

BIO103: Introductory Biology

Spring 2008 Syllabus

Instructor: Charles Taylor

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Lecture: McLennan 152
MWF 9 – 9:50 am

Office Hours: **Mon 10:00 – 12:00**
Wed 10:00 – 1:00
Fri 10:00 – 11:30
and by appointment

Laboratory in MCL 110

Lab 1 Mon 12:15 – 2:05 pm

Lab 2 Mon 2:15 – 4:05 pm

Lab 3 Wed 1:15 - 3:05 pm

Course Description: “A general survey of the basic principles of biology with an emphasis on humanity and humanity’s role in nature. The scientific method, evolutionary theory, and Christianity as the basis of understanding nature and its problems are considered.” (TIU catalog)

Course Objectives: Upon successful completion of this course the student should have a basic understanding of:

1. The scientific method.
2. Cell structure and function.
3. Mitosis, meiosis and inheritance.
4. How the information for a cell (and organism) is stored in DNA and subsequently utilized.
5. Evolutionary Paradigm and how it relates to Christianity and Creation.
6. Population Dynamics
7. Human impact on environment
8. Current issues in science such as genetically modified plants, stem cell research, gene therapy, and cloning.

Course Materials (All Required):

Textbook: Essential Biology with Physiology, Second Edition, by Campbell, Reece, Simon, published by Pearson Benjamin Cummings.

Lab Manual: Biological Observations, Shelton and Rentas 4th ed. 2004

Lab Notebook: Composition manual [a bound (not spiral) black and white laboratory notebook with graph ruled pages].

Course Policies:

Readings: 11% You are expected to have read the chapter and other assigned reading before class to facilitate your understanding of the lecture material. After each lecture, you are also expected to revisit the relevant chapter(s) of the textbook to ensure understanding of the material and the memorization of general principles. **This will be assessed by in-class quizzes.** You should work on the self-quiz at the end of each chapter.

Lecture Exams: 44% There will be three (3) in-class examinations and a final examination during Final Exam week. The exams include information from the lectures, handouts, assigned chapters in the textbook and also the group presentations. Make-up exams are not allowed except under *extraordinary* circumstances (verifiable emergencies) and the instructor notified as early as possible. An unexcused absence from an exam will result in a zero for that exam. For excused absences, exams must be made up within one week and must be scheduled in advance with the instructor.

EXCUSED ABSENCES for lecture, laboratory, and exams MUST be granted by the instructor IN PERSON and IN ADVANCE. Blanket notices of extracurricular events such as sports and field trips are not considered adequate reasons for excused absences.

Group Project: 12% The class will be divided into groups. Each group is required to prepare a group project and present it to the class. General topic guidelines will be given later.

Group project assignments:

1. To what extent should doctors extend the lives of their patients in cases of seemingly irreversible and terminal medical conditions?
2. Adult and embryonic stem cells: what are they and should we use them?
3. Should we enforce teaching Creation in high school?
4. Imminence of Global warming?
5. Should Cloning be allowed and what if any restrictions should be place on it.?
6. Should the Federal Government provide Medical coverage for all?
7. Obesity: An Overblown Epidemic?
8. How and why should we prepare for a pandemic?

GRADING POLICIES:

Your final grade will be determined by the total accumulated points using the following formula:

Exams	110 X 4	440
Questionnaire	10	10
In class assignment/quiz	110	110
<u>Group project</u>	<u>120</u>	<u>120</u>
Lecture Subtotal		680
<u>Lab Subtotal</u>		<u>320</u>
Course Total		1000 pts.

ATTENDANCE

Lecture Attendance: Attendance at lecture is expected in order to facilitate your understanding of the assigned readings. However, students are allowed up to three (3) absences if necessary. For each of the three absences not used, 1% point will be added to the composite score, for each absence beyond the three, 1% point will be deducted from the composite score. If a student enters the room after attendance has been taken she/he will be counted absent. **Classes missed for sports, field trips etc., even if cleared in advance with the instructor, count toward the three allowed.** (Note, however, that if you were to have 4 or more excused absences you would not be penalized, but would also not receive the attendance bonus.) Missed in-class assignments/quizzes cannot be made up.

COURSE POLICY ON PLAGIARISM AND CHEATING

PLAGIARISM, which is defined as utilizing another person’s ideas, works, or words as if they were one’s own, without identifying the source, will not be tolerated in any form, including written papers, exams, notebooks, or oral presentations. If you have questions regarding what is or is not considered plagiarism, please clarify with the instructor before handing in the assignment.

CHEATING, which is defined as any form of fraud or deception that results in a better grade or even a better impression of the student’s performance than she/he actually earns or deserves, will not be tolerated.

INCIDENTS OF PLAGIARISM OR CHEATING will be dealt with severely by the instructor. The penalty will include, at least, a zero for the assignment(s) involved, but could include failure of the course. Incidents of plagiarism and cheating will be reported to the Academic Dean, who has the authority to undertake further disciplinary measures in accordance with TIU policy on community standards violations.

