Florida Gulf Coast University
Biology II Laboratory (Spring 2015)
College of Arts and Sciences

AMG 11Aug15

COURSE: BSC1011L General Biology II Laboratory **CREDIT**-1 hour **CRN: 81868**
INSTRUCTOR: Dana Dettmar **E-MAIL: ddettmar24@gmail.com**
CLASS ROOM: Griffin Hall, Room 209 **MEETS:** Monday 5:00PM-7:45PM
OFFICE HOURS: Appointment Only **OFFICE HOUR ROOM:** Whitaker Hall, Room 233
Email: Please email me through Canvas only http://canvas.fgcu.edu/
Website: Course material and grades are available in Canvas at http://canvas.fgcu.edu/ .

Welcome to General Biology II Lab!

In this course we will explore together the processes of evolutionary biology which are the basis for the great organismal diversity you see around you. You will first learn how changes in form (phenotype) arise from changes in genotypes and how those changes spread through populations and across time. Second, to explore the diversity of life you will examine many preserved specimens (both whole forms and prepared slides) as well as organisms in the world outdoors. You will also learn to test hypotheses and design experiments by examining the behavior of simple animals in the lab, as well as animals outside. Throughout this course you will acquire skills to help you be successful at Florida Gulf Coast University.

Course Description

This course is intended for science majors. Laboratory experiments are related to the examination of biological systems from the organismal level through the system level and incorporate the principles of evolution, biodiversity and systematics, and ecology.

Things you need to be successful: required text and materials

Required text

- A Photographic Atlas for the Biology Laboratory, 7th edition. Kent M. Van De Graff and John L. Crawley. 2013. Morton Publishing Company.
- Your textbook from class (BSC1011 General Biology II) may also be helpful, but is not required.

Materials

- A 2-inch 3-ring binder to serve as your lab notebook. You will need to keep your lab materials from Canvas and writing assignments in this notebook. Please bring your notebook to lab every week.
- You will need to download, print, and bring material from Canvas to class weekly. *Printing the materials we provide in Canvas will save you about $150 across the semester.*

What should you know by the end of the class?

(Learning Objectives)

- You will develop an improved understanding of evolution from the standpoint of the fact of evolution, the mechanisms of evolution, and the diversity of organisms due to the course of evolution. You will be able to remember and use the terms associated with evolutionary biology so that you can discuss it in a professional manner.
  - You should understand the genetic principles that underlie evolutionary change. You will be able to recognize how the genotype affects the phenotype, how alleles are inherited from one generation to the next, how the frequencies of alleles, genotypes, and phenotypes are estimated within populations and what factors affect their change from one generation to the next.
  - You should understand the process of microevolution. You will know and test the underlying assumptions for Hardy-Weinberg equilibrium and be able to explain how violation of the underlying assumptions results in micro-evolutionary change.
  - You should understand that evolutionary processes, over long periods of time, result in macroevolution. To explore macroevolution you will examine the morphological characters of teeth and skulls to create a hypothesis of the historic evolutionary relationships among the great apes and major fossils leading to *Homo sapiens*.
  - You should understand how systematics enables biologists to organize living organisms into related groups that are hierarchically arranged and reflect their evolutionary history. You will be able to name species, create classification schemes, and propose phylogenies for groups of organisms.

