

## Biology 4 Syllabus–Fall 2008

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**DESCRIPTION:** Biology 4 is the second semester of a year-long series of introductory biology lectures for pre-health majors.

**TEXTBOOK:** Biology, Life on Earth (custom edition for LIU-Brooklyn); Audesirk, Audesirk & Byers, Prentice Hall, 7th Ed., 2005.

Book website: [http://wps.prenhall.com/esm\\_audesirk\\_bloe\\_7/](http://wps.prenhall.com/esm_audesirk_bloe_7/) (visit this site for more information of books chapters, media activities, self tests, and other resources)

**LABORATORY MANUAL:** BIOLOGY Laboratory Manual, Selected Laboratories from: (1) D. S. Vodopich and R. Moore, BIOLOGY Laboratory Manual, 8th Ed.; (2) S. S. Mader BIOLOGY Laboratory Manual, 9th Ed. (3) W. D. Dolphin, BIOLOGICAL INVESTIGATIONS Form, Function, Diversity, and Process, 8th Ed. McGraw-Hill Learning Solutions, 2007.

**MICROSCOPE ATLAS:** Photo Atlas for General Biology, 2nd Ed., D. Strete and D. Vodopich, McGraw-Hill, 2007.

Note: The syllabus may change throughout the term. Visit my website for updates:  
<http://myweb.brooklyn.liu.edu/jtello/classes.htm>

Topic	Date	Lecture	Laboratory
1	TH 9/4	Cellular reproduction, mitosis Prokaryotic and eukaryotic cell cycles Phases of mitosis, events of cytokinesis Functions of mitosis Ch, 11, P 184-198	Mitosis Vodopich&Moore Ex. 14, p. 149-157 Photo Atlas Ch. 4, 5
2	T 9/9	Gene exchange, meiosis Advantages of sexual reproduction Events of meiosis Eukaryotic life cycles – roles of mitosis and meiosis Genetic variability – roles of meiosis and sexual reproduction Ch. 11 p. 198-207	Meiosis Vodopich&Moore Ex. 15, p. 159-168 Photo Atlas Ch. 4, 5
3	TH 9/11	Animal development Differentiation Indirect and direct development Animal development – cleavage, gastrulation, Organogenesis, sexual maturation, aging Ch. 37, p. 744-755, 762-766	Starfish and frog development Mader Ex. 32, p. 447-452 Photo Atlas Ch. 19, p. 248-251
4	T 9/16	Human development Ch. 37, p. 755-762	Chicken embryology Mader Ex. 32, p. 452-460, 464 Photo Atlas Ch. 19, p. 252-257

5	TH 9/18	Patterns of inheritance, Mendelian genetics Gregor Mendel, single and multiple trait inheritance Ch. 12, p. 208-216	Genetics problems I (handout) Vodopich&Moore Ex. 17, p. 177-189
6	T 9/23	Gene linkage – same chromosome, sex linkage Incomplete dominance, multiple alleles, polygenic inheritance, pleiotropy, epistasis Ch. 12, p. 216-225	Lab review
	<b>TH 9/25</b>	<b>LECTURE EXAM I – Topics 1-6</b>	<b>LAB EXAM I – Topics 1-6</b>
7	T 9/30	Human genetics Pedigrees, human single gene disorders Effects of errors in chromosome numbers Ch. 12, p. 225-239	Genetics problems II (handout)
8	TH 10/2	DNA Chromosome structure, DNA structure Historical details of DNA structure DNA replication Ch. 9, p. 148-161	Human blood typing (handout) Vodopich&Moore Ex. 17, p. 179-181
9	T 10/7	Gene expression Relationship of genes and protein The genetic code Transcription; translation; mutation; Ch. 10, p. 162-174	DNA structure kits and models (handout) Vodopich&Moore Ex. 11, p. 131-139
10	TH 10/9	Gene expression (cont.)	DNA extraction Vodopich&Moore Ex. 11, p. 140
11	T 10/14	Gene regulation Ch. 10, p. 174-183	DNA fingerprinting, electrophoresis (handout) Mader Ex. 11, p. 142; Vodopich&Moore Ex.7, p. 71-76
12	TH 10/16	Molecular genetics and biotechnology Recombination of DNA Methods and applications of biotechnology Forensics and medical applications Ch. 13, p. 240-262	Lec/Lab review
13	<b>T 10/21</b>	Principles of evolution Ch. 14, p. 264-315	<b>LAB EXAM II – Topics 7-11</b>
	<b>TH 10/23</b>	<b>LECTURE EXAM II – Topics 7-12</b>	Start transformation lab demo (handouts)
14	T 10/28	How organisms evolve? Ch. 15, p. 293-299	Reading assignment (TBA) Transformation lab (check results)
15	TH 10/30	Origin of species Ch. 16, p. 300-315	No lab
16	T 11/4	Origin of species (continuation) Ch. 16, p. 300-315	Reading assignment (TBA) Start antibiotics lab demo (handout)
17	TH 11/6	The hidden world of microbes Viruses, viroids and prions Prokaryotes – Bacteria and Archaea Kingdom Protista Ch. 19, p. 358-385	Bacteria and Protista Antibiotics Lab demo (check results) Mader Ex. 14, p. 171-186 Photo Atlas Ch.6, 7

