

BIO 121 – S1, Diversity of Life, Spring 2012

Instructor: Ryan Fisher PhD.

Office Hours: Tues: 9-10am

Office: MH418

Weds: 1-2pm

Classroom: MH539

Thurs: 9 -10am

Phone: 978-542 6841

Fri: 12-1pm

Email: ryan.fisher@salemstate.edu **Class Times:** Tuesday – 4.30 – 9.30pm

If you need to see me urgently outside the office hours above please contact me by phone or email.

THE CLASSROOM IS A PLACE OF LEARNING. LET US LEARN TOGETHER!

Textbooks:

Lectures:

Mader, S. 2011. Concepts of Biology, 2nd edition. McGraw-Hill, 819pp.

iClicker – remote response unit, available from the Bookstore. ISBN: 0-7167-7939-0

Lab:

Fisher, R., T. Maney, D.W. Tapley & A.M. Young. 2011. Biology 121 The Diversity of Life - Lab Manual, Biology Department, Salem State University. Hayden McNeil, Plymouth, MI. 250pp.

Course Description:

Features of diversity among organisms are emphasized. Topics include taxonomy, a survey of the biological kingdoms, anatomy and physiology of representative organisms, and the interaction of the organism and it's living and non-living environment. Three lecture hours and one two-hour laboratory per week.

Overarching Goal:

1. To enable students to understand how evolution has formed and continues to modify the diversity of life.

Learning Objectives:

After completing this course students will be able to:

1. Explain the theory of evolution at both the micro- and macro-evolutionary scales.
2. Describe and evaluate the evidence (fossil, molecular, morphological) for evolution.
3. Explain how this evidence is used to determine evolutionary links to create phylogenies.
4. Explain the relationships (evolutionary, morphological, chronological) between all major groups of living organisms in the tree of life.
5. Explain the role of *structure and function* as used for environmental adaptation in prokaryotes and eukaryotes
6. Explain the ways in which organisms interact with the living and non-living components of their ecosystems.
7. Explain basic ecological theory, ecosystem function and human impacts on these ecosystems.
8. Report research findings to peers by way of PowerPoint and Poster presentations.
9. Critically evaluate published, peer reviewed scientific papers.

<i>Learning Objective</i>	<i>Where Addressed</i>	<i>How assessed</i>
1. Explain the theory of evolution by natural selection at both the micro- and macro-evolutionary scales.	Lectures 3 - 7	Clicker questions, exam one, final exam
2. Describe and evaluate the evidence (fossil, molecular, morphological) for evolution.	Lectures 3 - 7	Clicker questions, exam one, critical essay, final exam
3. Explain how this evidence is used to determine evolutionary links to create phylogenies.	Lectures 6 & 7	Clicker questions, exam one, critical essay, final exam
4. Explain the relationships (evolutionary, morphological, chronological) between all major groups of living organisms in the tree of life.	Lectures 6 - 16	Clicker questions, exam two, critical essay, final exam
5. Explain the role of <i>structure and function</i> as used for environmental adaptation in prokaryotes and eukaryotes	Lectures 9 - 19	Clicker questions, exams two and three, final exam
6. Explain the ways in which organisms interact with the living and non-living components of their ecosystems.	Lectures 24 -26	Clicker questions, presentations, final exam
7. Explain basic ecological theory, ecosystem function and human impacts on these ecosystems.	Lectures 24 -26	Clicker questions, presentations, final exam
8. Report research findings to peers by way of PowerPoint and Poster presentations.	Lecture work	Clicker questions, presentations
9. Critically evaluate published papers.	Lecture work	Critical essay

Plagiarism:

Plagiarism in any form will not be tolerated. Students should never copy the work of another student or reference and present it as their own work. Cheating by using written material during an exam is also forbidden. Anyone caught cheating or plagiarizing work will receive zero for that exam or assignment and may receive an F as the final course grade. Further action may be taken in accordance with the Academic Dishonesty policy.

Electronic Devices during Assessments

According to Department policy, **NO electronic devices may be used during assessments.** Stand-alone calculators or devices pre-approved by the instructor are the only exceptions. Any student with a visibly exposed electronic device may receive a **ZERO** for that exam/quiz.

