Biology 100: Introductory Biology - Winter 2010

Syllabus and Course Information

Instructor: Ken Marr
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Office: SC-214
E-mail: kmarr@greenriver.edu
Biol& 100 Website: http://www.instruction.greenriver.edu/kmarr/

Office Hours (in SC-214)
Mondays: 10:00 - 10:50
1:00 - 2:50
Wednesdays: 10:00 - 10:50
Fridays: 10:00 - 10:50
And by mutual arrangement

Class Meeting Times:
Lecture (in SC-240): Sections E and F: Tuesday & Thursday: 1:00 – 2:50 p.m. (No class on Mondays)
Lab (in SC-255): Section E: Wednesday: 1:00 – 2:50 p.m.; Section F: Friday: 1:00 – 2:50 p.m.

Course Description
For non-biology majors and students wishing to update their biological knowledge before taking other biology courses or human anatomy/physiology. Topics include the process of science, natural selection, molecules of life, cell biology, cell division, DNA and protein synthesis, Mendelian and human genetics, biotechnology, and selected topics from human and animal physiology. Examples will be taken from all the kingdoms of life. Satisfies math/science/lab distribution requirement for AA degree.

The Course
This is a one-quarter introductory biology course intended for non-science students, or returning students needing a refresher course. Topics discussed include….

- The process of science
- How cells work
- How genes are passed on from parent to offspring and the role of natural selection
- The molecular basis of heredity
- Biotechnology and bioethics
- How cells obtain energy
- Biology of Aging: Processes responsible of aging and methods to slow the aging process

A strong attempt will be made to show the relevance of these topics to your life and to help you to learn on your own once you leave this class. A variety of instructional methods will be used: traditional lecture, group work/discussions, and individual as well as group presentations.

Prerequisites
None, but each of the following are needed for success in this class:
- Availability and willingness to spend 2 hours of quality study time outside of class for every hour in class (i.e. 12-14 hours per week—about 2 hours daily.) WARNING! It is unlikely that you will do well in this class if you do not invest this amount of time!
- Good reading, writing, oral communication, and critical thinking skills
- Good study habits, a curious/active mind, and an interest in biology are strong assets.

Course Materials (available in the GRCC bookstore)
- Textbook: Essential Biology by Campbell/Reese/Simon, 3rd ed. (required). The text’s website has loads of useful study aids and other interesting stuff: http://www.essentialbiology.com
- Student Study Guide by Zaliska (optional)
- Do not purchase Biology 100 Lab Packet! Lab handouts will be provided each week in class.
- 3 ringed notebook for, handouts, notes, etc.
- Optional: simple scientific calculator, 6 inch ruler, small pocket stapler for stapling assignments in class (often a stapler in not available in the lecture room!)
Special Needs

If you believe you qualify for course adaptations or special accommodations under the Americans with Disabilities Act, it is your responsibility to contact the Disabled Students Services Coordinator, (253) 833-9111, ext. 2631, and provide the appropriate documentation. If you have already documented a disability or other condition, which would qualify you for special accommodations, or if you have emergency medical information or special needs I should know about, please notify me during the first week of class. You can reach me by phone at (253) 833-9111, ext. 4204, or you can schedule an office appointment to meet me in SC-214 during my posted office hours, or at another mutually determined time.

Grading Policy

<table>
<thead>
<tr>
<th>Points Possible (approximate)</th>
<th>% of Grade (approximate)</th>
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<tbody>
<tr>
<td>Midterm Exams:</td>
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<td>(5@ 100 pts each)</td>
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<td>(If it helps your grade, your lowest exam score is replaced with final exam %)</td>
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<tr>
<td>Final Exam</td>
<td>150</td>
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<tr>
<td>Lab Reports</td>
<td>145</td>
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<tr>
<td>Issues Project</td>
<td>205</td>
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<tr>
<td>Homework Portfolio</td>
<td>~115</td>
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Total Points Possible (approximate) = ~915

CAUTION!! Over half of these points are earned during the last 3 weeks of the quarter! CAUTION!!

