

Biology 110
Biology: Basic Concepts and Biodiversity
Fall 2006
MWF 8:00 - 8:50 a.m.
112 Kern / 100 Thomas/ 111 Wartik

Biology 110 is a four credit course. The course will utilize web-based tutorials, class, and laboratory/recitation sessions. The goal of this course is to introduce you to fundamental concepts that are common to all organisms and to explore the biological diversity of life on Earth.

Instructors:

Dr. Denise Woodward (Kern sections)
Office: 111B Mueller Lab
Mailbox: 208 Mueller Lab
Office hours: MW 9:30 -10:30 a.m.
Weekly review session: TBA

Dr. Richard Cyr (Thomas sections)
Office: 367 N. Frear
Mailbox: 208 Mueller Lab
Office hours: By appointment
Weekly review session: TBA

Dr. Carla Hass (Wartik sections)
Office: 516 Mueller Lab
Mailbox 208 Mueller Lab
Office hours: WF 9:30 -10:30 a.m.,
R 4 – 5 p.m. and by appt.

Course Coordinator: Carla Hass (contact info above). For questions on course **logistics**, please email Dr. Hass within ANGEL lecture sections (**not** lab). For questions about course **content**, see an instructor or a teaching assistant during their office hours or at the weekly review sessions – email is **not** a good forum for answering questions about the material covered in the course.

Teaching Assistants: are available to assist with both lecture and laboratory/recitation material. They are located in the Biology Resource Room (164 N. Frear - 865-0779); their office hours will be posted on the door to that room and on the course web page.

Course Materials

Required: Tutorial/Lab Access Coupon – Purchase this coupon at the Penn State Bookstore on campus at the registers. The tutorials will be access through your lecture section in ANGEL and the lab/recitation materials through your lab section in ANGEL (<http://webaccess.psu.edu>). To access the tutorials, there will be a second link directly for the Biology Department home page (<http://www.bio.psu.edu>) to use when ANGEL is down for maintenance (between 5 -7 a.m. daily).

Optional Textbook: Raven, P.H. G. B. Johnson, J.B. Losos, and S.R. Singer. 2005. *Biology*. Seventh Edition. McGraw-Hill, NY, NY **or** Freeman, S. 2005. *Biological Science*. Second Edition. Pearson Prentice Hall, Upper Saddle River, NJ **or** Campbell, N, and J. Reece. 2006. *Biology*. Seventh Edition. Pearson Benjamin Cummings, San Francisco, CA. The prior edition can also be used. Copies of these books will be available in the reserve reading room in Pattee Library. If you **do not** purchase a text book, please buy a copy of the *Oxford Dictionary of Biology*. 2004. Fifth Edition. Oxford University Press, Oxford, UK. We will discuss these options on the first day of class.

Course Format

Tutorials: This course has a non-traditional format. It is designed to let you know, on a daily basis, how you are progressing through the course (and to let us know how you are doing with the material). We will use on-line computer tutorials to guide you through the course. It will therefore be **essential** that you have a Penn State Access Account and access to a computer. If you do not have your own computer, you can access the tutorials from any of the many computer laboratories located on campus. In order for your tutorial use to be recorded, you must open the tutorials using **your** personal access account information.

Each tutorial has a series of questions to test your understanding of the material and provide you with feedback to help you better understand the topics covered. Think carefully before you select an answer; these questions are designed to let you know if your level of understanding is adequate. These questions are **NOT** graded, however, you should try to answer the questions correctly because your performance on the questions is an indication of the effort you are putting into the course. Consistent and adequate performance on the tutorial questions will help us determine whether or not you qualify for a second chance exam for Exam 1 (see the Exam Grading section). It will also be essential that you work through the tutorials **BEFORE** you come to class. Timely completion of the tutorials is one factor in determining whether or not you will qualify for the second chance exam.

This course stresses concepts and it is critical that you understand the material; memorization alone will not be sufficient. Bring your questions to class, come to instructor office hours or make an appointment, or attend the weekly review sessions.

