

## **BISC 150: The Nature of Human Health & Disease**

**4 units**

**M-Tu-W-Th 10:00am – 12:05pm**

**Room: ONLINE**

### **Labs**

Tues, 1:00 – 2:50 pm

Thurs, 1:00 – 2:50 pm

**Room: ONLINE**

**Instructor: Nancy Castro, Ph.D.**

**Office: ONLINE**

**Office Hours: Monday & Wednesday 12:00 – 1:00pm**

**Contact Info: [ncastro@usc.edu](mailto:ncastro@usc.edu)**

**Teaching Assistant: TBD**

**Office Hours:**

**Office Hours Location: ONLINE**

**Contact Info:**

### **Required Texts:**

Mastering Biology with Pearson e-Text – for Biology of Humans: Concepts, Applications and Issue, 6<sup>TH</sup> Edition. ISBN-10: 9780134389233 (required book is e-text not hard copy).

Authors: Judith Goodenough & Betty A. McGuire.

The Nature of Human Health & Disease Laboratory Manual, Spring 2020 (USC Custom Publishing)

### **Course Description**

The Nature of Human Health and Disease course is designed to bring students to a level of understanding of basic human biology, health, and disease, as well as modern biomedical science that will enable them to make rational decisions on personal, ethical, and political issues in their health. This level will be reached through lectures, reading of texts, papers and news media, and laboratory experiments.

**Prerequisite(s):** no prerequisites

### **Course Notes**

BISC 150Lg is a participatory course. A research project will lead students to become true experts in a subject of their choice and laboratory experiments will give an appreciation of biotechnology.

### **Learning Objectives**

- Students will understand basic human biology at the genetic, cellular and physiological levels.
- Students will know the human body maintains a healthy balance and how disturbances of this balance underlie diseases.
- Students will be familiar with modern biomedical scientific approaches to treating disease.
- Students will be able to make informed contributions to discussions of contemporary issues in health and disease with their peers.
- Students will be able to make rational decisions on personal, ethical and political issues in their health.

**Topic List:**

## General Biology Introduction:

Human physiology, cell and molecular biology, Mendelian genetics

## 1) Nutrition and Health

- a) Nutrition basics
- b) Supplements/Fad diets
- c) Diabetes

## 2) Microbiology, Infectious Disease and Vaccines

- a) STDs (HIV)
- b) Influenza/Common cold
- c) Bacterial infection-
- d) Human microbiome
- e) How they work and myths—autism, ethics of vaccinating/not vaccinating

## 3) Evolutionary Biology of Health and Infection

- a) Co-evolution of humans and infectious disease
- b) Third world disease/Global health

## 4) Genetic Inheritance and Disease

- a) Single gene traits
- b) Complex disease traits—Bipolar disorder, Depression
- c) Cancer
- d) Mental Health

## 5) Health Care Administration

- a) Health insurance
- b) Drug design/False advertising

## 6) Drug Effects and Abuse

- a) Prescription Drugs
- b) Street Drugs
- c) Alcohol
- d) Tobacco and Cannabis

**Lab Report.** Lab reports will consist of a 3-page report, double-spaced, on one of the lab techniques studied in lab. The lab report will focus on discussing how your chosen lab technique is currently being used to help prevent, treat, or diagnose a specific disease. A minimum of 5 references need to be used for this lab report. Lab reports must be submitted electronically via Turnitin, using the link provided on the Blackboard site for the lab section. Specific instructions on how to upload lab reports will be emailed to each student. It is each student's responsibility to confirm that their lab reports were successfully uploaded.

**Lab Exam.** One cumulative lab exam will be given to test your understanding of the topics and exercises covered in the laboratory sessions. The lab exam will cover materials from labs 1 – 8 and consist of multiple choice, fill-in-the-blank, short answer type questions.

**Lab Simulations.** You will be awarded various points (lab points vary per simulation) for completing the virtual lab simulations on Labster as part of the lab requirements.

### **Academic Dishonesty Tutorial**

All students must complete the Academic Dishonesty tutorial which can be found in the following link (<https://libraries.usc.edu/research/reference-tutorials>) (Flash Version). Click on the link and complete the tutorial and your certificate. Once you take a screen shot of your certificate, you can paste it into a word document and upload it as completion of your assignment. The assignment will be posted under the COURSE Blackboard site. You must have this assignment turned in **before 9 am on Tues, March 31, 2020**. A penalty of ½ pt per day will be applied for certificates received after the due date.

**Blackboard and Posting of Grades.** Blackboard (<https://blackboard.usc.edu/>) lists BISC 150 lecture and lab sections as “separate courses”. All grades (lecture and lab) are posted in your LAB section. However, be sure to check for additional postings and announcements both in the lecture section and the lab section on a weekly basis. Blackboard is convenient system to communicate grades; however, **those grades are not authoritative**. It is the student's responsibility to notify your TA or Lab Manager ASAP in the event of any mistakes in your posted grade.