Grades are determined based on a percentage of total points possible:

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<th>Percent</th>
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<td>93</td>
<td>3.8</td>
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<td>85</td>
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<td>89</td>
<td>3.4</td>
<td>82</td>
<td>2.7</td>
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<td>2.0</td>
<td>68</td>
<td>1.3</td>
<td>&lt; 62</td>
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Note:
- Students that earn less than 62%, or who stop coming to class without officially withdrawing by the end of the 8th week of the quarter, will receive a grade of 0.0 This grade will be included in college GPA calculations.
- Keep track of your grades!!!! It is strongly recommended that you keep track of all of your grades throughout the quarter on the grade record sheet found towards the end of this packet. There are two excellent reasons to do this:
  - If you keep track of your grades on individual assignments, you can calculate your class grade at any point in the quarter.
  - Instructors have been known to make record keeping mistakes. Protect yourself by keeping good records.
Pass/No Credit Grade Option
Students may elect to be evaluated on a "Pass" or "Non-Credit" basis rather than by decimal grades by filing a petition with enrollment services (253) 833-9111 ext 2500 no later than the end of the 8th week of the quarter. For students who qualify, the registrar will convert the decimal grade submitted by the instructor either to credit (P) or to no credit (NC)—as per GRCC policy, a decimal grade ≥ 1.5 is required for a “P” grade. Caution! Many universities will not award credit for a science or math course with a “P” grade if the course is required for a specific major (e.g. Biology, Pre-medicine, Pre-dental, etc.)

Major Course Goals
There are 3 major goals for this course:

- **Biological Concepts**
  Since this is a survey course, it is important that we cover the major areas of biology listed above. However, biology is a large field so we will concentrate on the major concepts involved, rather than try to cover everything superficially. To pass this course, students will need to demonstrate an understanding of the major concepts of cellular biology and genetics, particularly as they relate to human health, human behavior, and the environment.

- **Skills**
  It is important for all citizens to be scientifically literate, whether or not they are in a science profession. Part of literacy is the ability to find information, evaluate the information and communicate or act on that information. In this course we will help you learn to find reliable information related to biology, evaluate the quality of that information and communicate that information to your peers and instructor.

- **Process of Science**
  We think that it is important for all people, not just scientists, to understand the process of science and how to do science. To learn to be a better scientist you will read papers from various sources (including original research papers) and discuss not only the findings, but also how science is conducted (e.g. funding, peer review, conferences, etc.). You will DO science whenever possible including such scientific methods as hypothesis testing (this can even occur in lecture), controlled experiments and observational studies.

Content Specific Learning Objectives in this class include...
The student:

- Summarizes the steps of the process of science.
- Explains the role of the environment in natural selection.
- Identifies the functions of the four classes of biomolecules and the monomers of each class.
- Identifies the structure and function of cellular organelles.
- Solves Mendelian and non-Mendelian genetic problems.
- Summarizes how DNA controls the phenotype of cells by encoding information for the production of protein.

Three or more of the following demonstrates these outcomes:

1) Active and respectful participation in small and large groups,
2) Successful achievement on quizzes and exams,
3) Short and long writing assignments,
4) Case studies analysis,
5) Field and laboratory studies and associated reports, and
6) An ever-improving knowledge of the subject material through exemplification, illustration, and elaboration.
Assessment Instruments

Exams

• There will be four exams: three midterm exams and a comprehensive final exam. The midterm exams consist of short answer and/or objective in nature—see the schedule on the last page for exam dates. These exams will cover material from all aspects of the course, including lectures, labs, homework, and your readings. Your homework assignments and lecture participation sheets will help you concentrate on the reading material that we think is particularly important. The exams will be designed to probe deep understanding of the concepts and principles involved, and an ability to apply these concepts to novel situations rather than a memorization of detail. Your class notes, lab assignments, and stamped assignments will also be useful in helping to determine the main concepts to focus your attention on when studying.

• Exam scores are not "curved" making it possible for everyone in the class to earn a high grade. Moreover, each exam includes several extra credit questions allowing for the possibility of a score greater than 100%.

• There will be no make-ups; however, if it helps your grade, your lowest exam score will be replaced with the percentage score you earn on the comprehensive final exam. Missed exams cannot be made up.

• A comprehensive final exam (~2 hours long) will be given during final exam week. Everyone is required to take the final exam. Make your travel plans now, as there will be no early exams.

Issues Project

Each of you will work with a group on an issue related to genetics or cellular biology. You will choose your issues project topic during the 3rd week and work on the project during the entire term. For further details, please see the Issues Project handout under the lab section of the class website. The project, worth 21% of your grade, consists of three parts:

• Project References: 25 points (individual grade)
• Progress Report: 15 points (team grade)
• Project Abstract and References: 15 points (team grade)
• Presentation: 150 points (team grade)
  – Each team will present their issue in lab during week 10. Late presentations will not be accepted. Failure to participate in the team presentation will adversely affect your grade (50% penalty).