Grading:

Your overall grade comprises both lecture and laboratory components. It is made up as follows:

	<u>Points</u>
Two semester exams (100 points each)	200
Comprehensive final exam	200
PowerPoint/Poster Presentation	75
Critical Reading	125
Weekly Micro-tests	75
Review Essay	75
<u>Laboratory</u>	<u>250</u>
Total	1000 = 100%

Grades are based on a standard grading scale: A – 90-100%, B – 80-89.9%, C-70-79.9% etc. There will be four homework assignments. Presentations will be presented during the last class of the semester. You are responsible for completing all course requirements whether you are present or not. **If you miss 4 labs you receive zero and fail the course!**

Late Submission Penalties:

Most students make deadlines but it is unfair not to penalize those who do not! Work submitted up to 48 hours after the deadline will receive a 20% penalty. Work submitted after this time period will not receive a grade.

Attendance:

Class attendance is compulsory! It is in your best interest to attend all classes. Those who skip many classes generally do not perform well.

Pandemic Plan

In the event of a university declared critical emergency, Salem State University reserves the right to alter this course plan. Students should refer to www.salemstate.edu for further information and updates. The course attendance policy stays in effect until there is a university declared critical emergency. In the event of an emergency, please refer to the alternative educational plans for this course located in the **WebCT pages for this course**. Students should review the plans and gather all required materials before an emergency is declared.

Exams:

Examinations are compulsory. Exams will comprise multiple-choice questions, true-false type questions and short answer questions. Each semester exam will cover work from the preceding exam. The final exam will be comprehensive. **If classes are cancelled due to poor weather, the exam will be held in the next lecture class.**

Presentations:

The presentation will be held during the penultimate class (**Tuesday May 1st, 2012**). I have allocated people to groups according to the class register. Presentation titles and form (PowerPoint or Poster) need to be submitted to me by **Tuesday February 21st, 2012** (in class or by email to ryan.fisher@salemstate.edu). A proposal outlining what your group is going to do must be submitted to me by **Tuesday March 27th**. Details of what needs to be included in the proposal can be found in Appendix A. The topics are as follows:

1. Evolution by Natural Selection – The Story of Darwin and Wallace
2. The Tropical Rain Forest – Why is this Biome so Important?
3. Curious Animal Adaptations
4. Twenty-First Century Ailments of the Human Digestive System
5. Is Climate Change Overstated?

Critical Reading:

You will be provided a reading, 'Dobzhansky, T., 1973. *Nothing in Biology makes sense except in the light of evolution*. The American Biology Teacher 35: 125-129. You can download the reading from the 'Readings' folder in WebCT. After having read the short piece you will need to critically review the piece taking into account your own experiences and ideas. The completed essay should not exceed 3 typed pages (12 point, double spaced) and be submitted by **Tuesday March 20th, 2012**.

Weekly Micro-tests:

We will have these every week from week 2 excluding the weeks of a semester exam. These will be short, 10 question tests comprising multi-choice and true-false questions.

Review Essay

Many of you will not have taken a biology course ever or for some time. I would like you to write a *one page essay* explaining why you feel this course is important. You will prepare a draft for me at the start of the semester for submission by **Tuesday January 24th, 2012**. As we move through the course you will no doubt learn of many of the delights of the natural world around you. With this new knowledge I would like you to review what you had written earlier in the term and submit it for grading by **Tuesday April 24th, 2012**.

Lab Grade:

After each lab you will submit the worksheet for grading. You will also produce a full scientific report on the fouling plate lab. You will also produce a biodiversity fact sheet. The percentage contribution for each segment is: lab worksheets – 70%, scientific report – 20% and, fact sheet – 10%.

Make-ups:

Absence from an exam/quiz for a **valid reason** (death in family, serious illness, official university event) is allowed provided you inform me in advance of the exam. A make-up exam can then be scheduled. Please note that this exam will be in an essay format. The poster session may not be missed. Work submitted late will be penalized 10% per day. I do not allow *extra credit* work.

Effort Required:

BIO 121 is a fairly demanding class with components that count toward your final grade being completed throughout the semester. ***It is vital that you keep up with lecture material as you are contributing to your final grade each day of the term.*** I would recommend reading the relevant text section before each class. The more you are prepared for each class the better you will be able to ask and answer questions! Preparation for exams is a continuous process that you can make easier by reviewing the lecture material and re-reading the text after each lecture. If you wish to excel you need to spend at least 5 hours per week outside of the classroom. Please feel free to come and see me during my office hours or by appointment if you are having trouble with any of the work.

Classroom Culture:

The classroom is a forum for learning and as such should be respected. A relaxed, informal environment is conducive to learning but there are basic standards of behavior. So that everyone may have the same opportunity to learn please be mindful of the following:

1. Please be on time for class – walking in late not only distracts the instructor but also fellow students.
2. Please keep talking to a minimum unless you are asking questions in which case do not be shy.
3. Please be tolerant of others questions – we all learn at different speeds and another's question may actually help those who are too shy to ask.
4. Food and drink are not allowed in the class at any time.

