Syllabus
Bio-105, Biology Concepts Unity (3 credit lecture + 1 credit lab)
Section E09C, Fall 2012

Dr. Toivo Kallas

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

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Office Hours: M, W 11:30 – 12:30, Tu 3:00 – 5:00
Other times by appointment. Anytime by phone or e-mail.

Course Objectives and Statement of the Liberal Arts

Bio-105 is an introductory course in biology intended for both majors and non-majors. Amazing 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. We humans are living creatures, and we face remarkable opportunities as well as daunting environmental and societal challenges, many of which involve biology. Thus a basic understanding of biology is essential for an informed society to make 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, molecular and cellular features of life. We will also emphasize, as much as possible in a large class, the discussion of scientific concepts.

Lecture Information:

Lecture Text: Reece, Taylor, Simon, Dickey (2012) **Biology: Concepts and Connections**, 7th edition, Pearson-Benjamin Cummings, Custom Version for UW Oshkosh. ***Use your book!*** Read assignments before class and then re-read after class. Study the figures closely ***– they are important!*** Note that new, used, and e-copies of the book are available. Available also is the online (www.masteringbiology.com) 'MasteringBiology' package that includes animations, videos, tutorials, and sample problems that accompany the text. MasteringBiology is not required, but it is very useful, and may be purchased.

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. The clickers are optional but I will use them 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): Cheyenne Bradley (bradlc45@uwosh.edu) is the student, supplemental instruction leader for this class. More information is provided on D2L. Cheyenne is here to help you learn the material in this class!

Electronic devices: All 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! The only exception is 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 2012 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 Grades: Your lecture grade will be based on scores from the three unit lecture exams (100 points each) and one comprehensive final lecture exam worth 150 points.

Laboratory Grades: 150 points will be based on quizzes and lab reports assigned by the lab instructor.

Final Grade: 75% (450 points) will be based on lecture scores and 25% (150 points) on laboratory scores for a total of 600 possible points.

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 5% added to your semester point total. Exams may also include some extra credit questions.

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!*

Grading Scale: 93-100% = A, 90-92 = A^-, 87-89 = B^+, 83-86 = B, 80-82 = B^-, 77-79 = C^+, 73-76 = C, 70-72 = C^-, 67-69 = D^+, 63-66 = D, 60-62 = D^-, 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 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 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 2012:

Date	Lecture Topics	Text Reading	Lab Topics (beginning:)
Sep. 6	**What is science?** What is philosophy? **What is the Scientific Method?** Are scientists the only ones who follow the scientific method...or do we all use it? Why study biology? **What is life?**	Chapter 1	No lab
Sep. 11-13	**Biomolecules:** To understand how life exists and functions and how all life forms are similar, we must understand a bit of chemistry....what molecules are used in living systems, what are their properties, how is each crucial to the existence of life?	2-3	Sep. 12: **Exercise 1**, Scientific Method
Sep. 18-20	**Cellular basis of life:** 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 their competition and cooperation between cells in multicellular cellular organisms?	4	Sep. 19: **Exercise 2**, Impact of Drugs on *Daphnia* Metabolism
Sep. 25-27	**Cell membranes:** How are molecules and their forces harnessed to allow life to exist? How do cells control what enters and leaves? What molecules control the metabolism and behavior of cells?	5	Sep. 26: **Exercise 3**, Mystical Molecules
Oct. 2 - Oct. 9	**Cells and electricity:** How do cells generate electricity; what signals muscles to contract?...practical aspects of diffusion. How do nerve cells transmit signals?	5, 28, 30	Oct. 3: **Exercise 4**, Proteins & Enzymes
Oct. 2	**Evening Review/study session** (time & location to be announced)		
Oct. 4	**First Lecture Exam!**	**1-5**	
Oct. 9-11	**Enzymes, Energy, Respiration:** What are enzymes? How do they perform biochemical reactions? How do our cells get energy from the food we eat? What makes oxygen such an important molecule? What is meant by RESPIRATION?	6	Oct 10: **Exercise 5**, Osmosis and Diffusion
Oct. 16-18	**Energy and Photosynthesis:** 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. 17: **Exercise 6**, Respiration

Oct. 23-25	**Replication vs. Sex:** The difference between replication and sex! What controls cell division? What causes cancer? The difference between mitosis and meiosis.	8	Oct. 24: **Exercise 7** Photosynthesis **Exercise 8.1** Mendelian Genetics
Oct. 30 - Nov. 6	**Inheritance**: How are traits inherited? How can we calculate and predict patterns of inheritance? Mendel, Punnett squares, and genetic variation.	9	Oct. 29: **Exercise 8.2** Genetics **Exercise 9.1** Genetic Engineering
Nov. 6	**Evening Review/study session** (time & location to be announced)		
Nov. 8	**Second Lecture Exam**	**6-8, 28, 30**	
Nov. 13-15	**Molecular biology of the gene:** What are genes and how are they replicated?	10	Nov. 7: **Exercise 8.3** Genetics **Exercise 9.2** Gen. Engineering

Nov. 15-20	**Molecular biology of genes & gene products:** 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.	10	Nov. 14: **Exercise 8.4** Genetics **Exercise 9.3** Gen. Engineering
Nov. 20	**Genes, signals, & development:** How do genes control cell behavior? How do they control development?	11	
Nov. 21-25	**Thanksgiving Break!** *(Don't forget everything you've learned!)*		
Nov. 27-29	**Genes, signals, development, & biotechnology:** How do genes control development and cellular processes? How can scientists investigate and manipulate genes to genetically engineer bacteria, animals and plants?	11-12	Nov. 28: **Exercise 8.5** Genetics **Exercise 9.4** Gen. Engineering
Dec. 4-6	**Selection and evolution:** Darwin's legacy. "Survival of the fittest"...how do populations change? What makes us think that evolution took place? Wrap-up, SOS.	13-14 and parts of 15-16	Dec. 5: **Exercise 10** Evolution
Dec. 4	**Evening Review/study session** (time & location to be announced)		
Dec. 6	**Third Lecture Exam**	**10-16**	
Dec. 11	**Review Session (& Make-up Exam for missed exams)** (time and place to be announced)		
Dec. 13	**Comprehensive Final Exam**		
Dec. 14	**End of the semester – *Happy Holidays!***		

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 2012:

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