18	T 11/11	Kingdom Fungi Adaptations of fungi Fungal classification – Div. Zygomycota, Ascomycota, Basidiomycota, Deuteromycota Symbiosis Ch. 20, p. 386-403	Fungi Vodopich&Moore Ex.27, p. 289-300 Photo Atlas Ch. 8
	<b>TH 11/13</b>	<b>LECTURE EXAM III – Topics 13-18</b>	Bryophytes, ferns and fern allies Vodopich&Moore Ex. 28, p. 301-310 Vodopich&Moore Ex. 29, p. 311-321 Photo Atlas Ch. 9, 10, 11
19	T 11/18	Plant kingdom: Key features of plants The evolutionary origin of plants Plant adaptations to life on land Major groups of plants-bryophytes and seedless vascular plants Ch. 21, p. 404-413	<b>LAB EXAM III – Topics 13-18</b>
20	TH 11/20	Major groups of plants-seed vascular plants (Gymnosperms and angiosperms) Ch. 21, p. 413-421	Gymnosperms and angiosperms Vodopich&Moore Ex. 30, p. 323-331 Vodopich&Moore Ex. 31, p. 333-346 Photo Atlas Ch. 12, 13
21	T 11/25	Animal Kingdom: Key features of animals Anatomical features that mark branch points on the animal evolutionary tree Major groups of animals-sponges, cnidarians Ch. 22, p. 422-432	Sponges, cnidarians Vodopich&Moore Ex. 36, p. 387-400 Photo Atlas Ch. 14, p. 91-97
	<b>TH 11/27</b>	<b>Thanksgiving Day</b>	<b>Thanksgiving Day</b>
22	T 12/2	Major groups of animals (cont.)-flatworms, annelids, mollusks Ch. 22, p. 432-437	Flatworms, annelids, mollusks, Vodopich&Moore Ex. 37, p. 401-407 Vodopich&Moore Ex.38, p. 420-426 Vodopich&Moore Ex. 38, p. 413-419 Photo Atlas Ch. 14, p. 98-101; 104-107; 107-109
23	TH 12/4	Major groups of animals (cont.)-roundworms, arthropods, Ch. 22, p. 442-443; 437-442	Nematodes, arthropods Vodopich&Moore Ex.37, p. 407-412 Vodopich&Moore Ex. 39, p. 427-439 Photo Atlas Ch. 14, p. 102-103; 110-114
24	<b>T 12/9</b>	Major groups of animals (cont.)-echinoderms and chordates Ch. 23, p. 443-447; 448-462	Echinoderms, Chordates, Vertebrates Vodopich&Moore Ex. 40, p. 441-459 Photo Atlas Ch. 14 (115-117), 15 (118, 121), 16 (122-130)
		<b>LECTURE EXAM IV– Topics 18-24</b>	<b>LAB EXAM IV – Topics 19-24</b>

**IMPORTANT NOTES:**

**Absence from the laboratory:** An excess of 4 missed laboratories will result in immediate dropping from the course with a grade of "W" or "WF".

**Absence from exams:**

Lecture Exams: Requires both: (1) a valid excuse (official school business, sickness with doctor's note, unfortunate death in family) and (2) contacting me before the exam. Either a make-up exam will be given or your final grade will be based upon your remaining class evaluations. If you do not have a valid excuse or fail to contact me prior to a missed exam, your grade will be zero.

Lab Exams: It is the responsibility of the student who misses a laboratory practical to arrange to take the exam with another instructor. Failure to do so will result in getting zero for the exam.

**Cheating and plagiarism:** Students are expected to adhere to Long Island University policy stating that cheating and plagiarism are unacceptable. Students who violate this policy risk failure of the course as well as possible suspension from the University.

**Cell phones and pagers:** Cellular telephones and paging devices will be turned off during lecture and laboratory classes, especially during examinations.

**OFFICE HOURS**

T: 3:00-4:00 pm; TH: 3:00-5:00 pm, Room M501  
Other Times: by appointment – best to email me.

**GRADING**

<b>4 Lecture exams</b>	<b>200 pts (50 pts each)</b>	<b>60%</b>
<b>4 Lab exams</b>	<b>240 pts (60 pts each)</b>	<b>30%</b>
<b>Lab completion</b>	<b>22 pts (1 pt each)</b>	<b>5%</b>
<b>Lab preparation</b>	<b>66 pts (3 pts-pre lab quizzes x 22 labs)</b>	<b>5%</b>

**Extra Credit** for a maximum of 5% of the final grade will be given for completion of online self tests from all assigned book chapters.

The final percentage minima listed below are guaranteed to result in the following letter grades:

**A=100-85; B+= 84-80; B= 79-70; C+= 69-65; C= 64-60; D= 59-50; F<=49**

**Note that there will not be a curve applied to be final grade.**

Suggestions to achieve success in Bio 4:

- 1) Attend and pay attention in class- attendance will be taken.
- 2) Ask questions.
- 3) Actively take notes- do not simply copy what is put on the slides or blackboard.

- 4) Review the lecture notes and assigned readings after each class. If you need clarification come to office hours.
- 5) Prepare and use study notes before each lecture and lab exam.

**If there is any student who feels that she or he may need an accommodation for any type of disability, please make an appointment to see me during my office hours.**