Please turn off your electronic devices during class ie pagers and cell phones. *Disruptive behavior will not be tolerated and will lead to suspension from the class. If you are suspended you will need to meet with me to discuss why you should be readmitted.*

Assistance:

Salem State University has excellent facilities to help students be successful. These include: the Reading Laboratory (4th floor of Library, 542-6717); the Writing Center (223 Meier Hall, 542-6491); the Mathematics Laboratory (Sullivan 306, 542-6348). If you have a disability the Office for Students with Disabilities can assist you (Library 436, 542-6217). Please make use of these services if you are having trouble.

Access Policy:

Salem State University is committed to providing equal access to the educational experience for all students in compliance with Section 504 of the Rehabilitation Act and The Americans with Disabilities Act and to providing all reasonable academic accommodations, aids and adjustments. Any student who has a documented disability requiring an accommodation, aid or adjustment should speak with the instructor immediately. Students with Disabilities who have not previously done so should provide documentation to and schedule an appointment with the Office for Students with Disabilities and obtain appropriate services.

BIO 121 – Tentative Course Syllabus – Spring 2012

Date:	Lecture	Topic	Reading
January 17 th	1	Introductions	
	2	Biology, the study of life	Ch1
January 24 th	3	Darwin and Evolution	Ch13
	4	<u>DVD: Origins – The Shape of Life</u>	
	5	Speciation and Evolution	Ch14
January 31 st	6	Evolutionary history of Life	Ch15
	7	<i>Review of Evolution</i>	
	8	Evolution of Microbial Life	Ch16
February 7 th	9	Evolution of Protists	Ch17
	10	Evolution of Plants	Ch18
		<u>Review for Exam One</u>	
February 14 th		Semester Exam One (Lectures 1 – 8)	
	11	Evolution of Fungi	Ch18
February 21 st	12	Evolution of Animals	Ch19
	13	<u>DVD – Animals – Your Choice!</u>	
February 28 th	14	Unusual Animals – Meiofauna Handout	
	15	Evolution of Humans	Ch20
March 6 th		<u>Course Catch-up</u>	
	16	Plant Organization	Ch21
March 13 th		Spring Break – No Class	

March 20 th	18	Animal Organization	Ch25
	19	Coordination	Ch26
		<u>Review for Exam Two</u>	
March 27 th		Semester Exam Two (Lectures 9 - 16)	
	20	Sense Organs	Ch27
April 3 rd	21	Circulation	Ch29
	22	Digestive Systems	Ch31
April 10 th		<u>Course Catch-up</u>	
	23	Community and Ecosystems	Ch38
		<u>Presentation Work</u>	
April 17 th	24	Conservation Biology	Ch40
		In class assignment – carbon footprints	
		<u>Presentation Work</u>	
April 24 th		Presentations	
		<u>Review for Final Exam</u>	
May 1 st		Final Exam	

BIO121 Diversity of Life, Spring 2012, Schedule of Labs

<u>Week Beginning</u>	<u>Lab and Topic</u>
January 16 th , 2012	No Labs
January 23 rd , 2012	Lab 1 – The Metric System
January 30 th , 2012	Lab 2 – Scientific Method & Graphing
February 6 th , 2012	Lab 3 – Evolution – Cryptic Coloration
February 13 th , 2012	Darwin Festival – No Labs
February 20 th , 2012	Lab 4 – Evolution – Darwinian Snails
February 27 th , 2012	Lab 5 – Ubiquity of Microbes
March 5 th , 2012	Lab 6 – Plants I
March 12 th , 2012	Spring Break – No Labs
March 19 th , 2012	Lab 7 – Plants II
March 26 th , 2012	Lab 8 – Animals I
April 2 nd , 2012	Lab 9 – Animals II
April 9 th , 2012	Lab 10 – Field Trips
April 16 th , 2012	Lab 12 – Ecology – Nutrient Enrichment
April 23 rd , 2012	Lab 11 – Nutrition

Appendix A – Proposal for Group Presentation

You and your group have already selected a topic and a format from the list below. However, please include the topic and format in your proposal.

1. Evolution by Natural Selection – The Story of Darwin and Wallace
2. The Tropical Rain Forest – Why is this Biome so Important?
3. Curious Animal Adaptations
4. Twenty-First Century Ailments of the Human Digestive System
5. Is Climate Change Overstated?

Group Presentation Proposal

Group Members _____

Topic _____

Format poster/PowerPoint (circle option chosen)

Provide a summary of what your group is going to cover below.

Provide an overview of how the work will be divided up.