

Course Syllabus

Course Title and Credits Biol 101 - Survey of Biology, 3 semester credits

Catalogue Course Description Includes discussion of the most important concepts in biology. Topics cover cells (structure, physiology and replication), genetics (genes and the nature of heredity, and modern molecular genetics), evolution, the diversity of life (plants, animals, and microorganisms) and the ecological relationships of the diversity of life. This is a General Education course for non-science majors.

Instructors Course Description This course will survey the broad conceptual framework of the biological sciences. We will start by learning about the nature of life, and the basic processes carried out by living organisms. Initially we will stress unity, or similarity among living systems. We will then move on to evolution and study biological diversity, or the differences between living organisms. We will finish our course by learning how the extensive diversity of life coexists and interacts in the biosphere.

Course Objectives You have one main objective in this course:
To learn the fundamental principles of biology, the science of life.

You have two main reasons to justify why you should pursue this objective:

- 1) As students you must broaden your horizons: Biology is one of those horizons.
- 2) As persons, you must be able to form sound opinions, make rational decisions, act accordingly, and then argue logically to support your actions and beliefs: Understanding the principles of biology helps you do these whenever the science of life is involved in the issue.

Only after you understand the principles of biology will you be ready to use your scientific knowledge to form sound opinions, make rational decisions, act intelligently and argue logically about such issues as pollution, licit and illicit drug use, genetically engineered foods, controversial medical drugs, and abortion. These issues are complex. Solving problems associated with these issues is not easy. But, solving these problems is enhanced by a good understanding of the principles of biology. Indeed, lack of knowledge inhibits problem solving.

Prerequisites A willingness to study hard and think deeply are the only prerequisites for this class. This is not a class for science majors. It is not taught at the same level nor are the expectations comparable. There is no correlation between grades earned and previous exposure to high school science classes or your college class standing. This means that you can do well if you have ability and work hard. It also means that you can do poorly if you do not make a good effort to learn biology. Biology is not an easy subject: be prepared to work hard if you expect to do well.

Format This course is designed for on-line delivery. It directly follows the same class content that is offered in a traditional lecture-type class. Completion of this course ensures that you have fulfilled the requirements of a traditional General Education biology course. This is not a course for science majors or pre-professional (e.g. pre-med) students

The course is divided into an Introduction and 4 major sections: Cell Biology, Genetics, Evolution and Diversity, and Ecology. Each major section is comprised of 3 Units (e.g. Cell Biology includes Units on Cells, Metabolism and Cellular Reproduction). There are six learning items for each Unit. Each Unit is then followed by a short examination. Each Unit is divided as follows:

- I. Objectives - These are the major concepts covered in the Unit.
- II. Reading Guidelines - You should use these carefully to guide your studying. The intensity of your reading and studying is outlined in the Reading Guidelines shown below. You should also use the CD-ROM (I'll refer to it simply as 'CD' in your Reading Guidelines) that is packaged with your text. The Reading Guidelines will also point out what portions of the CD you should work with. Newer texts may not have a CD, but simply refer you to an online website that you have access to and contains the same material as the CD.
- III. Commentary - This is my reiteration (i.e. from my perspective) of the important details in the Unit.
- IV. Enrichment - These are items to add a broader perspective to the Unit. These are generally not for examination purposes (although there are some questions on the more academic topics, e.g. reproduction), but simply to stimulate you to think about the relevance of the topics under discussion.
- V. Discussion - This gives you the opportunity to provide answers to questions posed by the course instructor, and to participate actively in class matters. It is operated as a Threaded Discussion. The primary intent of the Discussion is to stimulate thinking about complex issues in biology, and then trigger interaction among you. All opinions about complex issues are respected, but opinions must be supported by facts if they are to hold up to scrutiny and debate. Your instructor may participate in the discussion, often arguing, simply for the sake of argument and to stimulate more discussion. You should feel free to offer your opinions and know that you are not graded on those opinions. You will not earn extra points by agreeing with your instructor or lose points by disagreeing. Participation in the Threaded Discussion is expected, and graded as Extra Credit.
- VI. Web - Extra Credit - This simply provides a mechanism for you to submit extra credit. See the description and requirements below for how you can earn extra credit. This is an opportunity to explore biology on your own, investigate ideas that interest you, learn items that are relevant to you, and earn extra credit in the process. You will place your Extra Credit in a Dropbox. There are specific due dates for submission of extra credit, and the Dropbox is access-controlled (i.e. you must submit your extra credit by the due date). You will be allowed to submit two web submissions for extra credit: choose your topics wisely.
- VII. Exam - Details about exams are found below. You will enter an exam from this point. There are specific due dates for exams, and access to exams is controlled by the due date.

