

**Syllabus**  
**Bio-105, Biology Concepts Unity** (3 credit lecture + 1 credit lab)  
**Section E09C, Fall 2013**

**Dr. Toivo Kallas**

Lecture hours: Tuesday & Thursday, 1:20 – 2:50, Halsey 106

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web: [www.uwosh.edu/facstaff/kallas](http://www.uwosh.edu/facstaff/kallas)

**Office Hours:** M 1:50 – 3:50, Tu 3:00 – 5:00  
Other times by appointment. Anytime by phone or e-mail.

**Course Overview and Statement of the Liberal Arts**

Bio-105 is an introductory course in biology intended for both majors and non-majors. Incredible advances have been made in understanding fundamental features of life and mechanisms by which living organisms sense and respond to each other and their environments. As living creatures, we face remarkable opportunities as well as significant environmental and societal challenges, many of which involve biology. Thus a basic understanding of biology is crucial for making rational decisions about environmental, medical, and ethical issues that greatly influence the modern world. A broadly-based, multidisciplinary appreciation of nature, society, and art, and the ability to discuss important issues, verbally and in writing, is the hallmark of a liberal arts education. In this course we will explore the fundamental, unifying features of life.

**Learning Objectives**

- 1) Students will learn the basic concepts of cell biology, physiology and function. This will allow them to better understand basic human physiology and medicine, how the natural world functions at a molecular level, and basic principles of evolution.
- 2) Students will gain practice in critical thinking. Toward these ends, we will examine how we know what we know, how to apply what we've learned to new situations and how to evaluate new information based on what we know.
- 3) Students will practice expressing themselves in writing, by writing laboratory reports and in some exam questions.
- 4) Students will learn to focus less on memorizing individual 'facts' and more on learning concepts and entire processes and how they fit together.

**Lecture Information:**

**Lecture Text:** Mader and Windelspecht (2013) **Biology**, 11<sup>th</sup> edition, custom version for UW Oshkosh, McGraw Hill, Inc. **Your book is invaluable – Use It!** Read assignments before class and then re-read after class. Study the figures closely – **they are important!**

**You must purchase the electronic media (Connect Plus) along with the text.** For pricing, go to:  
<http://shop.mcgraw-hill.com/mhshop/store/UOWO/productDetails?isbn=0078138744>

**Connect Plus:** Everyone must purchase Connect Plus. Before we cover a chapter in lecture, you will be required to complete a **LearnSmart** exercise (5% of your grade). Then, after we've finished a chapter, you will be required to take a **Connect Quiz** (10% of your grade). These will help you do well on the exams. Keep track of the due dates and be sure to complete **ALL** of the assignments. **NOTE:** Some of the due dates may change. I have not taught with Connect Plus before, so the dates given, so far, are educated guesses! This is true for LearnSmart exercises AND Quizzes.

**To Register For Our Section (Bio-105 E09C) Of Connect Plus** go to:  
[http://connect.mcgraw-hill.com/class/t\\_kallas\\_fall\\_2013](http://connect.mcgraw-hill.com/class/t_kallas_fall_2013)

**Student Performance System (CPS) Response ‘Clickers’:** Everyone is encouraged to purchase a student response ‘clicker’ from the bookstore and register this to obtain access to the class. Instructions are provided on the class D2L site under, ‘CPS student instructions, Setup Guide.’ Note that you will not need to pay the activation fee – this will be covered by Student Tech Fee funds – Activation cards will be provided in class. I will use the clickers for extra credit quizzes and to get feedback from the class. They will allow you to respond to questions that I ask which will include sample questions from exams.

**Podcasting:** Lectures will be podcast – however, if you want to do well in Bio-105, these will not substitute for regular attendance in class!

**Lecture Exams:** There will be four exams consisting of multiple choice and possible short answer/essay questions. The fourth exam at the end the semester will be a comprehensive exam. If you miss an exam, you will receive a score of zero unless you take the make-up exam at the end of the semester.

**Special note to athletes or others who will miss an exam for academic reasons:** you **MUST** have a letter from your coach/advisor and you **MUST** notify me at least **one week before the exam** so that we can make special arrangements. Failure to do this will result in a zero for the missed exam.

**Review sessions:** Review sessions may be held in the evening a few days before each lecture exam. Times and places will be announced.