BIO103 Course Web Site:

First-Time (i.e. Unenrolled) User of the Course Web Site

An individual Course Web Site is only accessible to students who have first enrolled on the site. This means that the first time you visit the Course Web Site you will have to enroll as a student in the course. You need to enroll **only once**. After enrolling, you can return and access the Web Site whenever you wish.

Enrollment

Connect at <http://webapps.tiu.edu/moodle/>. You will be taken to the Trinity Moodle Home Page. Locate the "Login" link in the upper-right hand corner of the Home Page. Click on "Login" and use your Groupwise user name and password to Login. After logging-in, you should be back at the Moodle Home Page. Find "All Courses" under "Course Categories" on the right side of page. Click on "All Courses". On the new page, click on "Biology". On the next page, find the text box with the Course Title: "BIO 103 Introductory Biology". Click on the Course Title. You will be taken to the "Enrollment" page where you can "Enroll" in the course. Enrollment requires that you type in the enrollment key. The enrollment key for this course is "**biology**" (without the quotation marks; all lowercase). Type in the enrollment key. You will be taken to the BIO103 Course Web Site. Here, you will be able to access various materials which I intend to provide as the semester progresses. I will add materials as the weeks pass. Lecture note and exam objectives will be posted early enough so as to be useful. Also available will be the course syllabus and schedules. To view/download available course materials, you only need to click on the hot link associated with each item.

Enrolled User:

As an enrolled user, you simply need to connect to the Trinity Moodle Home Page and login into the Course Web Site as follows: Connect at <http://webapps.tiu.edu/moodle/>. Locate the "Login" link in the upper-right hand corner of the Home Page. Click on "Login" and use your Groupwise user name and password to Login. After logging-in, you should be back at the Moodle Home Page. On the right hand side of the page under "Course Categories", you should see a "BIO103 Introductory Biology" link. Click on it and you will be taken to the Course Web Site where you can access course materials that have been made available for your use.

If you have any questions, please let me know.

Grading Scale

A	94-100%	C+	77-79.9%
A-	90-93.9%	C	73-76.9%
B+	87-89.9%	C-	70-72.9%
B	83-86.9%	D+	67-69.9%
B-	80-82.9%	D	63-66.9%
		D-	60-62.9%
		F	0-59.9%

Lecture Schedule*

<u>Date</u>	<u>Chapter</u>	<u>Topic</u>
Jan 9 Mon classes meet in lieu of Wed	1	Syllabus, Questionnaire, Introduction to Biology
Jan 11	1,2	
Jan 14	2	Essential Chemistry for Biology
Jan 16	3	The Molecules of Life
Jan 18	3	
Jan 23	4	A Tour of the Cell
Jan 25	4	
Jan 28	5	The Working Cell
Jan 30	5	
Feb 1	8	Cellular Reproduction: Cells from Cells
Feb 4	8	
Feb 6	9	Patterns of Inheritance
Feb 8	Exam I	Chap 1, 2, 3, 4,5, & 8
Feb 11	9	Patterns of Inheritance
Feb 13	10	The Structure and Function of DNA
Feb 15	10	

Feb 18	11	How Genes Are Controlled
Feb 20	11	
Feb 22	12 Group 1	DNA Technology
Feb 25	12	
Feb 27	13 Group 2	Creation & Evolution How Populations Evolve
March 10	13	How Populations Evolve
March 12	14	How Biological Diversity Evolves
March 14	Exam II	Chap 9, 10, 11, 12, & 13 Evolution and Creation
March 17	14	How Biological Diversity Evolves
March 19	15	The Evolution of Microbial Life
March 26	21	Unifying Concepts of Animal Structure and Function
March 28	21	
March 31	Group 3	
April 4	Group 4	
April 7	22	Nutrition and Digestion
April 9	22	
April 11	Group 7	
April 14	26	Reproduction & Development
April 16	Group 5	
April 18	Group 8	Reproduction and Development
April 21	Exam III	Chap 14,15, 21, 22,26
April 23	26	Reproduction and Development
April 25	18	The Ecology of Organisms & Populations
April 28	19	Communities and Ecosystems
April 30	Group 6 20	Human Impact on the Environment
May 2	20	Human impact on environment
May 5, Mon	Final	Chap 18,19,20

*Subject to change based on time constraints, flow of the course and the necessities of pedagogy.

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Laboratory, Spring 2008

Laboratory Objectives:

The hands-on laboratory exercises are designed to assist students in comprehending basic biological principles by reinforcing and/or complementing concepts presented in lecture. Laboratory exercises allow students the opportunity to learn fundamental laboratory techniques. Diligent participation in laboratory exercises will enable students to develop the abilities to think critically and be detail-oriented.