- You will gain an appreciation of the great diversity of life by examining the Domains, Kingdoms, major Phyla, and selected classes of living organisms. Through the examination of specimens you will learn to recognize the pattern of evolutionary change of Eukaryotes over the last 2.5 billion years. You will be able to identify and remember the major groups of organisms. You will:
  - Recognize that much of the diversity of life is made up of diverse groups of largely unicellular organisms called protists. Through the use of a microscope you will be able to recognize many of the known phyla, their forms, life cycles, and their ways of obtaining food and locomotion.
  - Recognize that embryophytes (land plants) evolved many key characters for survival on land. You will be able to recognize the different reproductive and vegetative structures of plants as well as their life cycles. You will learn to identify the main groups of plants and their key characteristics. You should be able to identify some of the native plants on campus.
  - Recognize the diversity among the fungi and their key characteristics.
  - Recognize that the different forms of animals are due to changes in developmental patterns. You will examine these early developmental stages in the major groups of animals and learn how we use those characteristics to describe evolutionary relationships among animals.
  - Recognize some of the earliest forms of animal life from preserved lab specimens and prepared slides. You will learn how to design experiments and test hypotheses by examining the behavior of live flatworms.
  - Recognize all the major phyla of animals and their key characteristics through the examination of whole preserved specimens and prepared slides. You will be able to examine the internal structures of a few animals through the dissection of preserved specimens.
- You will learn how to design and test hypotheses by studying animal behavior in the lab and in the natural world.
- Through all of the above activities you will learn to relate structure to function, develop improved reasoning skills through class discussions, learn how to design and implement experimental studies, and learn how to use data to draw inferences and conclusions.
- You will value the importance of precise language and the basic vocabulary associated with evolutionary biology and the diversity of life.
- You will learn to be a more successful student scientist and self-directed learner through the development of study skills, research skills, and the ability to organize information.

How will you be assessed?

Grading

Your grade for this class will be based on daily quizzes and lab activities, writing assignments, a midterm practical exam, and a final practical exam in the proportions identified below. The lowest quiz grade will be dropped at the end of the semester.

- Daily Quizzes and Lab Activities: 40%
- Writing Assignments 10%
- Midterm Lab Practical: 20%
- Final Lab Practical: 30%

Grades will be assigned by the following scale:

A	92.00-100	C+	78.00-79.99
A-	90.00-91.99	C	70.00-77.99
B+	88.00-89.99	D	60.00-69.99
B	82.00-87.99	F	Below 60.0
B-	80.00-81.99		

You can be successful if you:

- **Complete Weekly Homework -** Prepare yourself for the class (and weekly quiz) ahead of time by:
  - Printing and reading the lab material in Canvas.
  - Writing out answers to the pre-lab questions.
  - Reviewing the material from the previous week.
  - Keeping your work organized in your lab notebook.

- **Complete Laboratory Work -** Participate fully in all lab activities, examine all the materials that are on display, and participate in class discussions. Be sure to fill out the questions and tables in the lab handouts as you will need to review these for quizzes and exams.

- **Attend the full session of class –** Plan to attend for the full class period. Although some of you may complete the work at a faster pace than others, plan to review the materials from previous labs with this extra time rather

than walk out of the classroom early. At the end of each class we will have a short culminating activity that you will need to participate in.

- **Attend office hours.** This semester there are at least four instructors that together will have eight office hours per week in Whitaker Hall room 223. All times will be posted on the door. These are times that the instructors set aside just to help students. Stop by at any time during those times; you do not need an appointment. It is well documented that students who get help along the semester (not just the day before the exam) by attending office hours have higher grades.

- **Prepare for Quizzes and Activity Points–** Each class will begin with a quiz focusing on the material from the previous week. The quiz may include a few questions from the material you will cover that day. Reviewing the material regularly will also help you study for the mid-semester and final lab practical exams. Activity points may also be given as part of the weekly grade. These include points for class preparation (e. g., bringing and keeping up your lab notebook, answering pre-lab questions etc.), class participation (demonstrating the ability to use a microscope, etc), and completing the material for the day (answering all questions in the lab handouts, being able to identify materials examined in the class and understand concepts demonstrated in the class.

- **Keep your Notebook –** Keep yourself organized by keeping your notebook (3-ring binder) current. Print the materials before each class and keep them in your notebook. Bring all materials to class each lab so that you can use and review material from past labs during class. If you get ahead during lab time, study for the cumulative exams by reviewing past labs.

- **Study for Exams -** The material from labs 1-6 will be on the mid-term exam, and the final exam is cumulative. Therefore, be sure to complete the lab materials for each week, review the material on a regular basis, and obtain notes from your lab partners if you miss a class. The exams are in the form of lab practicals; you will need to be able to recognize and answer questions about the materials you examined in class.

- **Complete Writing Assignments –** Read the material describing the assignments as soon as they are provided to you. In general, allow twice as much time to complete the assignment as you think it will take. This will allow you to get help from a librarian or other resource if needed. After you have completed the assignments, review them carefully for mistakes. Quality work is less about getting it right the first time, and more about refining your initial brilliant ideas to meet the requirements of the assignment.