**Attendance and how to do well in Bio-105:** It is your responsibility to attend lectures and labs. **The main reason for poor grades is poor attendance!** Good attendance and good note-taking skills will increase your ability to do well. Lecture presentations and other materials will be available on the class **D2L** site. **Note that this is a college class!** *Most of you will have to work very hard to do well, but if you do, the class will be interesting and fun. You can succeed and have some fun at the same time!*

**Instructions for accessing the D2L (Desire2Learn) site:** Go to the UW Oshkosh home page > ‘Titan Services’ > ‘D2L.’ This will take you to the **D2L** login page. To login, use your UW Oshkosh e-mail username and password. In **D2L**, go to the Biology Concepts, Bio-105 E09C course to access course materials, review questions, grades, and messages.

**Supplemental Instruction (SI):** Alex Green (greena81@uwosh.edu) is the student, supplemental instruction leader for this class. More information is provided below and on D2L. Alex is here to help you learn the material in this class!

**Electronic devices: Cell phones must be turned off during lecture and laboratory times.** Texting, twittering, tweeting, bleeping, etc. will not be tolerated. If you must leave your phone on in case of an EMERGENCY (i.e. life or death situation), set it to vibrate. Cell phones or electronic devices operating during class sessions or lecture exams will be confiscated and broken into small pieces! Only exceptions are if you use a laptop, ipad, or other device to take notes or access presentations during class.

### **Laboratory Information:**

**Laboratory Manual: Bio-105 Concepts in Biology: Unity, Laboratory Manual** (Fall 2013 edition). Bring it (along with your lecture text) to every laboratory meeting. Other materials needed for lab are listed below.

**Laboratory Attendance:** You are required to attend the lab section in which you are enrolled. **Missed labs cannot be made up easily.** If you must miss your regularly scheduled lab you may try to attend another lab section, but it’s YOUR responsibility to contact the instructor of that lab in advance and obtain permission to participate in her/his lab. Lab instructors and schedules can be found on Titan Web. **Note that it is only possible to make up a lab during the same week of your scheduled lab class!**

**Grading:**

**Lecture Exams:** Your lecture grade will be based on scores from the three unit lecture exams (40% of the final grade) and one comprehensive final lecture exam (20% of the final grade).

**Make-up Exam:** *This will be a comprehensive exam!* Only **ONE** exam will be given at the end of the semester. Because this exam will test material from all parts of the semester, it will cover a great deal of information. *Be prepared and try to avoid this!*

**Final Grade:** 75% will be based on lecture scores and 25% on laboratory scores as follows:

**Lecture grade:**

- 1) LearnSmart assignments – 5%
- 2) Connect quiz scores – 10%
- 3) Three unit lecture exams – 40%
- 4) One comprehensive final exam – 20%

**Laboratory Grade:** 25% -- based on quizzes and lab reports assigned by the lab instructor.

**Extra Credit Quizzes:** The CPS clickers will be used for quizzes. Each correct answer is worth 1 point. Quiz scores up to a total of 30 points will be added directly to your final point total. This can amount up to 3% added to your semester point total. Exams may also include some extra credit questions.

**Grading Scale:** 93-100% = A, 90-92 = A<sup>-</sup>, 87-89 = B<sup>+</sup>, 83-86 = B, 80-82 = B<sup>-</sup>, 77-79 = C<sup>+</sup>, 73-76 = C, 70-72 = C<sup>-</sup>, 67-69 = D<sup>+</sup>, 63-66 = D, 60-62 = D<sup>-</sup>, below 60% = F. If scores from lab sections differ greatly, these may be adjusted up or down such that lab score distributions are comparable and fair for all sections.

**Statement on Academic Dishonesty:**

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 an 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 contact your lecture and lab instructors in the first week of class so that we may arrange all possible accommodation.