Group Activities and MiniQuizzes

Individual "MiniQuizzes" and collaborative group activities may occur during the quarter. For example, your group may work collaboratively on a quiz, written exercise or worksheet. All members of the group will receive the same grade—Hence, helping to prepare your team members can enhance your own score. Points may be deducted from the scores of individuals that come to class unprepared and/or that have missed class during the week—in these cases students may only earn half of the group score. If you have a problem with all group members receiving the same score (sometimes it’s not justified!), let me know your concerns.
Lab Activities

- Lab day is **Wednesday for Section E** and **Friday for Section F** in **SC-255**. Do not miss lab! Since this is a lab science course, *lab attendance is mandatory to pass this class*—"Lab Attendance" on page 7 for details.
- Some lab assignments will be turned in at the end of each lab, others on a date announced in class.
- Lab assignments are worth **20 points**.
- In an effort to promote collaboration and cooperation (NOT plagiarism!), one lab report may be selected at random from your lab group for evaluation. In this event, all group members will receive the same grade. Other times, your group will decide whose report is selected for evaluation. Again, a group grade is given. **If this policy is not working fairly** (e.g., One of the group members is a “slacker”), **contact your instructor immediately to work out a solution**.
- Most labs cannot be made up because they involve additional materials. **If you miss a lab because of an illness, contact your instructor as soon as possible to see if you can make up the lab.**

Explanation of Lab Assignment Grades

**20 points:** Exceptionally well done—work is of the highest quality: questions are answered fully, creatively, and correctly; Work is neat, pages are in the correct order, and a professional and conscientious effort is evident.

**18 points:** Well done—work is high quality: most questions are answered fully and correctly; Work is neat, pages are in the correct order, and a professional and conscientious effort is evident.

**16 points:** Satisfactory work: most, but not all of the questions are answered fully and correctly; Work is neat, pages are in the correct order, and a professional and conscientious effort is evident.

**14 points:** Work is lacking in some aspect (e.g. Some questions are not answered fully and/or correctly; Work is sloppy, pages are not in the correct order, and/or a professional and conscientious effort is lacking.

**12 points:** Work is of a very low standard (e.g. Many questions are not answered fully and/or correctly; Work is sloppy, pages are not in the correct order, and/or a professional and conscientious effort is lacking.

≤ **12 points:** Assignment was not handed in, or is inadequate in one or more major ways (e.g. less than two-thirds complete, sloppy, lacking a professional/conscientious effort, etc.) **Inadequate work will not be graded, and will be returned with a score of zero.**

Late Work Policy (Does not apply to stamped assignments such as ALE’s and prelab questions)

Turn your work in on time! Late work will be penalized as follows: **10% off per day late—maximum 4 days late. No credit if more than four days late.** Assignments due on a Friday that are turned in on the following Tuesday will be penalized 30%. An assignment is late if it is due at the start of class and it is not turned in at that time, or if an assignment is due at the end of class and the assignment is not turned in at that time. Look under “portfolios”, below, for the late work policy for ALE’s.
Active Learning Exercises
There will be weekly Active Learning Exercises (ALE’s). ALE’s are in-depth homework questions that are designed to help you learn and the major concepts discussed in class and in the reading assignments in your textbook that we think are important and thus may be included on the exams. ALE’s are “stamped assignments” that will only be stamped by the instructor when the ALE is due and shows a conscientious effort to be completed. If you are not in class, late to class, or absent, your assignment will not get stamped—however, contact the instructor A.S.A.P. if you are unable to attend class due to poor health or other emergency circumstances. Due dates will be announced in class.

Portfolios of Active Learning Exercises

- **What’s a portfolio?** A Portfolio is file folder containing a collection of Active Learning Exercises (“ALE’s”) that you complete during the quarter.

- **How is a portfolios organized?** Each assignment should be stapled individually and present in the correct order: ALE 1, 2, etc.) To facilitate the evaluation of the portfolios, do not attach the ALE’s to the file folder or each other. After each portfolio is returned to you with a grade, remove all work from your portfolio folder to make room for future stamped assignments.

- **When are portfolios due?** At the start of each exam during the quarter a portfolio containing the ALE’s completed since the previous portfolio was due will be collected and assigned a grade.

- **How are portfolio assignments graded?** A grade will be assigned to each ALE based on the following criteria:

  **10 points:** Assignments bearing a stamp and that have corrections made to incorrect and/or incomplete answers according to the guidelines below. It is your responsibility to check and make corrections for all ALE and lab questions.

  **Follow these guidelines when making corrections:**

  - Indicate if a response is correct by clearly recording a “check” next to all correct responses.
  - For incorrect or incomplete responses: Corrections and additions should be clearly indicated by using another color pen or by using a highlighter to highlight the correction or addition. Do not erase incorrect responses—simple cross them out by putting a line through your original answer.
  - If space permits, write your corrections/additions next to your original response. Do not erase incorrect responses—simply cross them out by neatly putting a line through your original answer. Be original when making corrections and answering questions. Do not simply copy answers from the textbook, answer keys or from other students—this is of no help to you as little learning will take place.
  - Make corrections on separate paper only if there is insufficient space next to your original response. Clearly indicate on the top of the 1st page of the assignment and next to the individual questions that corrections are on separate paper stapled to the last page. Number your corrections as the original questions are numbered.