- **Note Due Dates -** Pay attention to the due dates in the schedule for the the material covered on weekly quizzes, the writing assignments, and the exams. Careful organization and planning will save time in the long run. Due to the size and scope of the class, late assignments will not be accepted by instructors.

Policies that will help you be successful and will facilitate in-class learning:

Attendance

It is extremely important for your success that you be present for each lab. Because of the number of classes using BHG 209 and because lab materials are removed at the end of each lab cycle, **it is not possible to make up missed labs**. Absences will negatively affect your grade because you will accrue a zero for any quizzes or assignments that are due that day.

Unusual circumstances resulting in tardiness or class absence will be evaluated on a case-by-case basis. Please communicate the circumstances to your instructor as soon as possible (not at the end of the semester). Note that the lowest quiz grade (for example, a zero for a missed day of lab) will be dropped at the end of the semester, but you will still need to know the material for the cumulative exams.

Attendance will be documented the first week of class in order to comply with federal financial aid requirements. As of fall 2015, all faculty members are required to use Canvas to confirm a student's attendance for each course by the end of the first week of classes. Failure to do so will result in a delay in the disbursement of your financial aid. The confirmation of attendance is required for all students, not only those receiving financial aid.

Course Communication:

E-mail will be the primary means of communication outside of the classroom. Please email through Canvas so that a permanent copy of your email can be retained. It will be useful to you to have your Canvas email forwarded to your Eagle account so that you do not have to check for Canvas email separately. Check your e-mail daily and making sure your account is functional so that you receive all e-mail messages about the course. Please review the FGCU instructions for activating, forwarding, and getting help with your email at http://eagle.fgcu.edu/. If you need help with the Canvas Learning Management System, see the web for Canvas provided at the end of this document.

Use of electronics in the classroom:

We need to maintain a community atmosphere that is conducive to learning the course material. Therefore,

- Please turn cell phones off (not just on vibrate mode) during class time. If you must leave your cell phone on for an emergency, please let your instructor know at the beginning of each class.
- You are welcome to use your phone during class breaks outside of the classrooms.
- IPODS or other similar electronic devices, are not allowed during class or tests.
- Computers and electronic notebooks may be used for taking notes during class. Because they can be very distracting they are not to be used for any other reason (such as email, Facebook, or any use other than the current class activity) or they will not be allowed back into the classroom. If you choose to use a computer in the classroom, please sit at the sides of the class because the screens are distracting to other students. Although electronic resources from outside of class can be helpful, we prefer you first to try to answer the questions with the use of critical thought and the live materials or other resources we provide.
- Electronic materials provided in this class are for your use, but may not be uploaded and posted on any electronic forum (e. g. YouTube, or Facebook, your web page, etc.).

Uploading documents to Canvas:

Documents must be in Word 2007 or later. The full Office package is available to students in the FGCU Bookstore for about $9.00.

Turnitin

Students agree that by taking this course all required writing assignments will be subject to submission for textual similarity review to Turnitin for the detection of plagiarism (except for the assignment on your personal genetic history). All submitted papers will be included as source documents in the Turnitin reference database solely for the purpose of detecting plagiarism of such papers. Use of the Turnitin service is subject to the Terms and Conditions of Use posted on the Turnitin site.

Dissections

In this course you will have the opportunity to dissect live plant material and preserved animals, including ferns and flowers, crayfish, clams, and rats. We believe that the experience of dissecting is an integral part of learning the internal anatomy of organisms and is an introduction to advanced biology courses. The rat especially is a model of your own anatomy as many of the internal organs are very similar to humans. We encourage you, if you can, to visit a show such as the one called “Bodies” which celebrates the beauty of the internal human body. While we do not provide enough organisms for everyone to conduct every dissection on their own, we hope that you will participate and observe as much as you are able.

We recognize that some of you may have strong religious or ethical concerns regarding the use of animals. If you believe that you cannot participate enough to even observe the dissections, please make this known to your instructor the first week of class. We will discuss this with you and work to alleviate your concerns whatever they may be. Your ability to learn is important.

