POINT 1902 LOMA
NAZARENE UNIVERSITY

BIOLOGY DEPARTMENT
BIOTECHNOLOGY AND SOCIETY
BIO1004 (4)

Biotechnology and Society (BIO1004) Syllabus

FALL 2019

INSTRUCTOR: Dr. Heidi Woelbern, heidiwoelbern@pointloma.edu
Rohr Science Room 164
Office Hours: Mondays 9:00-10:00, Tuesdays 10:30 -12:00

LECTURE: M/W/F 10:55-12:05, Ryan Learning Center 101

BOOKS & MATERIALS:

1. **Text**: *Biology: Science for Life with Physiology along with MasteringBiology Access Card.* Sixth Edition. Colleen Belk and Virginia Borden Maier, Pearson, 2019.
2. **iClicker2***: BIO1004 requires an iClicker2. You can purchase this in the bookstore or online. You can also share with another student in a different class.*
3. **Supplementary Reading***: Follow Your Gut.* Rob Knight (ISBN: 978-1442375888)

PLNU MISSION:

To Teach ~ To Shape ~ To Send

Point Loma Nazarene University exists to provide higher education in a vital Christian community where minds are engaged and challenged, character is modeled and formed, and service is an expression of faith. Being of Wesleyan heritage, we strive to be a learning community where grace is foundational, truth is pursued, and holiness is a way of life.

GE MISSION:

PLNU provides a foundational course of study in the liberal arts informed by the life, death and resurrection of Jesus Christ. In keeping with the Wesleyan tradition, the curriculum equips students with a broad range of knowledge and skills within and across disciplines to enrich major study, lifelong learning, and vocational service as Christ-like participants in the world's diverse societies and culture.

COURSE DESCRIPTION:

An examination of current topics in biotechnology as they impact society, bioethics, and sustainable living. Course addresses the questions "What is biotechnology?", "How does it work?", and "How does it affect our lives?" Topics may include genetic engineering, gene amplification, genome projects, gene therapy, DNA fingerprinting, cloning, and assisted reproductive technology, genetic screening, recombinant DNA, knock-outs, AIDS research, and GM foods. Course approach emphasizes the process of science, critical thinking, active learning, social relevancy, and building connections between case studies and general concepts of biology.

COURSE LEARNING OUTCOMES:

1. You will be able to effectively express ideas and information to others through written communication.
2. You will be able to access and cite information as well as evaluate the logic, validity, and relevance of information from a variety of sources.
3. You will be able to examine critique and synthesize information in order to arrive at reasoned conclusions.
4. You will be able to solve problems that are quantitative in nature.
5. You will be able to express the function of DNA in the cell and how it is regulated, processed and synthesized.
6. You will be able to explain the various methods utilized in biotechnology as a means to better understand how science work, as well as how those methods can be applied to better the health of individuals and sustain our environment.

Date	Topic	Textbook Reference
9.4, 9.6, 9.9	History of Biotechnology and Introduction to the Scientific Method	Chapter 1
9.11, 9.13, 9.16	Water, Biochemistry and Cells	Chapter2, 3.2
9.18	Exam Review	
9.20	**Exam I**	History of Biotech, Ch. 1 & 2
9.23, 9.25, 9.27, 9.30, 10.2, 10.4	Cancer: DNA Synthesis & Mitosis	Chapter 6
10.7, 10.9	Fertility and Meiosis	Chapter 7
10.11, 10.14	Mendelian Genetics	Chapter 8
10.16	Exam Review	
10.18	**Exam II**	Chapters 6, 7 & 8
10.21, 10.23, 10.28	Forensics: Complex Patterns of Inheritance, DNA Profiling and Epigenetics	Chapter 9
10.30, 11.1	Book Discussion Group – Follow Your Gut	Supplementary Reading
11.4, 11.6, 11.8, 11.11, 11.13, 11.15	Genetically Modified Organisms: Gene Expression, Stem Cells and Cloning	Chapter 10
11.18	Exam Review	
11.20	**Exam III**	Chapters 9 & 10
11.22, 11.25, 12.2	Organ Donation: Tissues, Organs and Organ Systems	Chapter 18
12.4, 12.6, 12.9, 12.11	Vaccinations: Immune System, Bacteria, Viruses and Other Pathogens	Chapter 21
12.13	Final Exam Review	
12.18	**Exam IV – FINAL (10:30am-1:00pm)**	

Assessment & Grading:

1000 points total	
500 pts	**EXAMS**
	Exam I – 100 points
	Exam II – 120 points
	Exam III – 130 points
	Final – 150 points
100 pts	**Mastering Biology Homework Assignments**
175 pts	**Handouts/Worksheets/In class assignments/Discussion Forums**
50 pts	**Current Events**
70 pts	**Quizzes (iClickers)**
80 pts	**Book Analysis + Quiz (Follow Your Gut)**
25pts	**Class Participation/Attendance**

GRADE DISTRIBUTION

GRADE	Percentage Range	GRADE	Percentage Range
A	>93%	C	73-76%
A-	90-92%	C-	70-72%
B+	87-89%	D+	67-69%
B	83-86%	D	63-66%
B-	80-82%	D-	60-62%
C+	77-79%	F	≤59%

EXAMS (500pts total) – will be cumulative. You can expect 100 points to be based upon the new material, and the remainder of the points to be based upon previous material.