You should go through each learning item (I through IV) in each Unit in sequence. After that you may wish to visit the Threaded Discussion for the unit. It is generally believed that students learn more from each other than they do by themselves or even from their instructor. The Threaded Discussions are the place to go to talk with fellow students about the material you are responsible for. I will participate loosely in the Threaded Discussion. You should have questions to ask as well as answers to provide. It is generally believed that students do not take advantage of these very important learning tools. This is unfortunate. You may also contact me by email, but I recommend you do this only as a last resort. You should email me with questions only after you have prepared thoroughly and only if difficult questions remain. I am not likely to take the extensive time required to answer simple, superficial questions that can be answered with proper studying or communication with fellow students. After you have gone through the material you should then take the exam for that Session. Remember there is a deadline for each exam!

You should do your best to keep to the Schedule of Events. You must complete the entire course by the end of the semester. There are also interim deadlines for exams that must be met. You may not proceed out of sequence or take exams earlier than scheduled as all exams are access-controlled by

date.

Please note that whenever you see {IO} in any Commentary or Enrichment that I am simply offering my opinion (IO = Instructor's Opinion) on that item. I may provide some justification for my opinion, but I am not trying to convince you that my opinion is necessarily correct and you should simply believe me.

I believe learning is an active process, and the responsibility for learning is yours. This is more important in an online course than in a traditional course. There is a direct correlation between active participation in learning and success in biology. I will provide detailed guidelines to help you through the important topics that we cover. Learning biology by studying the text alone is difficult, so I recommend you use all the resources I provide as well as the Threaded Discussions.

Required Texts Biology: Concepts and Connections, 5e.
Campbell, et al.
Benjamin Cummings, 2006.

The text comes packaged with an interactive CD that will be used in conjunction with the text. Alternatively, the text provides you with an access code to a web site that contains the same info as the CD. There is no requirement to use the CD or access the web site: they are merely provided as an additional aid to help you learn biology.

Reading Use the following as a guide for the intensity of your reading effort:
Guidelines -*Read very carefully* = Read and study hard, even the details. The material is very important and fundamental to basic biology.
-*Read carefully* = Read and study well, even the details. The material is important and will be used at later times in the course.
-*Read* = Read and understand the concepts well. The concepts are important but the details are not worth memorizing.
-*Review* = Read for background and perspective. The material is valuable, it helps provide insight, but it is not essential to "study" it.
-*Summarize* = Read superficially if time permits. The material is interesting or informative, but it is not essential to your understanding basic, introductory biology.
-*Skip* = The material is not important to a basic, one semester biology course.

There is too much information if you were to try to learn everything in your text. Take my advice: Use these reading guidelines judiciously and you will save time, reduce headaches, learn more, learn more of what is important and earn a higher grade.

Examinations There will be a short exam at the end of each Unit and a comprehensive final. Exams may be composed of a variety of types of questions including: multiple choice, matching, true-false and short answer. Overall, it is much more important to understand the material you are studying than to try to memorize all the details or worry about the kinds of questions that may be on an exam.

My very strong recommendation is that you keep up with the schedule and take all exams at the scheduled times. Please remember the following:

- 1) Access to exams is controlled by date and you must take all exams within the limited time period allowed, generally 7 days.
- 2) You can not make up missed exams: You will receive no credit for missed exams.
- 3) You can take an exam once.
- 4) You must take each individual exam within the allotted time for that exam, generally 10 minutes. You cannot download the exam, answer the questions at your own pace, and then take the exam again.
- 5) Exams may vary slightly in length depending on the Unit (i.e. individual Units may vary in length and importance).
- 6) Individual exam questions will be randomly selected from a large group of questions (i.e. not every student will get the exact same exam questions).
- 7) After exams are completed I will grade them and put scores in the gradebook. Your exams with your grade, the questions, and correct answers to the questions will be available in the gradebook, generally by the Wednesday following the due date for the exam.

We will revisit the nature of examinations later. Simply, if there is one thing that potentially frustrates students in this course (actually, any biology course) it is the examination process. It may take a bit of time and patience to get use to the exam format. Preparation for exams by taking the quizzes packaged in your CD are of little value. I believe they are a waste of your valuable time.

Assessment **GRADING:** The approximate value of the examinations to your final grade is as follows:
Interim Exams - 65%
Final Exam - Comprehensive 35%

STANDARDS: My interpretation of the university grading scale is as follows:
A = Excellent. Thorough understanding of all major concepts; and, concepts supported by extensive details.
B = Good. Thorough understanding of most major concepts; and, concepts minimally supported by details.
C = Average. General understanding of most major concepts; but, deficiency of, or errors in, many details.
D = Minimally Passing. Weak grasp of even major concepts; or, extensive errors in concepts and details.
F = Failure. Weak grasp of major concepts and many factual errors.

Use of + and - grades is at my discretion.

ASSESSMENT: Due to the nature of this class, the major item used to measure your academic achievement will be your exam scores. The exams will be largely information-type exams. You will be able to earn extra credit (see below), and I will use class participation (e.g. contributions to Threaded Discussions) to help determine final grades. You must finish the course by the end of the semester.