Please remember that (1) the course mean given on Blackboard is also NOT authoritative, and (2) that only the total number of points earned determines your course grade. We will be glad to discuss your performance, and your possible grades, at any time throughout the course. Help provided in this way should be considered only provisional. Your later performance may change (sometimes dramatically) the best-meant extrapolation.

### **Email Communication:**

To ensure privacy, only student's USC email accounts may be used for email communications. Students are responsible for understanding the content of email messages that the instructor sends to their USC accounts. Therefore, each student must check their USC email regularly and make sure their account is not over quota, so new messages can be received.

## Grading Breakdown

The course grade will be based upon **686 possible points**:

Assignment	Points	% of Grade
Midterm 1	100	15
Midterm 2	100	15
Final Exam	100	15
At-home Quizzes	51 (3pts/ 17 lectures)	7
In-class problem sets	85 (5pts/ 17 lectures)	12
Lab Report	50	7
Lab Exam	100	15
Pre-labs	100 (10pts/lab)	15
<b>Total</b>	<b>686</b>	<b>100</b>

## Grading Scale

Course final grades will be determined using the following scale:

A	90.1 - 100
A-	86.7 - 90
B+	83.3 - 86.6
B	80 - 83.2
B-	76.7 - 79.9
C+	73.3 - 76.6
C	70 - 73.2
C-	66.7 - 69.9
D+	63.3 - 66.6
D	60 - 63.2
D-	56.7 - 59.9
F	≤56.6

**At-home Quizzes & In-class assignments:** Before coming to each lecture, you will be required to study the material and answer quiz questions. Each quiz assignment will be worth 3 points and based on the upcoming lecture material. Quiz answers should be submitted prior to the start of class at 10:00 a.m on Mastering Biology. Quizzes will typically be open 48 hours in advance of the next lecture.

Each lecture will have an in-class assignment where questions are expected to be completed by the end of the lecture. Attendance at all lecture sections is expected. If you must miss class due to illness or valid USC travel, please present Dr. Castro with evidence of the reason for absence and you will be allowed to make-up in-class work assignments within **3 days** of the missed lecture period.

**Exams.** There will be 2 midterm exams during the semester and 1 final exam. Exams will consist of multiple choice, short answer, matching or fill-in-the-blank questions. Exams are NOT open book nor open notes. A student is not allowed to start an exam after the first student has left ANY exam room.

## Grading Timeline

Grades for Midterm Exams will be posted within one calendar week following the exam date.

## Additional Policies

**Missed exams. There are no makeup exams in the course.** If a student misses an exam due to a true emergency, official written documentation (what you feel is appropriate to demonstrate a legitimate reason for missing said exam) should be submitted to the Instructors, Dr. Raffaella Ghittoni or Dr. Nancy Castro, **within two (2) days of the missed exam**. Students will only be excused for ONE exam with a valid excuse. If it is a medical excuse, you must also state *in writing* (a) the doctor's name and phone number and (b), a signed statement authorizing us to discuss with the doctor whether you were too ill to take the exam. (Note that neither you nor the physician need to tell us the nature of your illness.) Your physician has to be licensed to practice medicine by the State of California ([www.medbd.ca.gov](http://www.medbd.ca.gov)) and that it's considered unethical and unwise for a physician to provide medical care for a family member. We will contact the doctor and decide whether you have a valid excuse. If you do, the instructors may, at their discretion, permit the use of the student's performance on other exams in determining the missed exam grade. If your excuse is judged not to be valid, or you do not provide it within the allotted time, you will receive a score of zero for the missed exam.

**Please note:** the Student Health Center has changed their medical excuse policy. The Student Health Center will no longer provide: 1) class excuse notes for illness, 2) clinical appointments for class excuse, and 3) authentication of outside physician certificates. The Absence of Class - Self Verification Form provided by the Student Health Center is insufficient documentation for our purposes.

**Re-grades of exam questions.** Your midterm exams will be handed back either in lab or lecture and the answer key will be posted. If you feel an error was made in the grading of your exam, you must submit your exam, along with a Regrade Request Form in which you have thoroughly explained (typewritten) why you think your answer deserves more credit, to your TA within 1 week of the time it was returned to the entire class. Oral and email requests will not be considered. If you took the exam in pencil or used white-out, we will not grant regrade requests. The entire answer will be re-graded, not just the part you think deserves more credit. Your score may increase or decrease as a result of a re-grade.