Case Study Questions: Almost all of the tutorials will have an accompanying case study question. These will be posted on the course website before the lecture in which the corresponding tutorial will be covered. Over the course of the semester, each student will hand in four case study answers for a total of 80 possible points (20 points each). It is important that you read and think about the case study question before coming to class. Each lecture, you will have about ten minutes to discuss and write out

an answer for that day's case study question. The answer must be written in class and turned in before you leave. You will choose which case studies you want to hand in; you must hand in one for each regular exam (based upon the tutorials covered by that exam; see the course schedule). These will be graded as **+** (complete understanding – 20 pts), **✓** (partial understanding – 10 pts) and **—** (no understanding – 0 pts). We will go over each case study during the next lecture. There will be **no** opportunity to make up case study questions. You will not earn a score for any case studies submitted beyond the maximum of four. There will be multiple choice questions based upon these case studies on the exams. **You must memorize your lab section number and your PSU student ID number and write both at the top of each case study that you turn in. You will lose five points from your case study score if either of these items is missing.**

Weekly Review Sessions: Each week, Drs. Woodward and Cyr will each hold a 50 minute review session. These sessions will be a question and answer format and will allow you to ask about any material in the lecture that you want to review. The time and location will be announced.

Portfolio: We require that you keep a portfolio of your work in Biology 110. This portfolio will include assignments that you complete in both lecture and lab/recitation, including your preparation for case study questions, your exam booklets, including your UTS output, your lecture notes and any other materials that you create during the course of the semester as you learn this material (e.g. notes that you take as you work on tutorials). You should bring your portfolio with you whenever you come to see an instructor during office hours or question sessions. Having this material will allow us to better assist you and will provide evidence of your progress and preparation in the course. The portfolio can be any format that you choose. Many students find that a large 3-ring binder works well.

Laboratory and Recitation Exercises

Laboratory Coordinator: Dianne Burpee, dmb11@psu.edu, Room 115 Mueller Lab, 865-1714. Office Hours: By appointment.

This part of the course begins the **week** of **September 11th**. That week, you will attend the section shown on your schedule of classes unless you have been notified otherwise by the lab coordinator.

Attendance in laboratories and recitations is mandatory; the only legitimate excuses are described in the Exam Grading section. You will lose 10 points for the first lab or recitation that you miss unless you contact your teaching assistant **at least 24** hours before the lab/recitation, or contact the lab coordinator (Dianne Burpee) within **48** hours after the beginning of the missed lab or recitation period with a legitimate excuse. If you miss subsequent labs/recitations without a legitimate excuse, you will lose 20 points for each missed. Points also are deducted for tardiness. Some written assignments will be electronically submitted (submission details will be provided by your TA); a hardcopy of any written assignment must be turned in at the beginning of your lab section the day that the assignment is due. Further details about grading policies and making up exercises for which you have a legitimate excuse will be discussed by your teaching assistant during the first meeting of your laboratory section. Section changes must be done through Dianne Burpee and must be completed before 15 September 2006.

Note Well: If you are in an evening lab/recitation section, and have an evening exam in another course, you **must** make arrangements to take the conflict exam at another time during the day-you will **not** be excused from a lab/recitation for the purposes of taking an evening exam in another course. This semester, all lab/recitation sections are completely filled and you cannot assume that you will be able to make up an exercise at another time.

Exam Grading

Exams: You will be responsible for all material presented in the tutorials. The textbook will serve as a reference in the course. If material is covered in the textbook, but not in the tutorials, you will not be responsible for it. There will be four regular exams during the semester (100 points each) and a final exam (220 points). The course schedule lists the tutorials and topics that will be covered on each exam. For example, Exam 1 covers tutorials 1 through 8. The final examination includes new material (since the fourth exam ~ 40%), as well as the material covered on the first four exams (~60%). **You must memorize your lab section number and your PSU student ID number in order to correctly complete the University Testing Services scantron form.**

Attendance at exams is **mandatory** and absence during the scheduled exam time will result in a grade of zero unless prior arrangements (at least 24 hours before the exam) have been made with the course coordinator, or you provide a legitimate excuse to the course coordinator within **48** hours after the exam start time.

