Some lab reports may be accompanied by graphs or tables. Lab reports will have the following sections:

- **Hypothesis.** This is a broad statement that proposes a **possible explanation** for a phenomenon. Hypotheses are based on observations that you or others have made. In some cases they may be simply "educated guesses." Do not write "if then" statements for hypotheses.
- **Proposed Experiments and Controls**. Outline the experiments to you did, including control experiments.
- **Predicted Results and Rationale**. State the outcomes that you predicted for your experiments and how they would support or refute your hypothesis. State the purpose of each control.
- Actual results. Provide a written description of your results as well as graphs or other supporting data.
- **Conclusions**. Describe how your actual results supported or refuted your hypothesis. If possible, present a model that describes how your results helped understand the phenomenon that you tested.

# Note that lab reports should be written in the PAST tense because they describe work that you did in the past.

**Cheating policy:** Cheating of any kind will not be tolerated. Cheating will result in an F grade in the class and possible expulsion from the University. *Students are referred to the University of Wisconsin Oshkosh Student Discipline Code as detailed in specific provisions of Chapter 14 of the State of Wisconsin Administrative Code.* Any student(s) found in violation of any aspect of the above Code (as defined in sections UWS 14.02 and 14.03) will receive a sanction as detailed in UWS 14.05 and 14.06. Examples of violations include: looking at another student's exam or answer sheet and copying the answers during and exam, talking or whispering to another student during an exam, and receiving text messages during an exam on an electronic device. Sanctions range from a grade of zero for the assignment in question to an oral reprimand to expulsion from the University of Wisconsin Oshkosh. Students have the right to request a hearing and to appeal sanctions (as defined in UWS 14.08-14.10).

**Statement on Students with Disabilities:** Students with disabilities are welcome in this course. Please see me during the first week of class so that we may arrange all possible accommodations.

## LABORATORY SCHEDULE, Spring 2012

Lab Week	Dates	Laboratory exercise	Text Sections
1	Jan. 30 – Feb. 3	Exercise 1: Scientific Method	1.7, 1.8
2	Feb. 6-10	Exercise 2: Manipulating Metabolism with Drugs	1.7, 1.8
3	Feb. 13-17	Exercise 3: Molecules	2.9-2.11, 2.14, 3.4, and 3.12
4	Feb. 20-24	Exercise 4. Proteins	3.11-3.14, 5.14-5.16
5	Feb. 27 – March 2	Exercise 5. Enzymes	3.11-3.14, 5.14-5.16
6	March 5-9	Exercise 6. Osmosis	5.3-5.5
7	March 12- 16	Exercise 7. Respiration	3.7, 5.15, 6.6-6.10, 6.13
		March 19-23 No LabsSpring Break!	
8	March 26- 30	Exercise 8. Photosynthesis	7.2, 7.3, 7.11
9	April 2-6	Exercise 9.1. Start Genetic Engineering (streak Tet- and Tet+ plates)	9.5, 9.23, 9.24 12.1, 12.3
10	April 9-13	Exercise 9.2. Continue Genetic Engineering (isolate Tet- resistance-GFP plasmid)	9.5, 9.23, 9.24 12.1, 12.3
11	April 16-20	Exercise 9.3. Continue Genetic Engineering (perform transformation)	9.5, 9.23, 9.24 12.1, 12.3
11	April 23-27	Exercise 9.4. Finish Genetic Engineering (inspect final plates and discuss results)	9.5, 9.23, 9.24 12.1, 12.3
12	April 30 – May 4	Exercise 10: Evolution and Speciation	13.11-13.13, 14.4
	May 7-11	No labs	