Lab Safety:

Food and drink are not permitted in lab. Close-toed shoes are required in the laboratory for your safety. General safety guidelines are provided in the document *Lab 1: Introduction Materials*. Specific safety features for each lab will be discussed at the beginning of each lab as necessary.

The University has Policies and Resources to help and guide you:

Academic Civility in the Classroom

Be nice. As an instructor I need to meet the needs of all the students individually, and the needs of the group as a whole. Your civility in the classroom will really help in this effort. I adhere to the FGCU policies for student academic behavior and integrity provided in the Florida Gulf Coast University Student Guidebook.

FGCU Academic Behavior Standards and Academic Dishonesty

Don’t cheat. All students are expected to demonstrate honesty in their academic pursuits. The university policies regarding issues of honesty can be found in the FGCU Student Guidebook under the ***Student Code of Conduct*** and ***Policies and Procedures*** sections. All students are expected to study this document which outlines their responsibilities and consequences for violations of the policy. The FGCU Student Guidebook is available online

at http://studentservices.fgcu.edu/judicialaffairs/new.html Students found responsible for violating these rules will be given a failing grade in this course (this includes plagiarism or copying from fellow students).

Plagiarism is the copying of exact text or of original ideas without proper attribution. Copying verbatim from anything, including lectures, your lab materials, or your lab partner's work, is not permissible unless you put the material in quotation marks and cite it properly (give credit where credit is due). You will receive a zero for plagiarized work and may be referred to the Dean of Student Affairs. For examples of plagiarism see:
http://www.indiana.edu/~wts/pamphlets/plagiarism.shtml

Disability Accommodations Services
Florida Gulf Coast University, in accordance with the Americans with Disabilities Act and the university's guiding principles, will provide classroom and academic accommodations to students with documented disabilities. If you need to request an accommodation in this class due to a disability, or you suspect that your academic performance is affected by a disability, please see me or contact the Office of Adaptive Services. The Office of Adaptive Services is located in the Wellness Building. The phone number is 239-590-7956 or Video Phone (VP) 239-243-9453. In addition to classroom and campus accommodations, individuals with disabilities are encouraged to create their personal emergency evacuation plan and FGCU is committed to providing information on emergency notification procedures. You can find information on the emergency exits and Areas of Rescue Assistance for each building, as well as other emergency preparedness materials on the Environmental Health and Safety and University Police Department websites. If you will need assistance in the event of an emergency due to a disability, please contact Adaptive Services for available services and information.

Student Observance of Religious Holidays
All students at Florida Gulf Coast University have a right to expect that the University will reasonably accommodate their religious observances, practices, and beliefs. Students, upon prior notification to their instructors, shall be excused from class or other scheduled academic activity to observe a religious holy day of their faith. Students shall be permitted a reasonable amount of time to make up the material or activities covered in their absence. Students shall not be penalized due to absence from class or other scheduled academic activity because of religious observances. Where practicable, major examinations, major assignments, and University ceremonies will not be scheduled on a major religious holy day. A student who is to be excused from class for a religious observance is not required to provide a second party certification of the reason for the absence. http://www.fgcu.edu/generalcounsel/policies-view.asp

Canvas Learning Management System and Demonstration Site
Canvas Login is Canvas.fgcu.edu
Canvas Student Demonstration Course is https://fgcu.instructure.com/courses/7692

General Education
Information on General Education program requirements is available online at http://www.fgcu.edu/General_Education/index.html

Library Resources
Main page: http://library.fgcu.edu/
Tutorials & Handouts: http://library.fgcu.edu/RSD/Instruction/tutorials.htm
Research Guides: http://fgcu.libguides.com/
Faculty Support: http://library.fgcu.edu/faculty_index.html
Contact Us: http://library.fgcu.edu/LBS/about/contactus.htm

Life Happens! I reserve the right to modify the syllabus and schedule as needed to accommodate situations that may arise during the semester.

The updated Course Schedule can be accessed from the course home page in Canvas.

Please read the syllabus thoroughly, sign below, and keep the syllabus in your lab notebook.

I have read and fully understand the course syllabus for BSC 1011L General Biology II Laboratory.

