

July 21st Version

BISC 150: The Nature of Human Health & Disease

4 units

Tuesday & Thursday – 9:30-10:50am

ONLINE lectures will be given live, as well as recorded, on Zoom

Labs

Mon, 10–11:50 AM, 12–1:50 PM, 2–3:50 PM

Tues, 12–1:50 PM, 2–3:50 PM

Wed, 10–11:50 AM

Instructor: Raffaella Ghittoni, Ph.D.

Office Hours: On Zoom, Tues. and Thurs. from 11 am to 12 pm

Contact Info: rghitton@usc.edu

Instructor: Oliver Rizk, Ph.D.

Office Hours: On Zoom, Tues. and Thurs. from 11 am to 12 pm

Contact Info: orizk@usc.edu

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

Office: Zoom 'meeting room'

Office Hours: By appointment

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

Teaching Assistants: TBD

Office Hours: TBD

Contact Info: TBD

Required Texts:

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

Authors: Judith Goodenough & Betty A. McGuire.

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) Genetic Inheritance and Disease

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

4) Drug Effects and Abuse

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

Term Research Project. Your Research Project consists of 2 components: Outline and Paper, 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, September 18, 2020. The Outline is due no later than 5 p.m. Friday, October 2, 2020 and the Paper no later than 5 p.m. on Friday, October 23, 2020. An electronic copy of both your Outline and Research paper will be submitted through your LAB Blackboard site, under “Assignments”. You cannot email your paper to your TA. For every 12-hr increment the Outline or Paper is submitted late, 10% of the total possible points will be deducted from your grade [e.g., if the report is past 5 days (120 hrs) late, you will receive a zero (0) for that assignment]. Saturdays, Sundays, and University holidays ARE counted.

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).

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 Friday, October 23, 2020. This assignment is not worth any points but a penalty of ½ pt per day will be applied for certificates received after the due date.

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 **747 possible points**:

Assignment	Points	% of Grade
Midterm 1	100	13.4
Midterm 2	100	13.4
Final Exam	100	13.4
At-home Quizzes	45 (3pts/lecture)	6
In-class problem sets	75 (5pts/lecture)	10
Participation points	12 (2pts/guest lecture)	1.6
Critical Assessments	30	4
Term Research Project	85	11.4
Laboratory grade	200	26.8
Total	747	100

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

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. Rizk 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.

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.

Participation points:

Each guest lecture will require mandatory attendance and count as 2 participation points/per lecture (6 guest lectures) for a total of 12 points. Signing in will occur within the first 15 minutes of class, afterwards no credit will be given.

Critical Assessments (CA). Critical assessments are short papers evaluating and discussing science in the media. There will be 2 CA and more detailed information will be posted on your LAB Blackboard. CAs are due before 5:00 pm on Friday, September 11, 2020 and Friday, October 9, 2020.

Exams. There will be 2 midterm exams during the semester and 1 final exam. Exams will be administered on Blackboard, will be 60 minutes long, and will consist of multiple choice, short answer, matching or fill-in-the-blank questions. Exams are NOT open book nor open notes.

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. Ghittoni or Dr. Rizk, **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) 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. After they have been graded, you will be able to view your corrected exams on Blackboard. If you feel an error was made in the grading of your exam, you must submit a Regrade Request Form in which you have thoroughly explained (typewritten) why you think your answer deserves more credit, as an e-mail attachment to your TA within 1 week of the time the corrected exams were made available to the entire class. 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.

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.