  **5 - 9 points:** Stamped assignments that are complete but lack corrections and/or are of inferior quality. The number of points earned will be based on the quality of the work.

  **5 points:** unstamped ALE’s that are complete and have corrections

  **0 points:** incomplete ALE’s without a stamp and corrections.
Classroom Policies

The following policies are in effect for this class:

- **Attendance.** Participation in the class is an important part of your success in this course, and you will be expected to attend at all times. Treat this class as if it were a job: When you cannot be in class it is expected that you will notify the instructor and your team of your inability to attend. A voice mail or e-mail message before the missed class, or as soon as possible, will be sufficient.

- **Lab Attendance.** Since this is a lab science course, attendance is mandatory for lab. You will not receive credit for any lab you do not attend and 2% will be deducted from your final percentage for the quarter for each lab session you miss. You will not pass the course if you miss three or more labs. Please note that some Lab experiments may be difficult to make up. Therefore, strive not to miss lab! If for an extraordinarily good reason you do miss lab, you must make arrangements with your instructor to make up the missed lab assignment during the week that it was assigned. The materials for any given lab activity are only available and maintained for student use through the end of the week that the lab was done by the class. On Fridays, all lab materials for that week are put away. Some labs may not be made up.

- **Cell Phone / Electronic Device Policy.** To reduce disruptions, and out of respect to the instructor and students, class policy is that all cell phones and all non-note taking devices (including pagers, wireless devices, music players, etc.) must be turned off during class. Your teacher recognizes that emergencies do happen. If you feel you need to answer your cell phone during class, please leave the room quietly and take the call outside. You do not need to ask permission, just try not to disturb your fellow students. Exception: During an exam or quiz you will FAIL if the instructor sees your cell phone.

- **Professional Conduct.** Your instructor will work hard to make this a course from which you can learn much and develop important skills. Suggestions are welcome from you at anytime about things you think could be done to improve the course. In return, we ask that you arrive at lab and lecture on time and stay until class is over without making unnecessary noise that could distract your classmates. In short, we promise to respect you as students and as individuals, and ask that you return that respect to your instructor and to your classmates. We want you to learn and to do well in the course, but academic dishonesty will not be tolerated. If you find yourself in trouble or if you are aware of academic dishonesty occurring, please talk to the instructor. Personal crises do happen. If you are having difficulties that are interfering with your ability to do well in the class, please tell the instructor as soon as possible. We may be able to refer you to someone for help or to make special arrangements if the need is real and if you have done your best to deal with the situation in a timely manner.

- **Academic Honesty.** Students are expected to produce original work. Another person’s ideas, data, graphics, or text may be used with permission of the creator of the work if the original source is given credit. Plagiarism occurs when you knowingly submit someone else’s ideas or words as your own. Plagiarism is an act of intentional deception that not only is dishonest, it robs you of the most important product of education—learning. Should I suspect that you have plagiarized, I will talk with you one-on-one and ask you to prove that the work in question is your own. If you are found guilty of academic dishonesty, you will automatically fail that assignment. If you are caught plagiarizing again in the same quarter, you will fail this class. Examples of plagiarism include copying on exams, copying assignments, falsification of data or calculations, supplying an assignment, data, etc. for another student to plagiarize, etc. A person that allows their work to be plagiarized is just as guilty as the one copying the work. Academic dishonesty will not be tolerated and can result in failure of this course and a letter sent to the Dean. (WAC 132J-125-200)

- **Inappropriate Conduct**—will be addressed verbally as a first warning. The second offense will be addressed in writing to the student and the Dean. The third offense may result in permanent removal from class. WAC 132J-125-210

- **Anti-discrimination**—Discriminatory/derogatory language or actions regarding race, gender, ethnic/cultural background, sexual orientation, and physical/mental abilities will not be tolerated.

- **Safety**
  1. Notify the instructor immediate when injury occurs.
  2. Immediately discuss with the instructor any situation that you feel may be dangerous or cause you discomfort.
  3. Use proper, safe techniques regarding personal safety.
  4. Use equipment for its intended purpose only, as instructed by the instructor. While enthusiastic participation is encouraged, the class will remain an academic environment in which learning can take place.

Guidelines for Completing Biology 100 Active Learning Exercises
1. **Overview.** Strive to have all assigned questions completed with quality responses by the due date for each ALE. Start several days in advance and do a few pages each day—don’t sit down the day before and attempt to complete the whole assignment in one shot—little long-term learning will occur if you do so! With a diligent effort most students can complete 80-90% of the questions without much outside help. However, don’t panic if you do not understand everything on the ALE before coming to class. This is to be expected! Use class time with your group and, if needed, instructor office hours to tie up loose ends!