_____ _____ _____
Printed Name Date Signature

Lab Schedule

General Biology II Lab, BSC 1011L - Fall 2015 11 Aug 2015

Required Text: Byron J. Adams and J. L. Crawley. 2013. A Photographic Atlas for the Biology Laboratory, Seventh edition. Morton Publishing Company. *This is available only in loose-leaf form.*

Required Notebook: One 3-ring binder in which to keep your lab materials (material printed from Canvas and the required text above).

Be sure to bring handouts from Canvas for each lab and the lab manual on days where Lab Activities are indicated. Your textbook can also be helpful to link class and lab activities. Note that this schedule is tentative and may be modified by the instructor; any modifications will be announced through Canvas.

It is not possible to make up missed labs due to the number of classes that use BHG 209 and because all lab materials are removed at the end of each lab cycle. Therefore, your attendance is expected at every lab session.

Class	Date	Laboratory Activity/ Required Handouts	Assignments
1	**19 Aug-Wed**	Introduction to General Biology II Lab **Lab 1**: Genetics and Microevolution **Assignment 1:** Personal Schedule	• Please bring to class items for Lab 1 in Canvas. See Module 1. • **Due-Assignment 1:** Personal Schedule *(print material from Canvas)* • **Due-** Tell us about yourself. *(Print introduction material from Canvas)*
	25 Aug-Wed	*Last day to drop with full refund*	
2	**26 Aug-Wed**	**Lab 2**: Exploring Microevolution: The Hardy-Weinberg Principle **Assignment 2:** In class Handout - Predicting your grade *Possible Video – first minutes of new Cosmos series, unit 2 on wolf to dog evolution*	• **Quiz 1:** Genetics and Microevolution • **Due**-In class handout-Assignment 2: Predicting your grade • **Please bring** to class items for Lab 2 in Canvas.
	7 Sep-Mon	*Labor Day No classes*	
3	**2 Sep-Wed**	**Lab 3**: Describing Evolutionary History: Classifications, Hierarchies, and Phylogenies. **Assignment 3:**Library Exercise *Possible Video – Evolution*	• **Quiz 2:**Exploring Microevolution: Hardy-Weinberg Equilibrium • **Please bring** to class items for Lab 3 in Canvas.
4	**9 Sep-Wed**	**Lab 4**: Eukaryote Evolution: The Protists (Eukaryotes excluding Land Plants, Fungi ,and Animals) ***Begin bringing the Photographic Atlas for the Biology Laboratory***	• **Quiz 3:** Describing Evolutionary History: • **Please bring** to class items for Lab 4 in Canvas. • **Due:** Assignment 3: Library Exercise

5	**16 Sep-Wed**	**Lab 5**: The Evolution of Plants: Plant Anatomy and Plant Lifecycles	• **Quiz 4:** Eukaryote Evolution: The Protists • **Please bring** to class items for Lab 5 in Canvas.
6	**23 Sep-Wed**	**Lab 6**: Plant Diversity: The Embryophytes or Multicellular Land Plants. Tour of Campus/outdoor activity	• **Quiz 5:** The Evolution of Plants: Plant Anatomy and Plant Lifecycles • **Please bring** to class items for Lab 6 in Canvas.
7	**30 Sep-Wed**	***Lab Practical Exam I***	
8	**7 Oct-Wed**	**Lab 7**: Diversity of Fungi Introduction to the Evolution of Animals: Key Characters to Animal Diversity. **Assignment 4:** Exam reflection	• No quiz • **Please bring** to class items for Lab 7 in Canvas. • **Due:** Assignment 4- Exam reflection *(in-class handout)*
9	**14 Oct-Wed**	**Lab 8**: Animal Diversity I: The Porifera, Cnidaria, Platyhelminthes, and Nematoda, Planaria Behavior **Assignment 5**: Begin with the end in mind.	• **Quiz 6**: Diversity of Fungi and Introduction to the Evolution of Animals • **Please bring** to class items for Lab 8 in Canvas.
10	**21 Oct-Wed**	**Lab 9**: Animal Diversity II: Arthropoda, Mollusca, and Annelida Begin Dissections Earthworm demo, Crayfish, Squid and Clam dissections	• **Quiz 7:** Animal Diversity I • **Please bring** to class items for Lab 9 in Canvas. • **Due-** Assignment 5- Begin with the end in mind *(see materials in Canvas)*
11	**28 Oct-Wed**	**Lab 10:** Animal Diversity III: Echinodermata, Hemichordata, and Chordata Rat dissection	• **Quiz 8:** Animal Diversity II • **Please bring** to class items for Lab 10 in Canvas.
	3 Nov-Tue	Last day to drop with no academic penalty	
12	**4 Nov-Wed**	**Lab 11**: Exploring Macroevolution: Human Evolution	• **Quiz 9:** Animal Diversity III • **Please bring** to class items for Lab 11 in Canvas.
	11 Nov-Wed	Veteran's Day *No Classes*	
	Lab will be open 13 November to review materials for Lab Practical II. Regular class for Friday classes is not required on 13 November, but you are strongly encouraged to review the material.		
13	**18 Nov-Wed**	***Lab Practical Exam II***	
	25-27 Nov	Thanksgiving *No Classes*	
14	**2 Dec-Wed**	**Lab 12:** Animal Behavior; learning to observe and collect data. **Assignment 6:** Course review and evaluation	• **Please bring** to class items for Lab 12 in Canvas. • **Due:** Animal Behavior Lab Write-up will be due at the end of the class. • **Due:** Assignment 6: Course review and evaluation *(see materials in Canvas)*
	15 Dec-Tues	Grades due from Instructors by noon	