The following are the only legitimate excuses accepted:

- an illness
- a University sponsored event
- a religious holiday recognized by PSU
- a death in the family

Social functions (family reunions, weddings) are **not** legitimate excuses for missing an exam or lab/recitation. If you are unsure about your excuse, ask the course or lab coordinator **before** your absence when possible. As adults, it is your responsibility to

provide reasonable verification; each situation is unique, and we are flexible. Please note that Ritenour Health center will not provide you with a note for minor illnesses. If you have a family emergency, you may call the Assistance and Information Center 24 hour Family Emergency line at 814-863-2020. They will take the information and notify your instructors of your absence.

Note well: Oversleeping is **not** a legitimate excuse for missing an exam. If you oversleep, come to room 115 Mueller Lab as soon as possible. Points will be deducted for lateness. You must finish the exam by noon on the day of the exam.

Exam 1: We recognize that many students who take Biology 110 are freshmen experiencing their first college-level science course. For many of you, this class is quite different from either your high school classes or other college classes. As a result, you may feel intimidated by the first exam and thus may not perform up to your personal expectations. To help with this transition, we are offering the opportunity for you to retake the first exam if you are not satisfied with your performance. In order to qualify for the privilege of retaking the exam, you must demonstrate due diligence in your study habits. Students who do not attend lab/recitation or do not complete assignments, or who fail to work regularly and thoughtfully through the on-line tutorials and case studies will be ineligible for this opportunity. Your TA will provide more details closer to the exam date (October 8th).

Make-up Exams: There are NO make-up exams given until the end of the semester. Make-up regular exams (for students with excuses covered above) will be given only during the week of December 11th (the last week of classes). The dates, times and locations for the make-up exams will be emailed to students who have legitimate absences and have contacted the course coordinator. It is **your** responsibility to sign up for a make-up exam with Dr. Carla Hass no later **than Friday, December, 8th**. These make-up exams will be short-answer/essay format and will be worth 100 points.

Conflict Final Exam: The comprehensive final exam in the course is given during the official final exam period that will be determined by the University Registrar's Office. If you have three or more finals within fifteen hours during finals week, or a direct conflict, you must file for a conflict exam. Students may file for direct and overload conflict examinations through eLion between Monday, October 9, and Sunday, October 22. No conflict exam requests will be accepted after October 22. Individual conflict final exams will not be arranged.

Academic Integrity/Academic Dishonesty

Academic dishonesty is not limited to simply cheating on an exam or assignment. The following is quoted directly from the "PSU Faculty Senate Policies for Students" regarding academic integrity and academic dishonesty: "Academic integrity is the pursuit of scholarly activity free from fraud and deception and is an educational objective of this institution. Academic dishonesty includes, but is not limited to, cheating, plagiarizing, fabricating of information or citations, facilitating acts of academic dishonesty by others, having unauthorized possession of examinations, submitting work of another person or work previously used without informing the instructor, tampering with the academic work of other students." Lying to gain an advantage over other students is also an academic integrity violation.

All University and Departmental policies regarding academic integrity/academic dishonesty apply to this course and the students enrolled in this course. Refer to the following URL for further details on the academic integrity policies of the Eberly College of Science: <http://www.science.psu.edu/academic/Integrity/Policy.htm>. Each student in this course is expected to work entirely on her/his own while taking any exam, to complete assignments on her/his own effort without the assistance of others unless directed otherwise by the instructor or teaching assistant, and to abide by University and College policies on academic integrity and academic dishonesty. If you have any questions about an assignment, please ask. Academic dishonesty either in lab or lecture can result in assignment of "F" by the course instructors or "XF" by Judicial Affairs as the final grade for the student. Students are responsible for ensuring that their work is consistent with Penn State's expectations about academic integrity.

You will be turning in some of your written assignments electronically, through Angel, to give us a date and time stamp; this helps to ensure that we treat all students equally in meeting the deadlines for their assignments. Further details will be given in class.