## Lecture and Laboratory Schedule for Fall 2013:

Date	Lecture Topics	Text Reading	Lab Topics (beginning:)
Sep. 5-10	<b>Class logistics.</b> Why study biology? <b>What is life?</b> What do all living organisms share in common? How are living organisms organized? How do scientists perform research? What is the scientific method and is it peculiar to scientists?	Chapter 1	No lab
Sep. 10-17	<b>Chemistry of Life.</b> To understand how life exists and functions and how all life forms are similar, we must understand a bit of chemistry.... What are atoms? Molecules? Polymers? What are some of the properties of water and how is water essential for life?	2	Sep. 9-13 <b>Exercise 1,</b> Scientific Method
Sep. 17-24	<b>Biomolecules and cellular structures.</b> How are molecules used in living organisms, what are their properties, how is each crucial to the existence of life? What are the <b>big four</b> basic types of biological molecules?	3	Sep. 16-20 <b>Exercise 2,</b> Impact of Drugs on <i>Daphnia</i> Metabolism
Sep. 24-26	<b>Cellular basis of life.</b> How are the simplest forms of life different from each other? How are they the same? What are the components of individual cells and how have some of these been specialized so that some cells can send messages (neurons), some can store energy (liver and fat cells) and some can lift weights (muscles)? What caused multicellular organisms to evolve? Is there competition and cooperation between cells in multicellular cellular organisms?	4	Sep. 23-27 <b>Exercise 3,</b> Molecules
Oct. 1-8	<b>Enzymes and Energy.</b> What are enzymes? How do they perform biochemical reactions? How can they harness energy so that organisms survive? How do enzymes control metabolism?	6	Sep. 30 – Oct 4: <b>Exercise 4,</b> Proteins & Enzymes
<b>Oct. 1</b>	<b>Evening Review/study session</b> (time & location to be announced)		
Oct. 4	<b>First Lecture Exam!</b>	<b>1-4</b>	
Oct. 8-10	<b>Cell membranes.</b> How do cells control what enters and leaves? How do cells gain energy to pump molecules in and out? What does it mean for a cell to maintain homeostasis? How do neurons transmit signals?	5 (& part of 37)	Oct 7-11 <b>Exercise 5,</b> Diffusion and Osmosis
Oct. 15-17	<b>Energy and Respiration.</b> How do our cells get energy from the food we eat? What makes oxygen such an important molecule? What is meant by <b>Respiration</b> ?	8	Oct. 14-18 <b>Exercise 6,</b> Respiration
Oct. 22-24	<b>Energy and Photosynthesis.</b> How is energy from the sun harnessed? How does life on earth depends on the activity of cyanobacteria and algae! How plants produce oxygen and make sugars. Why oxygen can be extremely dangerous!	7	Oct. 21-25 <b>Exercise 7</b> Photosynthesis, <b>Exercise 8.1</b> Mendelian Genetics
Oct. 29-31	<b>Replication vs. Sex.</b> The difference between replication and sex! What controls cell division? What causes cancer? The difference between mitosis and meiosis.	9	Oct. 28 – Nov. 1 <b>Exercise 8.2</b> Genetics, <b>Exercise 9.1</b> Genetic Engineering
Oct. 29	<b>Evening Review/study session</b> (time & location to be announced)		
<b>Oct. 31</b>	<b>Second Lecture Exam!</b>	<b>5-8, 37</b>	

Nov. 5-12	<b>Inheritance.</b> How are traits inherited? How can we calculate and predict patterns of inheritance? Mendel, Punnett squares, and genetic variation.	11	Nov. 4-8 <b>Exercise 8.3</b> Genetics <b>Exercise 9.2</b> Genetic Engineering
Nov. 12-19	<b>Molecular biology of genes &amp; gene products.</b> What are genes and how are they replicated? What do genes actually encode? How is the DNA code of a gene converted to something useful by the cell? The connection between genes and enzymes.	12	Nov. 11-15 <b>Exercise 8.4</b> Genetics <b>Exercise 9.3</b> Genetic Engineering
Nov. 19-21	<b>Genes, signals, &amp; development.</b> How do genes control cell behavior? How do they control development? How can scientists manipulate the process to genetically engineer animals and plants?	13	Nov. 17-21 <b>Exercise 8.5</b> Genetics <b>Exercise 9.4</b> Genetic Engineering
Nov. 21-25	<b>Genes, proteins &amp; biotechnology.</b> How can scientists investigate and manipulate genes to genetically engineer bacteria, animals and plants?	14	
Nov. 26- Dec. 1	<b>Thanksgiving Break!</b> ( <i>Don't forget everything you've learned!</i> )		No labs
Dec. 2-5	<b>Selection and evolution.</b> Darwin's legacy. 'Survival of the fittest'...how do populations change? What makes us think that evolution took place? Wrap-up, SOS.	parts of 15-17	Dec. 2-6 <b>Exercise 10</b> Evolution and Speciation
<b>Dec. 3</b>	<b>Evening Review/study session</b> (time & location to be announced)		
<b>Dec. 5</b>	<b>Third Lecture Exam</b>	<b>9-17</b>	
<b>Dec. 10</b>	<b>Review Session (&amp; Make-up Exam for missed exams)</b> (time and place to be announced)		Dec. 9-13 No labs
<b>Dec. 12</b>	<b>Comprehensive Final Exam</b>		
<b>Dec. 14</b>	<b>End of the semester – Happy Holidays!</b>		

