

BIO103: Introductory Biology

Fall 2007 Syllabus

Instructor: Chrystal Ho Pao, Ph.D.

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Lecture: McLennan 212
MWF 10 – 10:50 am

Office Hours: Wed 9 – 10 am
Fri 12 noon – 1 pm
and by appointment

Laboratory in McL 113

Lab 1 Tue 1:40 - 3:30 pm

Lab 2 Fri 12:15 - 2:05 pm

Lab 3 Fri 2:15 - 4:05 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: Biology, A Human Emphasis 6th ed. by Cecie Starr, published by Thomson Brook/Cole.

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. Are some people born homosexual?
4. Should we enforce teaching Creation in high school?
5. How does AIDS evade our immune system?
6. Recent advance in Reproduction Technology: Techniques & Ethics
7. Imminence of Global warning?
8. Should Physical Education be a required part of the public school curriculum?

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.

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>
Aug 22 Mon classes meet in lieu of Wed	1	Syllabus, Questionnaire, Introduction to Biology
Aug 24	1	
Aug 27	2	Life's Chemical Basis
Aug 29	3	Molecules of Life
Aug 31	3	
Sept 5	4	How cells are put together
Sept 7	4	
Sept 10	8	How cells reproduce
Sept 12	8	
Sept 14	9	Meiosis & Sexual reproduction
Sept 17	9	
Sept 19	10	Inherited traits
Sept 21	Exam I	Chap 1, 2, 3, 4, 8 & 9
Sept 24	10	Inherited traits
Sept 26	11	Chromosomes & Human Genetics
Sept 28	11	

Oct 1	12	DNA structure & function
Oct 3	12	
Oct 5	13 Group 1	From DNA to proteins
Oct 8	13	
Oct 10	14 Group 2	Control over genes
Oct 15	Handout (15)	Studying & Manipulating genomes
Oct 17	15	
Oct 19	Exam II	Chap 10, 11, 12, 13 & 14
Oct 22	23, handout	Evolution & Creation
Oct 24	23, handout	Evolution & Creation
Oct 26	34	Immunity
Oct 29	34	
Oct 31	Group 3	
Nov 2	Group 4	
Nov 5	38	Animal reproduction & development
Nov 7	38	
Nov 9	Group 7	
Nov 12	38	Animal Reproduction & Development
Nov 14	Group 5	
Nov 16	Group 8	Population Ecology
Nov 19	Exam III	Chap 15, 23, Evolution & Creation, 34
Nov 28	39	Population Ecology
Nov 30	39	
Dec 3	43	Behavioal Ecology
Dec 5	Handout Group 6	Human impact on environment
Dec 7	Handout	Human impact on environment
Dec 10, Mon (10:30 am– 12:30 pm)	Final	Chap 38, 39, 43, Human impact on environment

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

BIO103: Introductory Biology

Laboratory, Fall 2007

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(zes) 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
8/24 8/28	Lab 2 & 3 Lab 1	Introduction to lab; Check-in Scientific Notation	Lab manual section iii, iv. Ex. 2
8/31 9/4	Lab 1 & 2 Lab 3	Scientific Method	Ex. 3
9/7 9/11	Lab 1 & 2 Lab 3	Metric Measurement Microscope	Ex. 1 Ex. 6
9/14 9/18	Lab 1 & 2 Lab 3	Cell Structures	Ex. 7
9/21 9/25	Lab 1 & 2 Lab 3	Biological Compounds	Ex. 8
9/28 10/2	Lab 1 & 2 Lab 3	Genetics: Meiosis & Mitosis, Mendelian Inheritance	Ex. 14, 17
10/5 10/9	Lab 1 & 2 Lab 3	Reproduction & Development	Ex. 20
10/16 10/19	Lab 1 & 2 Lab 3	Cell Membrane: Diffusion, Osmosis	Ex. 9
10/26 10/30	Lab 1 & 2 Lab 3	Cell Membrane: Active Transport	Ex. 10
11/2 11/6	Lab 1 & 2 Lab 3	Immunology: ABO & Rh Blood Typing, Pregnancy Testing	Ex. 21, 22
11/9 11/13	Lab 1 & 2 Lab 3	Microorganism	Ex. 23
11/16 11/20	Lab 1 & 2 Lab 3	Taxonomy: Dichotomous Key	Ex. 24
11/27 11/30	Lab 1 & 2 Lab 3	Lab Checkout & Review	
12/4 12/7	Lab 1 & 2 Lab 3	Lab Practicum	