2. **Using your textbook as a resource.** Find the appropriate chapter or sections of your book that pertain to an ALE. To get an overview of the chapter read the chapter introduction, the sectional headings, the captions of all diagrams/illustrations and then the chapter summary at the end of the chapter. Now skim over the ALE questions to get an idea of the information you wish to find while reading the entire chapter or the relevant sections within the chapter.

3. **Using class lecture notes as a resource.** Hence, your lecture notes are an excellent resource when completing the ALE’s since nearly all of the concepts that you need to understand to complete an ALE are addressed during class lectures. Therefore, review you class lecture notes as you work on each ALE. Moreover, some topics are either not in your textbook or are only covered superficially.

4. **Using the Book’s Index.** Avoid the temptation of simply scanning the index of your book for the section(s) of the book that relate to the question and transcribing portions of them onto the ALE. Although you will get some nifty sounding answers, you will have learned very little in the process.

5. **Plagiarism.** Don’t complete your ALE by copying answers from your friends and classmates. To do so prevents you from learning anything. You will get out of this collaboratively taught class only what you put into it. The process starts with you alone thinking about the ALE’s, finding pertinent information and formulating answers. *If you find yourself copying or wanting to copy answers from other students because you are not ready and have not done the work required, you should consider dropping the course.* Without individual effort on the ALE’s you will not succeed in learning very much and the group activities will make you feel and look uncomfortable because your mastery of the material will be well behind the rest of the class.

6. **Put Answers in your own words.** When you can formulate an answer to a question in your own words, you have mastered the concept and should do well on the exams. If you have copied answers (either from the text or a friend) you have only gotten practice in writing and have learned little to nothing at all. Because you will not have your friend or text to copy from during the exam, you will do poorly. *Memorization gets you nowhere in this class—learning major concepts gets you everything.*

7. **Alternate Resources.** Sometimes you will not find all the information you need to properly formulate your answers to the ALE questions. If this is the case, you will need to consult other resources, such as online resources, the library, a dictionary, etc.
The Road to Success—Some Tips...

1. Stay focused: don't let life's distractions derail you from your personal, academic and/or career goals:
   - Keep a positive attitude,
   - Dedicate your energy towards actions that will help you to be successful,
   - Work hard to achieve your goals, and
   - Have confidence in yourself!

2. If you need extra help in this class (or any other class!), take advantage of the instructor’s office hours and the help center in the 2nd floor of the Holman Library.

3. Visit the instructor’s website (http://www.instruction.greenriver.edu/kmarr) and the Textbook's website (http://www.essentialbiology.com/) for this class often since they have many useful study aids and practice problems.

4. Many students benefit greatly by being involved in a study group consisting of other members of this class. If you wish, exchange phone numbers and email addresses A.S.A.P. with a few people in this class.

5. Be intellectually active in class: participate actively in class discussions and ask questions.

6. Do the assigned reading and complete the Active Learning Exercises before the material is discussed in class. Make a list of questions you have concerning the assigned reading and/or the questions on the weekly Active Learning Exercises. Be sure to get clarifications during class time, with your study group, and/or during office hours.

7. Review and rewrite your class notes and the relevant material in your textbook immediately after class or as soon as possible.

8. Study daily: Develop a study plan in which you will study for this class at least 2 hours daily 7 days a week. Just as one cannot train for a marathon by training sporadically for several hours at a time, one can’t study sporadically for long periods of time and expect to learn with retention. Regular study sessions of one-hour duration or less are more effective than massive cram sessions.

9. Isolate yourself from distractions while studying.

10. Study efficiently: Don’t waste too much time on a tough problem or concept. Go on to the next problem and come back to the real stumpers later. Get help as needed from your fellow classmates and from your instructor. Often it’s only a few small details that may keep you from understanding something—what seems like a major stumbling block might in reality be something minor!

10. Studying for an Exam
   - Learn from your instructor the type of exam (essay, multiple choice, etc.)
   - Study regularly throughout the quarter
   - See the class website for study guides and practice questions.
   - Set up a study schedule and review all materials well before the exam.
   - Write out likely questions and answer them.
   - Form a study group, discuss the materials you will be tested on, and quiz your partners.
   - Get enough rest the night before the exam.

11. Taking a Multiple Choice Exam
   - Read each question carefully—underline key words within each question.
   - Before looking at the possible answers, form an answer in your mind.
   - Read each possible answer before making a choice.
   - Watch for words such as always, never, only, or except.
   - Don’t change your initial answer unless you are absolutely certain it’s wrong.

