

# AB101-02: Essential Biology

Fall quarter, 2005-2006

Department of Applied Biology and Biomedical Engineering  
Rose-Hulman Institute of Technology

## Course Information and Syllabus

**Course Description:** This course surveys essential concepts in the biological sciences and describes how new advances related to these concepts affect contemporary society.

**Course Specifics:** AB101 is a four-credit-hour course; Section 2 meets in Olin Hall O105 on Mondays, Tuesdays, Thursdays and Fridays, during ninth hour (3:25 – 4:15 p.m.). The ANGEL on-line course management system will be used to keep records of course grades and to allow access to course materials.

**Instructor:** Renee Rogge, Ph.D.  
Assistant Professor, Applied Biology and Biomedical Engineering  
Office: Moench Hall D222  
Phone: 877-8505; Email: [rogge@rose-hulman.edu](mailto:rogge@rose-hulman.edu)  
Office Hours: MTRF, 8<sup>th</sup> hour (2:30 - 3:20 p.m.), and by appointment. Please feel free to email me to arrange an appointment, or to simply stop by my office. You are always welcome to drop by.

**Texts:** The required text is: *Discover Biology* (2<sup>nd</sup> edition), by Cain, Damman, Lue, and Yoon, Sinaur Associates, 2002.

**Learning Objectives:** At the end of this course, students will be able to:

1. Identify and summarize important concepts from the fields of molecular biology, genetics, evolution, human physiology, and ecology.
2. Articulate and justify their points of view on current issues involving societal uses and perceptions of molecular biology, genetics, evolution, physiology and ecology.
3. Describe how the development of various fields of biology has contributed to their lives, and how these fields are likely to impact their personal and professional lives in the future.

**Attendance:** Attendance at all class meetings is required. **Students who miss more than two classes without valid excuses (see below) will receive a final course grade reduced by up to one full grade level; a student whose total absences (excused and unexcused) exceed two per credit will fail this course.** Students who miss quizzes or graded in-class activities will be allowed to make up the work if a valid excuse is provided *within one week* of the missed event.

**Valid Excuses:** A valid excuse consists of a memorandum on Institutional letterhead from the Dean of Students. Job and graduate/professional school interviews, attending scientific conferences and Institute-sponsored activities are also valid excuses provided that the student notifies me *in writing* and *at least one week in advance* of the event. Illness and exceptional

circumstances are, of course, valid excuses if a confirming memo from the Dean of Students is provided as soon as possible.

**Academic Accommodations:** I understand that “invisible” disabilities (learning and attention deficit disorders, chronic fatigue syndrome, clinical depression, *etc.*) can significantly affect a student’s academic performance. I strongly encourage students to document special academic needs with staff at the Office of Student Affairs, and then to contact me as soon as possible so that we can work together to provide recommended academic accommodations while protecting your privacy.

**Academic Integrity:** “Rose-Hulman expects its students to be responsible adults and to behave at all times with honor and integrity.” - RHIT Academic Rules and Procedures. It is my policy to follow the letter and intent of the Rules and Procedures regarding academic misconduct.

**Course Requirements and Grading Procedures:**

Exams (3 exams): 50%

Quizzes (7 total, drop lowest grade): 20%

Contemporary Topic Assignments (in-class and take-home): 10%

Class Participation and Attendance: 5%

Final Exam (consists of both new and previously-tested material): 15%

*Total:* 100%

Detailed requirements for activities will be provided as the quarter progresses.

Examination questions will be composed from material presented in class or in the textbook. Questions will be in various formats: multiple choice, true/false, short answer/essay, *etc.* Any questions regarding the grading of an examination must be directed to the instructor in writing within one week after return of the exam – after that period, grades will not be changed.

Homework will be assigned, however, it will not be graded. Solutions will be posted. Some questions from the homework will be included on exams, so it is to your benefit to complete the homework and self-check your solutions.

Course grades will not be curved. This means that grades will not be adjusted in comparison to the performance of other students in the course; instead, each student’s grade will depend on demonstrating (through course assignments) how well they have mastered the learning objectives of the course. Letter grades will be assigned according to the system outlined in the Institute’s Academic Rules and Procedures.

**There will be no rescheduling of the final exam to accommodate travel plans at the end of finals week. Do not schedule trips home before the finals schedule is announced.**

**Caveat:** I reserve the right to modify the course content, schedule, policies, *etc.* outlined in this syllabus.

## Course Schedule

Week	Dates	Course Topics	Assigned Readings / Notes
0	9/1 9/2	Course setup / science, characteristics of life Building blocks	Chapter 1 Chapter 5
1	9/5 9/6 9/8 9/9	Cell division: mitosis and meiosis Patterns of Inheritance Patterns of Inheritance, <b>Quiz 1</b> Chromosomes and human genetics	Chapter 10 Chapter 12 Chapter 12 Chapter 13
2	9/12 9/13 9/15 9/16	Chromosomes and human genetics DNA From gene to protein, <b>Quiz 2</b> Genetics-related ethical issues	Chapter 13 Chapter 14 Chapter 15 Handouts
3	9/19 9/20 9/22 9/23	<b>Exam 1</b> Gene expression, gene chips DNA technology The human genome – in-class computer lab	<b>1, 5, 10, 12-15, Handouts</b> Chapter 16 Chapter 17, Handouts (Chapter 18)
4	9/26 9/27 9/29 9/30	Nature of science / Evidence for evolution Mechanisms of evolution Adaptation and speciation, <b>Quiz 3</b> Human evolution: skull morphometrics lab	Chapter 19 Chapter 20 Chapter 21 Chapter 23
5	10/3 10/4 10/6 10/7	Lab wrapup, Review <b>Exam 2</b> (educational) video day: Adaptation Nutrition	<b>16- 21, 23, Handouts</b>  Chapter 28
6	10/10 10/11 10/13 10/14	Nutrition and Health; <b>Quiz 4</b> In-Class activity <i>Fall Break</i> <i>Fall Break</i>	Handouts Handouts
7	10/17 10/18 10/20 10/21	Defense HIV / AIDS; Hormones Reproduction, <b>Quiz 5</b>	Chapter 32 Handouts Chapter 33 Chapter 36
8	10/24 10/25 10/27 10/28	Reproduction Development Stem cells <b>Exam 3</b>	Handouts Chapter 37 Handouts <b>28, 32, 36, 37, Handouts</b>
9	10/31 11/1 11/3 11/4	Growth of populations Communities of organisms Genetically modified crops Ecosystems; <b>Quiz 6</b>	Chapter 41 Chapter 43 Handouts Chapter 44
10	11/7 11/8 11/10 11/11	Wolves - keystone species in Yellowstone Global change Global climate change – in-class computer lab Course evaluations / review; <b>Quiz 7</b>	Handouts Chapter 45 Handouts TBA
	11/14–11/18	<b>Finals Week</b> The final exam includes all material covered in the course.	Final exam date/time to be determined.

This schedule is subject to change.