Laboratory Policies:

Besides the following, all the mentioned lecture policies apply.

Safety: Biological and chemical reagents and lab equipment used in the lab can pose health and safety hazards. Therefore, each student is expected to know and obey all safety and conduct rules as outlined on p. iii of the lab manual. Each student should be aware of the various safety hazards associated with each lab exercise and take appropriate precautions to avoid accidents. Biological reagents and wastes for each lab must be properly handled and disposed of according to the instructor's guidelines. All students are expected to be responsible and professional in the use of laboratory materials (i.e. equipment, reagents, specimens, etc.)

Pre-lab Quizzes: 7%

Quizzes (5 pts. each) pertaining to the assigned lab exercise(s) will be administered immediately at the beginning of each lab period. Therefore, it is essential that students read and prepare for the lab exercise(s) in advance and arrive on time. Students arriving late to the lab may be refused the opportunity to take the quiz resulting in the loss of 5 - 10 points.

Lab Reports: 15%

Students are required to write lab reports (10 pts. each) in a non-spiral bound, black and white laboratory notebook using only black ink. Merely one single line should be drawn through mistakes. Students are expected to purchase an additional laboratory notebook if they fill the first one before all lab exercises for the semester have been completed. All guidelines for maintaining a laboratory notebook as described on p. iv of the lab manual must be followed. Left hand (facing pages) are to be left blank except as noted on p. iv of the lab manual.

Pre-lab preparation is expected. Students must have read the assigned lab exercise(s) before class and completed the first two sections (Purpose, Materials and Methods) before coming to lab. **50% will be deducted for late pre-lab work.** Using the textbook to complement each lab by reading related material while the lab exercise is still fresh in one's mind is highly recommended. It will also be useful to bring your textbook to lab.

Complete lab reports are due at the end of the lab period. All data and observations, results, and conclusions must be recorded in the lab notebook by the end of

the lab period. When students are done with the assigned exercise(s) for a particular lab period, their lab notebooks will be checked for completeness and signed by the instructor. Students are not to leave without obtaining the signature of the instructor. Late submissions of lab reports will NOT be accepted.

Laboratory Attendance: Prompt attendance to lab is **mandatory** due to the hands on nature of the laboratory exercises. Since the lab exercises often require partners and specific amounts of materials prepared in advance, students must attend only the laboratory section in which they are enrolled to avoid unnecessary disruption. Exceptions to this policy are extremely limited, and students are required to contact the instructor at least seven (7) days in advance regarding extraordinary situations that interfere with attendance to one's enrolled lab section. **One unexcused absence will result in the loss of 15- 30 points [5-10 from the pre-lab quiz(ze)s and 10-20 the lab report(s)]. Two unexcused absences will lower your course grade one full letter. Three unexcused absences will result in a final course grade of "F" regardless of your performance in other areas of the course.**

Lab Practicum: 10%

A lab practicum (100 points) will be given during the last week of regular classes during the last laboratory. The exam will be a timed exam and will represent material from all of the labs undertaken (i.e. cumulative).

Grading:

Laboratory notebooks (10 points x 15 exercises)	150
Prelab questions (5 x14)	70
<u>Laboratory practical exam</u>	<u>100</u>
Total	320

Tentative Lab Schedule:

Date		Study Focus	Lab Exercise Number
1/9 1/16	Lab 1 & 2 Lab 3	Introduction to lab; Check-in Scientific Notation	Lab manual section iii, iv. Ex. 2
1/14 1/23	Lab 1 & 2 Lab 3	Scientific Method	Ex. 3
1/28 1/30	Lab 1 & 2 Lab 3	Metric Measurement Microscope	Ex. 1 Ex. 6
2/4 2/6	Lab 1 & 2 Lab 3	Cell Structures	Ex. 7
2/11 2/13	Lab 1 & 2 Lab 3	Biological Compounds	Ex. 8
2/18 2/20	Lab 1 & 2 Lab 3	Genetics: Meiosis & Mitosis, Mendelian Inheritance	Ex. 14, 17
2/25 2/27	Lab 1 & 2 Lab 3	Reproduction & Development	Ex. 20
3/10 3/12	Lab 1 & 2 Lab 3	Cell Membrane: Diffusion, Osmosis	Ex. 9
3/17 3/19	Lab 1 & 2 Lab 3	Cell Membrane: Active Transport	Ex. 10
3/31 3/26	Lab 1 & 2 Lab 3	Immunology: ABO & Rh Blood Typing, Pregnancy Testing	Ex. 21, 22
4/7 14/9	Lab 1 & 2 Lab 3	Microorganism	Ex. 23
4/14 4/16	Lab 1 & 2 Lab 3	Taxonomy: Dichotomous Key	Ex. 24
4/21 4/23	Lab 1 & 2 Lab 3	Lab Checkout & Review	
4/28 4/30	Lab 1 & 2 Lab 3	Lab Practicum	