12. Taking an Essay Exam
   - Survey all essay questions and note the questions that are easy for you.
   - Estimate how much time you have to answer each question.
   - Answer easier questions first to build your confidence.
   - Read each question several times to ensure that you understand what is being asked—underline key words such as analyze, discuss, define, or describe.
   - Take a few moments to brainstorm and create a rough outline of your response.
   - Support each major idea with specific examples and detailed information.
   - Remember to begin each answer with an introduction that gives an overview of your response.
   - Conclude by briefly summarizing your answer.

How to Boost your Learning Skills. Do you run out of time on exams? Do you struggle to finish reading assignments? Is Time Management your Achilles heel? Have your grades reached a plateau? Check out the Center for Teaching and Learning at Stanford University for tips to boost your learning skills: http://ctl.stanford.edu/Student/learning_skills.html
Campus-Wide Learning Outcomes addressed in Biology 100

Written Communication
1. Student demonstrates involvement with the material by expressing a clear sense of purpose, unity and focus in his/her writing.
2. Student demonstrates clear organization of his/her thoughts in written form.
3. Student demonstrates well-organized and logical writing with correct grammar and spelling.
4. Student’s writing illustrates the connections between concepts developed in the course and topic specific applications.
5. References are reported in standard format.
   • These outcomes are demonstrated by 1) portfolio, 2) short and long writing assignments.

Quantitative Reasoning
1. Student demonstrates problem-solving abilities in individual assignments and in assignments which involve working in groups of variable size.
2. Student translates real-world data into symbolic representations, extracting and interpreting data from symbolic representations of real-world data.
   • These outcomes are demonstrated by 1) data acquisition, summarization, and analysis, 2) case study analysis, 3) lecture/discussion, 4) seminars.

Responsibility
1. Student demonstrates knowledge of and a willingness to accept stated/agreed upon expectations, policies, behavior, and procedures.
2. Student demonstrates preparedness for class discussion of assigned readings.
3. Student demonstrates an ability to understand and respond respectfully to perspectives offered by other students.
4. Student shares knowledge and opinions with others in general class discussions.
   • These outcomes are demonstrated by 1) pre-class clearance documents (stamped assignments), 2) active and meaningful participation in lecture/discussions, 3) handing in assignments in a timely fashion, 4) attitudes and behaviors in the class which will be reflected in the overall class grade.

Critical Thinking
1. Student recognizes and uses essential components of effective reasoning to evaluate information and to improve the quality of his/her own thinking.
2. Student provides reasons for the conclusions they reach and assess the relevance and adequacy of those reasons.
3. Student demonstrates active listening and close reading skills.
4. Student connects past learning with current topics.
   • These outcomes are demonstrated by: 1) active and meaningful participation in seminars, 2) portfolio, 3) case study analysis, 4) class and group discussions, 5) short and long writing assignment.

Aesthetic Awareness
1. Student demonstrates the ability to produce work that is neat in appearance.
   • This outcome is demonstrated by: 1) portfolio, 2) short and long writing assignments
Guidelines for Class Participation—a self-test!

Sometimes people think that class attendance and participation merely involves coming to class, taking notes, and perhaps participating occasionally in class discussions. However, true participation is much more than this. You can evaluate your level of participation by using the following guidelines.

1. Participation (25%)

<table>
<thead>
<tr>
<th>Do</th>
<th>Don’t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complete homework and reading before class</td>
<td>Do homework during class</td>
</tr>
<tr>
<td>Have necessary materials (textbook, paper, pencils, assignments stapled and ready to turn in, etc.)</td>
<td>Arrive late and disrupt the class by asking what’s happening</td>
</tr>
<tr>
<td>Sit in front or middle of class</td>
<td>Have to borrow materials from classmates</td>
</tr>
<tr>
<td>Arrive early after having reviewed notes and reading from the previous class session</td>
<td></td>
</tr>
</tbody>
</table>

2. Behavior (50%)

<table>
<thead>
<tr>
<th>Do</th>
<th>Don’t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pay attention and focus on the day’s lesson</td>
<td>Talk when others are answering or talking</td>
</tr>
<tr>
<td>Volunteer answers</td>
<td>Shout out answers without being called on</td>
</tr>
<tr>
<td>Ask questions appropriately</td>
<td>Take the discussion off the main topic</td>
</tr>
<tr>
<td>Maintain a balance of speaking and listening during discussions and group activity</td>
<td>Attack others verbally</td>
</tr>
<tr>
<td>Make constructive comments</td>
<td>Sleep in class anytime</td>
</tr>
<tr>
<td>Help make a friendly learning atmosphere in class</td>
<td>Do homework for other classes</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3. Body Language (25%)

