



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

**4 units**

**Tuesday & Thursday – 9:30-10:50am**

**Room: ZHS 252**

**Instructor: Raffaella Ghittoni, Ph.D.**

**Office:** ZHS 256

**Office Hours:** Tuesday & Thursday 11 am - 12 pm

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

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

**Office:** ZHS 256

**Office Hours:** Tuesday & Thursday 8:30-9:30 am

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

**Lab Manager: Celeste Chong-Cerrillo, Ph.D.**

**Office:** ZHS 450

**Office Hours:** Open door policy

**Contact Info:** [chongcer@usc.edu](mailto:chongcer@usc.edu) (Subject line should state "BISC 150")

**Teaching Assistant:** TBD

**Office Hours:**

**Office Hours Location:** ZHS 360A (BioSpace)

**Contact Info:**

### **Required Texts:**

1. Mastering Biology with Pearson e-Text – for Biology of Humans: Concepts, Applications and Issue, 6<sup>TH</sup> Edition. ISBN-10: 0134389239 (required book is e-text not hard copy)  
Authors: Judith Goodenough & Betty A. McGuire.
2. The Nature of Human Health & Disease Laboratory Manual, Spring 2019 (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

**Term Research Project.** Your Research Project consists of 3 components: Outline, Paper, and Presentation, each receiving a grade. Refer to the “*Guidelines for Term Research Project*” document for details regarding this assignment. Your topic must be approved by your TA no later than 5 p.m. Friday, February 15, 2019. The Outline (hardcopy) is due on Tuesday, February 26, 2019 and the Paper is due no later than 5 p.m. on Tuesday, March 26, 2019. The hardcopy Outline must be submitted in class, not in lab, and we will NOT accept electronic copies. An electronic copy of your Research paper will be submitted through your LAB Blackboard site, under “Assignments”; you cannot email your paper to your TA. You will also be required to hand in a hard copy of your research paper to your TA during the following lab period. For each day the Outline or Paper is submitted late, 20% of the total possible points will be deducted from your grade (e.g., if the report is past 5 days late, you will receive no points for that assignment). Presentations will be given in lab during the last 3 weeks of class. Once you have signed up for a date to give your presentation, you will not be able to change it unless you have a valid medical emergency. If you do not have a valid medical excuse, it will be at the discretion of the Laboratory Manager to determine whether you will be able to make up the Presentation, if time allows; however, the maximum possible points you may receive will be reduced by 50%.

The entire Research Project must be an **ORIGINAL WORK** by the student involved. *We will only allow a maximum of 3 one-sentence quotes for the entire paper.* Plagiarism is strictly forbidden and will be treated with the usual University rules if it is encountered (see below).

You must attend ALL your labs during the presentation weeks. If you do not have a valid excuse for missing lab, *2 points will be deducted from YOUR presentation score for EACH presentation you miss* (i.e., if 5 students present, 10 points will be deducted from your presentation grade). If you have a valid excuse for missing your lab, it must be accompanied with official written documentation and presented to the Laboratory Manager, within two (2) days of the missed lab. However, *you are still responsible for making up the missed presentations* by attending another lab section’s presentations. If you fail to do this, points will still be deducted regardless of excuse.

### **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 26, 2019**. 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 **775 possible points**:

Assignment	Points	% of Grade
Midterm 1	100	13
Midterm 2	100	13
Final Exam	100	13
At-home Quizzes	54 pts (3pts/lecture)	7
In-class problem sets	90 pts (5pts/lecture)	12
Participation points	16 (2pts/guest lecture)	2
Term Research Project	110	14
Laboratory grade	205	26
<b>Total</b>	<b>775</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

### Assignment Submission Policy

**Join Educational Partnership.** There will be an opportunity for a small percentage of the class to participate in a K-12 educational program with the Joint Educational Project (JEP) at USC. This is a semester-long commitment and you will receive extra credit in the class based on your performance in the program. The maximum amount of extra credit points a student can receive is 50 points and participation is capped at 10% of class enrollment.

**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 9:30 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 or Dr. Ghittoni with evidence of the reason for absence and you will be allowed to make-up in-class work assignments within **1 week** of the missed lecture period.

### **Participation points:**

Each guest lecture will require mandatory attendance and count as 2 participation points/per lecture (8 guest lectures) for a total of 16 points. Signing in will occur within the first 15 minutes of class, afterwards no credit will be given.

**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. You will be required to write your full name on EACH page of the exam. If you fail to do so, ½ point will be deducted for each page missing a full name.

### **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	Date	Lecture Topic	Reading	Lecturer	Assignments
1	8-Jan	Overview: Humans in the world of biology	Ch. 1	Castro	
	10-Jan	Intro to cell biology	Ch. 2	Castro	Quiz & Prob. set
2	15-Jan	How your body gets its energy (Biochemistry)	Ch. 2	Castro	Quiz & Prob. set
	17-Jan	Body organization and homeostasis	Ch. 3	Castro	Quiz & Prob. set
3	22-Jan	DNA, RNA, proteins and You! (Molecular Biology)	Ch. 4.1 - 4.4	Castro	Quiz & Prob. set
	24-Jan	Mutation, Biotechnology & GMOs	Ch. 4	Castro	Quiz & Prob. set
4	29-Jan	Genetics	Ch. 5.1	Castro	Quiz & Prob. set
	31-Jan	Genetic Diseases	Ch. 5.2 - 5.3	Castro	Quiz & Prob. set
5	5-Feb	Cancer	Ch. 10	Castro	Quiz & Prob. set
	7-Feb	<b>Midterm 1</b>			
6	12-Feb	Stem cells	Ch. 9	Ghittoni	Quiz & Prob. set
	14-Feb	Immune system	Ch. 6	Ghittoni	Quiz & Prob. set
7	19-Feb	Immune system dysfunction	Ch. 6	Ghittoni	Quiz & Prob. set
	21-Feb	Human Immunodef. Virus-HIV	Ch. 7	Ghittoni	Quiz & Prob. set
8	26-Feb	Infectious diseases	Ch. 8	Ghittoni	Quiz & Prob. set
	28-Feb	Human Microbiome	Ch. 8	Ghittoni	Quiz & Prob. set
9	5-Mar	The digestive system	Ch. 11.1 - 11.3	Ghittoni	Quiz & Prob. set
	7-Mar	Nutrition: Supplements/Fad diets	Ch. 11.4 - 11.8	Ghittoni	Quiz & Prob. set
10	Mar 11-15	<b>SPRING BREAK</b>			
11	19-Mar	Respiratory system	Ch. 16	Ghittoni	Quiz & Prob. set
	21-Mar	<b>Midterm 2</b>			
12	26-Mar	Women's Health: Beyond the Pap Smear	TBD	Guest Lecture	
	28-Mar	Alzheimer's disease and pollution	TBD	Guest Lecture	
12	2-Apr	Pulmonary System, Tobacco, and Medical Cannabis	TBD	Guest Lecture	
	4-Apr	Stress Management	TBD	Guest Lecture	
14	9-Apr	Cardiovascular: Myocardial Infarction	TBD	Guest Lecture	
	11-Apr	Nutrition	TBD	Guest Lecture	
15	16-Apr	Liver Cancer & Organ Transplant	TBD	Guest Lecture	
	18-Apr	Street Drugs	TBD	Guest Lecture	
16	23-Apr	Target zero: HIV documentary	TBD	Educational Documentary	
	25-Apr	Review Session	TBD	Castro/Ghittoni	
	7-May	<b>FINAL EXAM 8:40-10:00am</b>			

## 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>