Lab Schedule

General Biology II Lab, BSC 1011L - Fall 2015 11 Aug 2015

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1	**24 Aug-Mon**	Introduction to General Biology II Lab **Lab 1**: Genetics and Microevolution **Assignment 1:** Personal Schedule	• Please bring to class items for Lab 1 in Canvas. See Module 1. • **Due-Assignment 1:** Personal Schedule *(print material from Canvas)* • **Due-** Tell us about yourself. *(Print introduction material from Canvas)*
	25 Aug-Wed	*Last day to drop with full refund*	
2	**31 Aug-Mon**	**Lab 2**: Exploring Microevolution: The Hardy-Weinberg Principle **Assignment 2:** In class Handout - Predicting your grade *Instructors: Possible Video – first minutes of new Cosmos series, unit 2 on wolf to dog evolution*	• **Quiz 1:** Genetics and Microevolution • **Due**-In class handout-Assignment 2: Predicting your grade • **Please bring** to class items for Lab 2 in Canvas.
	7 Sep-Mon	*Labor Day No classes*	
3	**14 Sep-Mon**	**Lab 3**: Describing Evolutionary History: Classifications, Hierarchies, and Phylogenies. **Assignment 3:**Library Exercise *Instructors-Possible Video – Evolution*	• **Quiz 2:**Exploring Microevolution: Hardy-Weinberg Equilibrium • **Please bring** to class items for Lab 3 in Canvas.
4	**21 Sep-Mon**	**Lab 4**: Eukaryote Evolution: The Protists (Eukaryotes excluding Land Plants, Fungi ,and Animals) ***Begin bringing the Photographic Atlas for the Biology Laboratory***	• **Quiz 3:** Describing Evolutionary History: Classifications, Hierarchies, and Phylogenies. • **Please bring** to class items for Lab 4 in Canvas. • **Due:** Assignment 3: Library Exercise

5	**28 Sep-Mon**	**Lab 5**: The Evolution of Plants: Plant Anatomy and Plant Lifecycles	• **Quiz 4:** Eukaryote Evolution: The Protists • **Please bring** to class items for Lab 5 in Canvas.
6	**5 Oct Mon**	**Lab 6**: Plant Diversity: The Embryophytes or Multicellular Land Plants. Tour of Campus/ outdoor activity	• **Quiz 5:** The Evolution of Plants: Plant Anatomy and Plant Lifecycles • **Please bring** to class items for Lab 6 in Canvas.
7	**12 Oct-Mon**	***Lab Practical Exam I***	
8	**19 Oct- Mon**	**Lab 7**: Diversity of Fungi Introduction to the Evolution of Animals: Key Characters to Animal Diversity. **Assignment 4:** Exam reflection	• No quiz • **Please bring** to class items for Lab 7 in Canvas. • **Due:** Assignment 4- Exam reflection *(in-class handout)*
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