Assignment of Grades:

Exams and case studies (totaling 700 points) count for 70% of your course grade; the remaining 30% will come from the laboratory and recitation exercises (300 points), for a total of 1000 points*. If you do not pass lab (your score is less than 60%), you will not pass the course, regardless of your grade in the lecture portion of the class. The grading scale is:

A	93 - 100%	C+	77 - 79%
A-	90 - 92%	C	70 - 76%
B+	87 - 89%	D	60 - 69%
B	83 - 86%	F	Less than 60%
B-	80 - 82%		

If the class mean is below 75%, then grades will be assigned with the mean being a "C". There are **no** extra credit points available in this course. *In extraordinary circumstances, a final grade may be based upon fewer than the total number of points available.

Qualified students with disabilities are encouraged by Penn State to participate in the University's programs and activities. Should you need any type of accommodation in any course because of a disability or have questions or concerns about the physical access, please contact the Office for Disability Services in 116 Boucke Building (863-1807).

Course Schedule –Textbook Readings

	Date for Tutorial Completion and Class Meeting	Review of Tutorial and Class Topic	Suggested Textbook Reading		
			Raven	Campbell	Freeman
C A S E S T U D Y O N E B L O C K	9/6	1 - Course Introduction, Life and Natural Selection 14 – Antiquity of Life	1: 1-3, 8-16 4: 61–63 22: 460- 461	1:2-8, 12-19, 26-27	1:1-10, 2:21-23 26:517-518
	9/8	2 - Heredity and Life Cycles 25 - Mitosis/Cell Cycle Regulation	12: 227-236 11: 213-218	13:238-249 12:221-226	12:248-260 11:227-236
	9/11	3 - Mendel and Modern Genetics	13: 241-249	14:251-256	13:269-275
	9/13	4 - Predicting Phenotypes and Genotypes	13: 250–254	14:256-260	13:275-279
	9/15	5 - The Complex Expression Patterns of Multiple Alleles	13: 255-260	14:260-264	13:287-293
	9/18	6 - Pedigree Analysis	13: 261-264	14:265-269	13:294-297
	9/20	7 - Chromosome Behavior and Sex Chromosomes	13: 265–266 13: 270-273	15: 274-277, 282–284, 287	13: 279-283
	9/22	8 - Chromosome Behavior and Gene Linkage	13: 267- 269	15: 277-281	13: 283- 287
C A S E S T U D Y T W O B L O C K	9/25	9 - Genes in Populations	21: 433 -437	23: 454 -458	24: 516-520
	9/27	10 - Genetic Change in Populations	21: 438-442	23: 459-465	24: 527-535
	9/29	Exam 1 – Covers Tutorials 1 - 8, 14 (9 tutorials)	During class time		
	10/2	11 - Genetics and Natural Selection	21: 444-450 22: 453-459 52: 1126-1127	22: 443-448 23: 465-470	23: 503–512 24: 520-52?
	10/4	12 - What is a Species?	23: 471- 485	24: 472-481	25: 538–552 26: 573–575
	10/6	Fall Study Day – No class			
	10/8	Second Chance for Exam 1	Evening – Time/location TBA		
	10/9	13 - Mechanisms of Macroevolution	19: 398-399 51: 1102	24:482-486	26: 569 – 572
	10/11	16 - Carbon and Life	3: 35-58	4: 58 – 66 5: 68 - 89	3: 48 – 62 4: 74 – 82 5: 90 – 97
	10/13	17 - From Gene to Protein	14: 290-295	16: 299–305	14: 311–315
10/16	17 - From Gene to Protein	15: 301-312	17: 311317, 320 – 327	15: 328–335 16: 338-341, 345–354	
C A S E S T	10/18	18 - Prokaryotes I - Cellular and Genetic Organization	27: 545–549 11: 208–209 20: 406- 407	12: 226–227 18: 348–351 27: 540–544	11: 232 19: 404 27: 582-583
	10/20	19 - Prokaryotes II -Structure and Function 20 - Prokaryotes III - Evolution and Early Metabolism	27: 550-558 55: 1187	27:534-538, 544-547, 538-540 54:1197	27:592-594, 584-588, 594-598