### Course Schedule: The Nature of Human Health and Disease

Wk	Lecture	Date	Lecture Topic	Reading	Assignments
1	1	Wed, May 20	Overview: Humans in the world of biology	Ch. 1	
	2	Thurs, May 21	Intro to cell biology	Ch. 3	Quiz & Prob. set
2		Mon, May 25	<b>Memorial Day – NO CLASS</b>		
	3	Tues, May 26	How your body gets its energy (Biochemistry)	Ch. 3	Quiz & Prob. set
	4	Wed, May 27	Body organization and homeo.	Ch. 4	Quiz & Prob. set
	5	Thurs, May 28	DNA, RNA, proteins and You! (Molecular Biology)	Ch. 21	Quiz & Prob. set
3	6	Mon, June 1	Mutation, Biotechnology & GMOs	Ch. 21	Quiz & Prob. set
	7	Tues, June 2	Genetics	Ch. 20	Quiz & Prob. set
	8	Wed, June 3	Genetic Diseases	Ch. 20	Quiz & Prob. set
		Thurs, June 4	<b>MIDTERM 1 (Lectures 1-7)</b>		
4	9	Mon, June 8	Cancer	Ch. 21a	Quiz & Prob. set
	10	Tues, June 9	The Digestive System	Ch. 15	Quiz & Prob. set
	11	Wed, June 10	Nutrition: Supplements/Fad diets	Ch. 15	Quiz & Prob. set
	12	Thurs, June 11	Nutrition Continued	Ch. 15	Quiz & Prob. set
5	13	Mon, June 15	The Endocrine System	Ch. 10	Quiz & Prob. set
	14	Tues, June 16	Diabetes	Ch. 10a	Quiz & Prob. set
	15	Wed, June 17	Hormones Documentary		Discussion
		Thurs, June 18	<b>MIDTERM 2 (Lectures 8-14)</b>		
6	16	Mon, June 22	The Nervous System	Ch. 8	Quiz & Prob. set
	17	Tues, June 23	Drugs and the Mind	Ch. 8a	Quiz & Prob. set
	18	Wed, June 24	Immune System	Ch. 13	Quiz & Prob. set
	19	Thurs, June 25	Human Immunodef. Virus-HIV	Ch. 17a	Quiz & Prob. set
7	20	Mon, June 29	HIV Documentary		Discussion
		Tues, June 30	<b>FINAL EXAM 10:00 – 11:00am (Lectures 15-20)</b>		

Week	Date	Labster Simulation
1	Thurs, May, 21	Cell Structure
2	Tues, May 26	Cellular Respiration
	Thurs, May 28	Gene Regulation
3	Tues, June 2	Mendelian Inheritance
	Thurs, June 4	Cell Division Principles
4	Tues, June 9	Introduction to Food Macromolecule
	Thurs, June 11	Identify and Differentiate Bacteria
5	Tues, June 16	Diabetes
	Thurs, June 18	Introduction to Immunology
6	Tues, June 23	Antibodies (Lab Report Due)
	Thurs, June 25	Lab Exam

### Statement on Academic Conduct and Support Systems

#### Academic Conduct:

Plagiarism – presenting someone else’s ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in SCampus in Part B, Section 11, “Behavior Violating University Standards” <https://policy.usc.edu/scampus-part-b/>. Other forms of academic dishonesty are equally unacceptable. See additional information in SCampus and university policies on scientific misconduct, <http://policy.usc.edu/scientific-misconduct>.

#### Support Systems:

Student Counseling Services (SCS) - (213) 740-7711 – 24/7 on call  
Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention. <https://engemannshc.usc.edu/counseling/>

#### National Suicide Prevention Lifeline - 1-800-273-8255

Provides free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week. <http://www.suicidepreventionlifeline.org>

**Relationship and Sexual Violence Prevention Services (RSVP)** - (213) 740-4900 - 24/7 on call free and confidential therapy services, workshops, and training for situations related to gender-based harm.

<https://engemannshc.usc.edu/rsvp/>

### **Sexual Assault Resource Center**

For more information about how to get help or help a survivor, rights, reporting options, and additional resources, visit the website: <http://sarc.usc.edu/>

### **Office of Equity and Diversity (OED)/Title IX Compliance** – (213) 740-5086

Works with faculty, staff, visitors, applicants, and students around issues of protected class.

<https://equity.usc.edu/>

### **Bias Assessment Response and Support**

Incidents of bias, hate crimes and microaggressions need to be reported allowing for appropriate investigation and response. <https://studentaffairs.usc.edu/bias-assessment-response-support/>

### **The Office of Disability Services and Programs**

Provides certification for students with disabilities and helps arrange relevant accommodations.

<http://dsp.usc.edu>

### **Student Support and Advocacy** – (213) 821-4710

Assists students and families in resolving complex issues adversely affecting their success as a student EX: personal, financial, and academic. <https://studentaffairs.usc.edu/ssa/>

### **Diversity at USC**

Information on events, programs and training, the Diversity Task Force (including representatives for each school), chronology, participation, and various resources for students. <https://diversity.usc.edu/>

### **USC Emergency Information**

Provides safety and other updates, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible, <http://emergency.usc.edu>

**USC Department of Public Safety** – 213-740-4321 (UPC) and 323-442-1000 (HSC) for 24-hour emergency assistance or to report a crime.

Provides overall safety to USC community. <http://dps.usc.edu>