Fall 2020 Course Schedule: The Nature of Human Health and Disease

Wk	Date	Lecture Topic	Reading	Lecturer	Assignments
1	18-Aug	Overview: Humans in the world of biology	Ch. 1	Rizk	
	20-Aug	Intro to cell biology	Ch. 2	Rizk	Quiz & Prob. Set
2	25-Aug	How your body gets its energy (Biochemistry)	Ch. 2	Rizk	Quiz & Prob. Set
	27-Aug	Body organization and homeostasis	Ch. 3	Rizk	Quiz & Prob. Set
3	1-Sep	DNA, RNA, proteins and You! (Molecular Biology)	Ch. 4.1 - 4.4	Rizk	Quiz & Prob. Set
	3-Sep	Genetics	Ch. 5.1	Rizk	Quiz & Prob. Set
4	8-Sep	Genetic Diseases	Ch. 5.2 5.3	Rizk	Quiz & Prob. Set
	10-Sep	Cancer	Ch. 10	Rizk	Quiz & Prob. Set
5	15-Sep	Midterm 1		Rizk	
	17-Sep	Stem cells	Ch. 9	Ghittoni	Quiz & Prob. Set
6	22-Sep	Immune system	Ch. 6	Ghittoni	Quiz & Prob. Set
	24-Sep	Immune system dysfunction	Ch. 6	Ghittoni	Quiz & Prob. Set
7	29-Sep	Human Immunodeficiency Virus-HIV	Ch. 7	Ghittoni	Quiz & Prob. Set
	1-Oct	Infectious diseases	Ch. 8	Ghittoni	Quiz & Prob. Set
8	6-Oct	Human Microbiome	Ch. 8	Ghittoni	Quiz & Prob. Set
	8-Oct	The digestive system	Ch. 11.1 - 11.3		Quiz & Prob. Set
9	13-Oct	Nutrition: Supplements/Fad diets	Ch. 11.4 - 11.8	Ghittoni	Quiz & Prob. Set
	15-Oct	Midterm 2		Ghittoni	
10	20-Oct	Respiratory System	Ch. 16	Ghittoni	
	22-Oct	Diabetes & Obesity	Ch. 12 & 13	Rizk	
11	27-Oct	Pulmonary System, Tobacco, and Medical Cannabis	TBD	TBD	
	29-Oct	HIV Treatment	Ch. 16	TBD	
12	3-Nov	Cardiovascular: Myocardial Infarction	TBD	TBD	
	5-Nov	Women's Health: Beyond the Pap Smear	TBD	TBD	
13	10-Nov	Liver Cancer & Organ Transplant	TBD	TBD	
	12-Nov	Alzheimer's disease and pollution	TBD	TBD	
	19-Nov	FINAL EXAM (8-9 AM)			

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>

Remote Laboratory Policies

Attendance. As this course is offered entirely online, we will be using Zoom 5.0 and Blackboard for most instruction and communication. You are required to attend your Lab Instructor's Zoom lecture presentations so that you can interact with your TA and labmates. Students that cannot be present due to extreme time zone differences will be excused. All lecture presentations will be recorded.

Blackboard. Blackboard (Bb) will list BISC 150 lecture and lab sections as "separate courses". Lab-related materials and documents[§], Zoom links and recordings, Labster links (see below), submission of lab assignments, and administration of the lab final exam will be in your LAB section. If you have problems acquiring any documents, please let your TA or the Lab Director know immediately.

Be sure to check for additional postings and announcements in both the lecture and lab section on a daily basis.

Zoom. Please log into Zoom (using **USC credentials only**) for the class and lab sessions a few minutes beforehand. During these Zoom sessions, please keep the ringer of your cell phone either off or on vibrate.

Labster. The majority of your lab experience will be through weekly virtual lab simulations offered by Labster (topics referenced with * in the schedule). The link for each week's simulation will be available the day before your lab session. It is highly recommended that you start and complete the simulations during your regularly scheduled lab session so that if you have any questions or want to discuss any topics, your TA will be readily available. However, in order to accommodate time zone differences, you'll have 72 hrs from the beginning of your lab session to complete the simulation (to 100% progress). The points for each simulation will be earned from answering questions, based on theory and results, throughout these simulations. In order to receive 100% of your quiz score, you must complete the simulation to 100% progress; otherwise, your final score will be based on the percent completed. These scores are automatically transferred to Blackboard. If you do not attempt to do your lab simulation within the 72-hr time frame, you will receive a zero (0) for that simulation.

If you cannot complete a simulation within the 72-hr time frame due to a true emergency situation or extraordinary circumstance, it will be your responsibility to submit written documentation of your excuse (what you feel is appropriate to demonstrate a legitimate reason) to the Laboratory Director, Dr. Chong-Cerrillo, within 24 hrs after the deadline. It will be at her discretion to determine whether your excuse is valid and whether the simulation can be made up. If documentation is not received within this time frame, you will receive a zero (0) for that simulation. Please note that if the documented excuse does not cover all three days of the assignment, your request will be denied.

If you experience technical issues, please contact the Labster Support Team (<https://help.labster.com/en/collections/681721-contact-our-support-team>).

§ **Additional Lab Activities.** There are 3 lab sessions not offered through Labster. The general process is outlined below. More detailed information will be posted on the LAB Bb section.

Lab	Procedure	Available on	Assessment/Assignment	Due	Submit
Biology of Skin Color	Watch documentary	Sun, Sept 13, 2020	Questions on Lab Report	72 hrs from beginning of lab	Upload Lab Report via "Assignments"
Human Karyotyping	Follow instructions on document	Sun, Sept 27, 2020	Activity and questions on Lab Report		
How Safe Are We?	Watch documentary	Fri, Oct. 30, 2020	Short quiz on LAB Bb	Quiz available for only 1 hr <u>starting at the beginning of your regular lab time</u>; ~5-10 min to complete ; required to start and complete it in one sitting	

Late Policy. For every 12-hour increment any assignment is handed in late, you will lose 10% of the total possible points [i.e., if the assignment is past 5 days (120 hrs) late, you will receive a zero (0) for that assignment]. Saturdays, Sundays, and University holidays ARE counted. The Labster simulations adhere to the 72-hr policy stated above.

