

## **Biology 102: The Biological World**

Weekend College Fall 2009

### INSTRUCTOR

Brian Corner

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Office Hours: 12noon—1.15pm Sundays, after labs, by appointment, or just stop by. Email is a great way to seek help!

**Important Note: BIO102 will be held EVERY weekend during fall semester (except Thanksgiving), not just “WEC weekends”. This is to accommodate the large amount of content demanded by a survey-level biology class.**

### CLASS TIMES

Please refer to Records & Registration on the Inside Augsburg page (<http://augnet.augsburg.edu>) for the latest information on room assignments for your classes. The following info is correct as of the time of writing:

Class Fri 6.30pm—9.30pm Science 212

Lab Sun 1.15pm—4.15pm Science 214

**Please note: All students taking BIO102 must register for BOTH lecture and lab sections.**

### COURSE OBJECTIVES

We will make a broad-based survey of the biological world, from the study of biomolecules and biochemical pathways through cell biology, genetics, evolution and ecology. Concepts are emphasized, rather than rote memorization. However, it is impossible to avoid introducing significant amounts of new terminology. Mastery of this new language will enable the biological world to become more accessible, and will heighten appreciation and stewardship of our biological heritage. Current topics and issues in biology will be liberally incorporated into the lectures, particularly as they relate to course concepts. Classroom and laboratory time will be used for discussion of topics to foster critical thinking skills.

### TEXT

Discover Biology, 4<sup>th</sup> edition (2009) Cain, Yoon and Singh-Cundy. W.W. Norton. (Please note: both paper and electronic (whole book, or customized by chapter) editions are available)  
<http://www.discoverbiology.com/>

**Please read at least Chapter 1 before the first class, and ideally, Chapters 2 and 3. If you are unfamiliar with basic concepts of chemistry, you may also like to dip into Chapter 4.**

Laboratory handouts will be posted to Moodle, and are to be printed, and brought to the laboratory. Lecture outlines (powerpoints) will be made available on Moodle, but personal note taking is strongly encouraged, since not all examinable content will be in the powerpoints. **STUDY GUIDES WILL NOT NECESSARILY BE PROVIDED; RATHER, IT IS THE STUDENT’S RESPONSIBILITY TO BE ATTENTIVE IN CLASS AND IN THEIR READING.**

### FORMAT

Most materials will be presented in lectures, with outlines and visual aids in PowerPoint or html, augmented with videos and class discussions. General lecture material will be from the text, supplemented regularly with discussion of current events from various media. Lecture outlines, corresponding to the PowerPoint outlines will be posted to Moodle, and may be printed by students and used as a guide to review for exams. Students will each be asked to make a short presentation and help lead a discussion on a biology-related news item of their choice, to be scheduled throughout the semester. Laboratory exercises are selected to illustrate key biological concepts covered in class. A field trip will be conducted during the semester.

Testing will consist of 3 tests during the semester, plus a final exam. Additional small tests may be scheduled as needed. The final exam will be non-comprehensive for lecture and comprehensive for the laboratory. Tests will consist of written answer questions together with multiple-choice questions. The mix is anticipated to be about 60% multiple choice and 40% written answer items. Students who miss an exam due

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to extreme hardship (e.g. in cases of illness or bereavement, as supported with documentation) may be offered an opportunity to make up exams, at the discretion of the instructor. Make up exams may be oral.

### GRADING CRITERIA

Grades will be awarded based upon accumulated points in categories listed in the table below, with the possible inclusion of other minor categories. A grade of 2.0 requires that at least 60% of available course points be obtained, or that total points be within one standard deviation of the mean. A grade of 4.0 requires at least 92% of available course points, and/or one standard deviation above the mean.

<u>Component</u>	<u>Approximate points</u>	<u>Approximate % of grade</u>
Tests	300	30
Lab* reports and problem sheets	200	20
Final exams	200	20
Attendance and participation	200	20
Individual presentation	100	10
Total	1000	100

- Lab attendance is required. One missed lab will reduce the final grade by 0.5, two missed labs will reduce the final grade by 1.0 and more than 2 missed labs results in a grade of 0.

### Provisional Schedule

Week	Date (Friday)	Topics	Readings
1	11-Sep	Introductions: to each other, and to major concepts in biology. Scientific method	Ch 1
2	18-Sep	Biodiversity	Ch 2, 3; Interlude A
3	25-Sep	Test 1; Biomolecules Cell structure and function, membranes, transport and communication	Ch 4
4	2-Oct	Energy and enzymes, photosynthesis and respiration	Ch 5, 6
5	9-Oct	Test 2; Cell division and cancer	Ch 7, 8
6	16-Oct	Classical Genetics and chromosome theory	Ch 9, Interlude B
7	23-Oct	Human genetics, DNA structure and function	Ch 10, 11
8	30-Oct	Gene expression and DNA technology	Ch 11, 12, 13
9	6-Nov		Ch 13, 14, 15; Interlude C
10	13-Nov	Test 3; Evolution 1	Ch 16, 17
11	20-Nov	Evolution 2	Ch 18, 19; Interlude D
12	27-Nov	NO CLASSES: Thanksgiving	
13	4-Dec	Ecology	Ch 33, 35, 37, 38
14	11-Dec	FINAL	

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## Provisional Lab Schedule

Date (Sunday)	Lab	Comments
13-Sep	Daphnia and scientific method	
20-Sep	Biodiversity at Augsburg	Drop deadline Sept 18
27-Sep	Molecular models	
4-Oct	Cells and microscopy	
11-Oct	Fermentation	
18-Oct	Mitosis in onion root tip	
25-Oct	Corn, classical genetics problems	
1-Nov	DNA isolation; E. coli transformation GFP	
8-Nov	Transformation results; Gel electrophoresis; Playing God	
15-Nov	Natural selection; Cichlids	Withdraw deadline Nov 10
22-Nov	TBA	
29-Nov	NO CLASSES: Thanksgiving	
6-Dec	Planet Earth	
13-Dec	No lab	