EXTRA CREDIT: Extra credit is available for each Unit. There are two ways to earn extra credit. The first way is via the Threaded Discussion. I will give you up to 1 point for a meaningful 'primary' contribution to the discussion, and up to an additional point if you contribute a meaningful 'secondary' comment on someone else's contribution. Basically, a primary contribution is an original comment, usually one that answers one of the questions that I pose to the class. A secondary comment is usually one that corrects an erroneous, incomplete or misleading primary comment, or one that constructively argues a controversial topic. You will not receive extra credit for simply repeating statements made by another student or for comments that have no 'substance'. The second way to earn extra credit will be in the form of an internet web site that you find that directly relates to the topic of that Session. To receive credit you must have reviewed the site, provide me the web address (as a hyperlink that I can directly access!) and your commentary (I want to know

WHAT you learned in the web site) on the content. You must provide this before the exam deadline for that Session. You must post these in the Dropbox which is found under the Web-Extra Credit for the Unit (NOT in the Weblography). As an example, you might find a site on the biological effects of acid rain, which would be relevant to Session 2 which covers Chemistry. The topics can cover hardcore science, or they can even cover other perspectives that relate to science. e.g. You might find a web site that compares evolution and creation. To receive credit you should find a RELEVANT site, PREPARE your review, INCLUDE a hyperlink to the website, and SUBMIT it to me in the Dropbox. It must be sent before you take the exam for that unit. It must be sent with a link that I can use to directly access the web site! You will not receive credit if the above requirements are not met. The purpose of this exercise is to get you to look into topics of interest to you so that you can better understand the science, and then to see the applications of biology to your everyday life. You will be allowed to submit up to three web sites for extra credit. The value for these submissions ranges from 0 points (if you do not follow the guidelines) up to 4 points (for exceptional submissions). Please see the Announcements portion of our class for additional Guidelines regarding Extra Credit.

FINAL GRADES: Grades will be curved at the instructor's option to no higher than:

A=>90%, B=80-89%, C=70-79%, D=60-69%, F=<60%

Changing these standards is at my discretion. Sometimes there is a curve downward (to as low as approximately A=85%, B=75%, C=65%, D=60%).

The per cent of past internet students achieving a particular grade is typically:

A=20%, B=30%, C=40%, D=5%, F=5%

These grades are slightly higher than in my traditional course. Most students who earn only a D or F do so because they don't study or because they quit, rather than because of a lack of ability.

Extra credit can be used to raise your final grade by one letter grade only (e.g. from a 'C' to a 'B', but not from a 'C' to an 'A').

Recommendations In summary, I expect you to become an active participant in the learning process. I am responsible for guiding you through and helping you achieve the goals you set for yourself, but you are responsible for your progress in this class.

WARNING: Do not take this course if you are incapable of independent learning. Do not take this class if you believe it will be easier or less time consuming than a traditional class. For the average student to do well in this course it will take from 120 to 150 hours of effort: this is about the same amount of time that is expected of students taking a traditional course. The major reason for taking this course should be convenience or distance from campus.

Schedule of Events The following is a brief Schedule of Events. Exact dates for Sessions and Exams are also scheduled on your calendar. Please note that examinations are "access controlled" and MUST BE COMPLETED by the Exam Deadline date. Examinations will be available the week before the deadline, and can be taken any time during that week! It should be easy to keep track of exam deadlines as all exams are due by Sunday (except for the Final). You should not wait until the last minute to take exams. If you delay and then have technical or personal problems it is your fault and not my responsibility to correct. I will keep you informed about changes in our schedule if necessary.

<u>Session</u>	<u>Start Date</u>	<u>End Date</u>	<u>Exam Deadline</u>
1 - Introduction	W 17 Jan	S 21 Jan	S 28 Jan
2 - Chemistry	M 22 Jan	S 28 Jan	S 28 Jan
3 - Cell Structure	M 29 Jan	S 4 Feb	S 4 Feb
4 - Cell Metabolism	M 5 Feb	S 11 Feb	S 11 Feb
5 - Cell Reproduction	M 12 Feb	S 18 Feb	S 18 Feb
6 - Inheritance	M 19 Feb	S 25 Feb	S 25 Feb
7 - Cellular Information	M 26 Feb	S 4 Mar	S 4 Mar
8 - Modern Genetics	M 12 Mar	S 18 Mar	S 18 Mar
9 - Evolution	M 19 Mar	S 25 Mar	S 25 Mar
10 - Biological Diversity	M 26 Mar	S 1 Apr	S 1 Apr
11 - Human Evolution	M 2 Apr	S 8 Apr	S 8 Apr
12 - Ecosystem Structure	M 9 Apr	S 15 Apr	S 15 Apr
13 - Ecosystem Function	M 16 Apr	S 22 Apr	S 22 Apr
14 - Human Ecology	M 23 Apr	S 29 Apr	S 29 Apr
Comprehensive Final Exam	---	---	M-Th 30 Apr - 3 May