## **Guidelines for success in Bio-105!**

**Remember, your goal is to learn this information so that you will remember it for years!**

- 1) Study consistently and frequently.** We estimate that students should study at least 2hr for every hour of lecture. It is MUCH better to study 30-45min every day than to study for five or six hours straight, once a week. AND the worst way to study is to cram day and night just before an exam. If you cram, you may do OK on the exam, but you'll forget what you've learned within days or a couple of weeks.
- 2) Constantly review old lecture material.** This course builds on itself. If you forget material from the first part of the semester, you will be lost in the middle and at the end of the semester.
- 3) Test yourself when studying!!! DO NOT STUDY BY READING OVER YOUR NOTES,** over and over again. Can you draw out or describe whole processes, by memory? Can you look at an unlabeled picture of a cell (for example) and describe everything that you see? This is the way to test yourself.
- 4) Pay attention in class and ask questions.** DO NOT a) talk to your neighbors, b) check your cell phone, c) surf the net. DO listen carefully a) to the lecture, b) to answers to questions that other students have posed.
- 5) Understand how the lab exercises relate to the lecture material.** You will learn a lot about the material covered in lecture by studying and thinking about what you do and see in lab.

## **Further laboratory information**

**Laboratory attendance:** You are required to attend the lab section in which you are enrolled and the corresponding lecture section. Dr. Kallas is the lecture instructor for E01-E07.

YOU MUST ATTEND THE LECTURES THAT CORRESPOND WITH YOUR LABORATORY SECTION, (e.g. if you enroll for lab sections E01L-E07L, you must attend Dr. Kallas' Bio-105 E09C lectures.)

**Missed Labs Cannot Be Made Up Easily.** If you must miss your regularly scheduled lab you can try to attend another lab. It is YOUR responsibility to contact the instructor of that lab and confirm that you may participate in her/his lab section. Lab instructors are under no obligation to allow you into their lab. Below is a list of all of the lab sections and the instructors. IT IS ONLY POSSIBLE TO MAKE UP A LAB DURING THE SAME WEEK OF YOUR SCHEDULED LAB SECTION!

### **Materials You Will Need In The Lab:**

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

## **LABORATORY INSTRUCTORS AND SECTIONS, Fall 2013:**

The names and schedules of the Bio-105 lecture and lab instructors may be found on Titan Web.

# Frequently Asked Questions about Supplemental Instruction (SI)

**Alex Green** (greena81@uwosh.edu) will be your SI for Fall 2013.

## **What is SI?**

Supplemental Instruction (SI) consists of regular review sessions for students enrolled in difficult courses. SI provides a chance to get together with other students in your class to compare notes, discuss important concepts, develop strategies for studying, and test yourselves before your professor does so you can be ready for exams. The sessions are facilitated by a trained leader.

## **What is an SI leader?**

SI leaders are students who have taken the class before and earned a high grade. They have been trained to lead study groups and are prepared to share with you what they have learned about how to study effectively for this course. They know the course content and will be in class with you every day, taking notes and listening closely to the professor. Your SI leader will provide two or three review sessions a week; you can attend one, two, or all three sessions. Your SI leader will also announce when there are special test review sessions.

## **How does it work?**

At each SI session, you'll be guided through the concepts that have been covered in class or assigned as homework. Each session will be different because you'll have new material to discuss. Your leader's job is to help you think about the lectures you hear and the books you read, and then put it all together during SI sessions so you can learn it more efficiently. SI leaders do not re-lecture or give you their class notes. They won't do your homework or your thinking for you. Leaders will share with you the strategies they used to be successful in the course and will help you make the best use of your study time.

## **When do sessions start?**

SI sessions usually start during the second week of classes. Your SI leader will keep you informed about the times and locations for sessions.

## **What does it cost?**

SI is free. It costs you nothing except your time, so come as often as you like – the statistics show that the more you come, the better your grade! National research on SI and results here at UWO clearly show that students who attend SI sessions regularly average one half to one full letter grade higher than their classmates who choose not to attend.

## **What's in it for me?**

Bring your notes; bring your textbook; bring your questions. SI is provided for all students who want to improve their understanding of course material and earn higher grades. If you attend SI regularly, chances are you'll earn a better grade. When you attend SI, you'll develop a better understanding of course content as well as more effective ways of studying. SI sessions are informal – you may even make a few friends as you learn. Since you have to study anyway, come to SI and make efficient use of your study time.

*SI is provided by the Center for Academic Resources.*