<table>
<thead>
<tr>
<th>Do</th>
<th>Don’t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Look at the speaker during lecture/discussion</td>
<td>Repeatedly look at the clock</td>
</tr>
<tr>
<td>Nod or shake your head to show understanding/agreement</td>
<td>Slouch or sprawl in your seat</td>
</tr>
<tr>
<td>Use facial expressions to show understanding/agreement</td>
<td>Put your head down on your desk</td>
</tr>
</tbody>
</table>

4. Evaluate your level of Participation by filling in the table below

<table>
<thead>
<tr>
<th>Always</th>
<th>Usually</th>
<th>Often</th>
<th>Sometimes</th>
<th>Seldom</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.0</td>
<td>3.0</td>
<td>2.0</td>
<td>1.0</td>
<td>0.0</td>
</tr>
</tbody>
</table>

| Preparation (25%) | Decimal Grade = ( ) x .25 = _________ |

| Behavior (50%) | Decimal Grade = ( ) x .50 = _________ |

| Body language (25%) | Decimal Grade = ( ) x .25 = _________ |

Your Total = _______
Biology 100 Grade Record Sheet

It is recommended that you use the table below to keep track of your grades as the quarter progresses. Ensure that you totals agree with the instructor’s at the end of the quarter.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Points Scored</th>
<th>Points Possible</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Lab Activities</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#1 Scientific Method</td>
<td></td>
<td>20</td>
</tr>
<tr>
<td>#2 Microscope and Cells</td>
<td></td>
<td>20</td>
</tr>
<tr>
<td>#3 Searching the Literature</td>
<td></td>
<td>20</td>
</tr>
<tr>
<td>#4 Pea Lab</td>
<td></td>
<td>25</td>
</tr>
<tr>
<td>#5 Karyotyping and Mitosis</td>
<td></td>
<td>20</td>
</tr>
<tr>
<td>#6 Mendelian Genetics Lab</td>
<td></td>
<td>20</td>
</tr>
<tr>
<td>#7 Modeling DNA &amp; Protein Synthesis</td>
<td></td>
<td>20</td>
</tr>
<tr>
<td><strong>Issues Project</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>References</td>
<td></td>
<td>25</td>
</tr>
<tr>
<td>Poster Plan/Presentation Plan</td>
<td></td>
<td>15</td>
</tr>
<tr>
<td>Project Abstract and References</td>
<td></td>
<td>15</td>
</tr>
<tr>
<td>Group Presentation</td>
<td></td>
<td>150</td>
</tr>
<tr>
<td><strong>Exams</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#1</td>
<td></td>
<td>100</td>
</tr>
<tr>
<td>#2</td>
<td></td>
<td>100</td>
</tr>
<tr>
<td>#3</td>
<td></td>
<td>100</td>
</tr>
<tr>
<td>Final Exam</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(If it helps your grade, your lowest exam score is replaced with final exam %)</td>
<td></td>
<td>150</td>
</tr>
<tr>
<td><strong>Portfolio</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#3</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>MiniQuizzes and Group Activities</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Total Points                     |               |
| End of Quarter %                 | =             |
| End of Quarter Grade            | =             |
Biology of Aging Reading Assignments
Biology 100 – K. Marr

For links to the following reading assignments and an up to date list of reading assignments go to the Biol& 100 class webpage at http://www.instruction.greenriver.edu/kmarr/Biology100/BioAging/BioAgingHome.htm

Theories of Aging
2. Cellular Senescence—discuss the major theories of aging including the evolutionary theories of aging with good external and internal links: http://en.wikipedia.org/wiki/Senescence

Caloric Restriction
1. Visit the caloric restriction guru’s (Roy Walford) website for information about caloric restriction—you’ll find diets, menus, calorie counters and more: http://www.walford.com/
2. Visit the Caloric Restriction Society’s website: www.calorierestriction.org The Calorie Restriction Society is a worldwide organization that focuses attention on the "CR diet", the most heavily researched diet in history—and the most healthy diet known in history -- proven by 70 years of laboratory experiments to extend both the maximum years of life, and the maximum years of health, a unique claim that no other diet can make.

Cellular Senescence

Personal use of caloric restriction (Optional Reading)
1. Visit Roy Walford’s website for more information about caloric restriction—you’ll find diets, menus, calorie calculators and more: http://www.walford.com/;
   Read Roy Walford’s obituary—he led a very colorful life: http://www.grg.org/RWalford.htm

Misc. Resources (Optional Reading)
1. Alliance for Aging Research—The nation's leading non-profit organization dedicated to improving the health and independence of Americans as they age through public and private funding of medical research and geriatric education. An excellent source of information about how the environment and genes interact in the aging process: http://www.agingresearch.org/
2. Aging Research Center—links to cutting edge research papers in the field of aging: http://www.arclab.org/
5. The AgeLab at MIT: http://web.mit.edu/agelab/
### Tentative Schedule for Winter 2010 - Biology 100 - K. Marr