HOMEWORK(100pts) – Mastering Biology assignments are due at the beginning of class, and can be found on Canvas.

HANDOUTS/WORKSHEETS/DISCUSSION FORUMS/REFLECTIONS (175pts) – oftentimes in class we will work in small groups. Various worksheets, case studies, concept maps etc will be started in class and usually require some work outside of class to complete. We will also have a few discussion forums on CANVAS as well as online assignments which will also contribute towards your overall class grade.

CURRENT EVENTS (50pts) – These are one page write ups worth 10 points to be submitted on CANVAS. You can find any article from a reparable newspaper or magazine (Wall Street Journal, NY Times, LA Times, Scientific American, JAMA, etc.) which addresses an issue in biotechnology. The questions which you should address in your write up are posted on Canvas. If you are not content with your score on your write up, you may submit an extra write up and drop your lowest grade.

DAILY QUIZZES (iCLICKERS)(70 pts) – During the first five minutes of class each day you will have an opportunity to answer a few one-point multiple choice questions using the iClickers (this will also serve to take role). Additionally, questions will be asked during the lecture to ensure that you comprehend the material. The quiz questions will come from the textbook readings and from lecture. Only questions from documented excused absences can be made up. Your final iClicker quiz grade will be out of 70 points total (approximately 80 questions will be asked). Thus you are able to miss several questions and still get 100%. **Answering for someone else (bringing a friend's iClicker) will be considered cheating by both the person answering the questions and the person whose iClicker is being used to answer questions**.

BOOK ANALYSIS (80 pts) – We will spend two class periods discussing the book entitled *Follow Your Gut*, on the microbiome. Instructions as to your write up and analysis can be found on CANVAS.

ATTENDANCE:

Attendance at lectures is required and role will be taken. Your first three absences in lecture are overlooked and no excuse is required. Thereafter 5 points will be deducted from your attendance grade from each class that you miss. However, if absences are excessive (over 10%), then the student can be dropped from the course.

FINAL EXAMINATION POLICY

Successful completion of this class requires taking the final examination **on its scheduled day**. The final examination schedule is posted on the Class Schedules site. No requests for early examinations or alternative days will be approved.

PLNU COPYRIGHT POLICY

Point Loma Nazarene University, as a non-profit educational institution, is entitled by law to use materials protected by the US Copyright Act for classroom education. Any use of those materials outside the class may violate the law.

PLNU ACADEMIC HONESTY POLICY

Students should demonstrate academic honesty by doing original work and by giving appropriate credit to the ideas of others. Academic dishonesty is the act of presenting information, ideas, and/or concepts as one's own when in reality they are the results of another person's creativity and effort. A faculty member who believes a situation involving academic dishonesty has been detected may assign a failing grade for that assignment or examination, or, depending on the seriousness of the offense, for the course. Faculty should follow and students may appeal using the procedure in the university Catalog. See Academic Policies for definitions of kinds of academic dishonesty and for further policy information.

PLNU ACADEMIC ACCOMMODATIONS POLICY

While all students are expected to meet the minimum standards for completion of this course as established by the instructor, students with disabilities may require academic adjustments, modifications or auxiliary aids/services. At Point Loma Nazarene University (PLNU), these students are requested to register with the Disability Resource Center (DRC), located in the Bond Academic Center. (DRC@pointloma.edu or 619-849-2486). The DRC's policies and procedures for assisting such students in the development of an appropriate academic adjustment plan (AP) allows PLNU to comply with Section 504 of the Rehabilitation Act and the Americans with Disabilities Act. Section 504 (a) prohibits discrimination against students with special needs and guarantees all qualified students equal access to and benefits of PLNU programs and activities. After the student files the required documentation, the DRC, in conjunction with the student, will develop an AP to meet that student's specific learning needs. The DRC will thereafter email the student's AP to all faculty who teach courses in which the student is enrolled each semester. The AP must be implemented in all such courses.

If students do not wish to avail themselves of some or all of the elements of their AP in a particular course, it is the responsibility of those students to notify their professor in that course. PLNU highly recommends that DRC students speak with their professors during the first two weeks of each semester about the applicability of their AP in that particular course and/or if they do not desire to take advantage of some or all of the elements of their AP in that course.

PLNU ATTENDANCE AND PARTICIPATION POLICY

Regular and punctual attendance at all classes is considered essential to optimum academic achievement. If the student is absent from more than 10 percent of class meetings, the faculty member can file a written report which may result in de-enrollment. If the absences exceed 20 percent, the student may be de-enrolled without notice until the university drop date or, after that date, receive the appropriate grade for their work and participation. See Academic Policies in the Undergraduate Academic Catalog.