U D Y T H R E E B L O C K	10/23	Exam 2 – Covers Tutorials 9-13, 16-17 (7 tutorials)	During class time		
	10/25	21 - Energy I - Thermodynamics	8: 144-148; 154	8: 141- 152	2: 29 – 39 9: 177-183
	10/27	22 - Energy II - Cellular Respiration (Glycolysis)	9: 159-168	9: 161 – 168	9: 183 – 186
	10/30	23 - Energy III - Cellular Respiration (Krebs Cycle & Electron Transport Chain)	9: 169-176, 181	9: 168 – 176	9: 186 – 197
	11/1	24 - Metabolic Regulation and the Endosymbiotic Theory	8: 149-153 9: 177, 182 4: 72–73 28: 562-563	8: 152 –157 9: 177 –178 26: 52 –524 28: 550–551	3: 62 –68 9: 197-198 28: 615617, 622 –623
	11/3	26 - Subcellular Specialization	5: 79-81, 86- 102	6: 98 – 120	7: 131 –155
	11/6	26 – Subcellular Specialization	5: 79-81, 86- 102	6: 98 – 120	7: 131 –155
	11/8	27 - Protists I - Kingdoms Archaezoa, Euglenozoa, Alveolata, and Slime Molds	28: 564-570, 574 -576	28: 549-550, 552 –558, 564 - 566	28: 612-614, 617–626, 627– 630, 633
C A S E S T U D Y F O U R B L O C K	11/10	28 - Energy IV - Photosynthesis (Light Reactions)	10: 185-199	10: 181 -192	10: 202–217
	11/13	29 - Energy V – Photosynthesis (Calvin Cycle)	10: 200-202	10: 192-195	10: 217–221
	11/15	30 - Protists II - Kingdoms Stramenopila, Rhodophyta, and Chlorophyta	28: 571- 573	28: 538-562, 567 – 569	28: 630631, 633, 662- 663
	11/17	Exam 3 – Covers tutorials 18–24, 26-27 (9 tutorials)	During class time		
	11/20	31 - Plants I - Evolution and Diversity, Bryophytes	29: 579- 583	29: 573–583	29: 637, 643 – 655, 661 – 665
	11/21	32 - Plants II - Seedless Vascular Plants	29: 584–588	29: 584–588	29: 665-667
	11/22-24	Thanksgiving Break	Enjoy!		
	11/27	33 - Plants III - Seeded Vascular Plants	29: 589–592	30: 591–597	29: 667-669, 655 –656
11/29	34 – Plants IV - Angiosperms	29: 593–596 41: 840-845, 848	30: 598–606 38: 771–777	29: 657-661, 670 40: 916–922	
	12/1	35 - Fungi I - Evolution and Diversity, Phyla Chytridiomycota and Zygomycota	30: 599-614	31: 608- 623	30: 674 -695
	12/4	36 - Fungi II - Phyla Ascomycota and Basidiomycota	30: 599-614	31: 608- 623	30: 674 -695
	12/6	Exam 4 – Covers Tutorials 27 – 34 (8 tutorials)	During class time		
	12/8	37- Animals I - An Overview of Phylogeny and Diversity 38 - Animals II - Parazoa, Radiata, and Acoelomates	31: 617 -630 32: 633 -645	32: 626 -636 33:638– 648	31: 698 -722 32: 736
	12/11	39 - Animals III - Pseudocoelomates, Mollusks, and Annelids	32: 646 -648 33: 651-661	33: 650–656	32: 724-734, 737 – 741
	12/13	40 - Animals IV- Arthropods and Echinoderms	33: 664 -680	33: 656–666	32: 742–745 33: 749–757
	12/15	41 - Animals V - Deuterostomes: Chordates	34: 683–719	34: 671 -697	33: 758- 772
	Week of 12/18	Final Exam 40% of exam covers tutorials 35 – 41 (7 tutorials), 60% covers the rest of course (tutorials 1 - 34)	Date and time will be posted on eLion after 9 October		