**Caution!** This schedule is only approximate and is subject to change at the instructor’s discretion!

<table>
<thead>
<tr>
<th>Week starting</th>
<th>Lectures</th>
<th>Readings¹</th>
<th>Lab Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 1. Tu Jan 5</td>
<td>Intro. to course; What is Life; Scientific Method</td>
<td>• Ch 1: Intro to Biol</td>
<td>Lab 1. <strong>Heart Rate, Physical Fitness and the Scientific Method</strong></td>
</tr>
</tbody>
</table>
| Week 2. Tu Jan. 12  | • What is Life; Scientific Method  
  • Basic chemistry, molecules of Life, cell structure and function—Application to Gaucher Disease | • Ch 2: Essential Chemistry for Biol  
  • Ch 3: Molecules of Life  
  • pg.78-79: Enzymes  
  • Ch 4: A Tour of the Cell | Lab 2. **The Microscope & Cell Structure**                                   |
| Week 3. Tuesday Jan. 19 | Basic chemistry, molecules of Life, cell structure and function—Application to Gaucher Disease |                                                    | Lab3A **Searching the Literature**  
  • Bring a PC data storage device  
  • Intro to Issues Project: Select Issues  
  • Project topic and group members  
  • Read the **Issues Project handout** before attending lab |                                                                                     |
| Week 4. Tuesday Jan. 26 | • Finish Gaucher’s Disease and Cell Structure/Function  
  • The Cell Cycle and Cell Division:  
    - Mitosis—Application to Cancer | • Ch 8: Cellular Basis of Repro. & Inheritance  
  • pg. 208-212: The Genetic Basis of Cancer | Lab 4. **Pea Lab**  
  (set up in lab this week and cont. making observations over the next 3 to 4 weeks) |
| Week 5. Tuesday Feb. 2 | • Portfolio #1 due on Tuesday.  
  • The Cell Cycle and Cell Division:  
    - Mitosis—Application to Cancer |                                                    | Lab 5. **Mendelian Genetics**  
  • Bring a PC data storage device |                                                                                     |
| Week 6. Tuesday Feb. 9 | • The Cell Cycle and Cell Division:  
    - Mitosis—Application to Cancer  
    - Mitosis—Application to Down Syndrome |                                                    | Lab 6. **Mendelian Genetics**  
  • Finish |                                                                                     |
| Week 7. Tuesday Feb. 16 | • Patterns of Inheritance  
  • Mendelian Genetics  
  • Non-Mendelian Genetics | • Ch 9: Patterns of Inheritance  
  • Chapter 10: Molecular Biology of the Gene  
  • Chapter 12: DNA Technology | Lab 7. **Modeling Replication and Protein Synthesis**  
  **Important!!** Read and understand the introduction to lab 7 before attending lab! |                                                                                     |
| Week 8. Tuesday Feb. 23 | • Finish Patterns of Inheritance  
  • DNA and Protein Synthesis—Application to Cystic Fibrosis  
  • Lab Activities                                                                 | • Ch 10: Molecular Biology of the Gene  
  • Chapter 12: DNA Technology | Lab 7. **Modeling Replication and Protein Synthesis**  
  **Finish** |                                                                                     |
| Week 9. Tuesday Mar. 2 | • Portfolio #2 due on Tuesday.  
  • DNA and Protein synthesis—Application to Cystic Fibrosis  
  • Gene Therapy—Application to cystic fibrosis  
  • DNA Technology—genetic engineering  
  • Biology of Aging—Pt. 1: Stealing Time Video Series | • Biology of Aging:  
  • Chapter 10: Molecular Biology of the Gene  
  • Chapter 12: DNA Technology | Lab 7. **Modeling Replication and Protein Synthesis**  
  **Finish**  
  **Week 10 Issues Project Group Presentations** |                                                                                     |
| Week 10. Tuesday Mar. 9 | • Biology of Aging—Pt. 2: Stealing Time Video Series  
  • Biology of Aging—Pt. 3: Stealing Time Video Series  
  • Lab Activities                                                                 | • Biology of Aging:  
  • See the Online reading list on page 13 and the class webpage for links to the articles listed. |                                                                                     |
| Week 11. Tuesday Mar. 16 | **Tuesday Mar. 16 Study Day:**  
  No daytime classes;  
  - 1-3 p.m.: Review/Question Session in SC-240 (Attendance is optional) |                                                    | **Week 10 Issues Project Group Presentations**  
  **No lab this week!!** |                                                                                     |

¹ = Chapters and pages in Biology 100 textbook, *Essential Biology* by Campbell/Reece/Simon (7th ed.)