Lab Final Exam. The Lab Final Exam will be cumulative and will test your ***understanding*** of the topics, theory, concepts, experiments and results covered in the lab simulations and exercises. The final will be at the beginning of your lab session, have a time limit, and only available/open for a designated time frame. You will be required to log into Zoom and have your video camera on during the entire exam for proctoring purposes.

If you have prior knowledge that you will miss the final exam for a legitimate reason, discuss the situation with the Lab Director at least 2 weeks in advance. Be prepared to provide supporting official documentation.

If you miss the lab final due to a true emergency or extraordinary circumstance, it will be your responsibility to submit documentation of your emergency (what you feel is appropriate to demonstrate a legitimate reason) to the Laboratory Director, Dr. Chong-Cerrillo, within 24 hrs of the missed exam. It will be at her discretion to determine whether your excuse is valid and whether the exam can be made up. If documentation is not received within this time frame, or if it is deemed invalid, you will receive a zero (0) for the final exam.

Regrade Request. You will receive an announcement once your lab final exam has been graded. If you feel something should be reviewed for a regrade, you must submit a thoroughly typewritten document (as an email attachment, NOT within the body of the email) explaining why you think your answer deserves more credit to your TA within 48 hrs after announcement. Oral requests will not be considered. The entire question will be regraded, which may raise or lower your score.

Trojan Academic Integrity. Please remember that you are required to adhere to the Trojan Academic Integrity. You are not allowed to use someone else's data or answers to complete any simulation or assignment. You are not allowed to use any external assistance, including communicating with fellow students (e.g., texting, group chats, video calls, etc.) during or after the exam, allowing another student to copy from an exam, sharing exam material with another student, possession or use of any books, notes, calculator, or other materials, and any instruments that can convey exam answers, such as cell phones, tablets, alternate computer, etc.

Blackboard Posting of Grades/Scores. Blackboard is a convenient system to communicate scores and grades; however, *those grades are not authoritative*. All scores (lecture and lab) will be in your LAB section. It is the student's responsibility to notify your TA or the Lab Director ASAP in the event of any mistakes in your posted score.

Please remember that (1) the course mean given on Blackboard is also NOT authoritative, and (2) that only the total number of points earned by the end of the semester 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.

Academic Accommodations. Students requesting academic accommodations based on a disability are required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP when adequate documentation is filed. Please be sure the letter is delivered to **Dr. Chong-Cerrillo** as early in the semester as possible. DSP is open Monday-Friday, 8:30 am - 5:00 pm, GFS 120, Email: ability@usc.edu, Phone: (213) 740-0776.

The Nature of Human Health and Disease Laboratory

BISC 150Lxg

Schedule and Important Dates

Wk	Dates	Laboratory
1	Aug 17 – 19	Lab Orientation Labster Demo
2	Aug 24 – 26	Lab Safety* Experimental Design*
3	Oct 31 – Sept 2	Cell Structure*
	<i>Fri, Sept 4</i>	<i>Last day to register and add classes</i> <i>Last day to drop a class without a mark of "W" with refund</i> <i>Last day to change enrollment option to Pass/No Pass or Audit</i>
4	Sept 7 – 9	Cellular Respiration (Principals)*
	<i>5 pm, Fri, Sept 11</i>	<i>Critical Assessment 1 due</i>
5	Sept 14 – 16	The Biology of Skin Color [§]
	Tues, Sept 15	Midterm 1
	<i>5 pm, Fri, Sept 18</i>	<i>Deadline for Approval of Research Paper Topic</i>
6	Sept 21 – 23	Mendelian Inheritance*
7	Sept 28 – 30	Human Karyotyping: A Tool for Genetic Analysis and Diagnosis [§]
	<i>5 pm, Fri, Oct 2</i>	<i>Research Outline due</i>
	<i>Fri, Oct 2</i>	<i>Last day to drop a class without a mark of "W" on transcript</i> <i>Last day to change a Pass/No Pass course to letter grade</i>
8	Oct 5 – 7	Antibodies*
	<i>5 pm, Fri, Oct 9</i>	<i>Critical Assessment 2 due</i>
9	Oct 12 – 14	The Gram Stain: Identify and Differentiate Bacteria*
	Thur, Oct 15	Midterm 2
10	Oct 19 – 21	Control of Microbial Growth*
	<i>9 am, Fri, Oct 23</i>	<i>Academic Dishonesty Tutorial due</i>
	<i>5 pm, Fri, Oct 23</i>	<i>Research Paper due</i>
11	Oct 26 – 28	Your Diet and Your DNA*
12	Nov 2 – 4	How Safe Are We? [§]
	<i>Fri, Nov 6</i>	<i>Last day to drop a class with a mark of "W"</i>
13	Nov 9 – 11	Lab Final Exam

*Labster