

BISC 104 – *How the Body Works*
Fall 2015

This GE (D, Life Science) course is designed to give undergraduates an introduction to human physiology. BISC 104 is designed to provide a working knowledge of the human body and many of the associated considerations, such as diseases, genetics, lifestyle, and the effect of both legitimate and illegal drugs. We shall also explore social aspects of many of areas presented. Although there is no prerequisite, general knowledge of introductory biology and chemistry at the high school level is helpful.

Please note that this course is **not** designed for those majoring in biology or the related health sciences. BISC 104 does not satisfy the requirements for accreditation in any pre-health area of which we are aware, and should not be used in an attempt to satisfy admission requirements into one of the health professions. We do not support, and will not provide help, in using this course for such a purpose. Those who are majoring in biology or any of the health sciences should consider BISC 307, which is designed specifically for pre-health majors.

Lecturers:

Chien-Ping Ko, Ph.D.	HNB 209	740-9182	cko@usc.edu	Office Hrs: W& F 2-3
Bruce Yazejian, Ph.D.	HNB 528	740-2220	yazejian@usc.edu	Office Hrs: M&F 12-1

Laboratory Director:

Michael Moore, Ph.D.	ZHS 371B	740-6084	moore@usc.edu	Office Hrs: generally available during regular hours
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Teaching Assistants:

Damian Wang	damianwa@usc.edu
Edder Lopez	edderlop@usc.edu

Textbook:

Visualizing Human Biology by Kathleen Anne Ireland and David J. Tenenbaum. Wiley/The National Geographic Society, *Fourth Edition*. [Recommended]

Blackboard Website: <https://blackboard.usc.edu/>

Lecture: MWF 1–1:50 PM, THH 102

Grading:

The possible numbers of points for the various evaluations are:

Exam I	75 points	15%
Exam II	75 points	15%
Exam III	75 points	15%
Exam IV	75 points	15%
Lab/Discussion	90 points	18%
Term paper	75 points	15%
Oral presentation	35 points	7%

Course Total	500 points	100%

Lab/Discussion: Each student must enroll in one section of Lab/Discussion. The lab/discussion section will start the week of August 31st there will be no lab/discussion meeting during the first week of classes. The lab/discussion section meets once each week for two hours. The lab/discussion section will serve two main purposes; to instruct you on how to meet the expectations of the term paper, and to further elucidate various lecture topics either through discussion and/or ‘laboratory’ exercises and activities. The material covered in the lab/discussion is critical to understanding the overall course. As a result, the lab/discussion is an integral part of this course, and cannot be taken separately. For certain exercises and activities additional handouts will be provided in lab/discussion and on Blackboard. More information about the lab/discussion will be supplied to you at a later date. Be sure to attend the first offering of your lab/discussion section.

Final grades are assigned on a curve, based entirely on the total number of points earned in the course. After each exam a curve will be given by the instructors to indicate roughly what letter grade corresponds to the student’s current number of points. Specifically, you will be provided with the current course average and a provisional letter grade scale. Please remember that the course mean on Blackboard is NOT authoritative. Also, please remember that all discussion regarding letter grades is to be held as provisional prior to the completion of all course assignments. Again, provisional means provisional. Please remember that only the total number of points earned determines your course grade!

In a course such as this, in which the exact content of the lectures can vary, the student must realize that the examinations can and will cover anything that is discussed in class. Some of this material may not be in the textbook, and will be available only to those who were present in class. For this reason, it is very important that you attend class. Those who do not attend will surely not do as well on examinations.

Please note that this course involves conceptual ideas that are not easily grasped, as well as a significant amount of memorization. These are often challenging to students. BISC 104 is not a trivial course. The entire grade distribution will be used, including Ds and (when we are forced to) Fs. Students who seek less challenging material would be well advised to consider alternate enrollments.

Regarding Pass/No Pass Status. Should you choose the Pass/No Pass option, you must have a final score equivalent to “C minus” quality or better to receive a “Pass.” “No Pass” will be assigned if your final score is less than the equivalent of a “C minus.” No petitions for change from Pass/No Pass to graded status will be accepted after the deadline (September 11) to change status has passed.

Exams. If you arrive late for an exam; and another student has already finished their exam and left the exam room – you will NOT be permitted to take the exam and will receive a score of ZERO for that exam.

Re-grading of exams. If you wish to have exam questions re-graded, you must submit a request to your TA within one week of when your exam was returned to you. Your request must be thoroughly explained in writing. TAs will not consider oral requests. The entire answer will be re-graded, not just the part you think deserves more credit. Your score may go up or down as a result of a re-grade.

Make-up exams will normally not be permitted. Making up an exam will only be allowed if the student can demonstrate with written documentation, in advance when possible, a compelling reason (such as family or medical emergency) for not taking the exam at the scheduled time. A make-up exam may

include an oral component and will generally be more difficult than the in-class exam.

Students with Disabilities. Any student requesting academic accommodations based on a disability is required to register with the Office of Disability Services and Programs (DSP, STU 301, 213-740-0776) each semester. You must deliver an approved DSP letter to Dr. Moore or Dr. Ko early in the semester as possible. Please see SCampus (<http://www.usc.edu/dept/publications/SCAMPUS/>) for additional policies that are not covered here (i.e. academic integrity, proper conduct, etc.) but that do still apply!

Preparation of the term paper and oral presentation

A **term paper** is required. The term paper should be a minimum of about 10 pages, double spaced and machine-printed in a manner that is normal for formal presentations using a font size of 12 points. Please don't exceed 20 pages. The term paper will be written in the scientific style, in which you will be instructed on in the discussion section.

Each paper must be annotated with a minimum of 4-10 references to the scientific or popular literature. Of these references, one must be as recent as 2013. The references must demonstrate evidence that the student has read at least two articles from a scientific journal or one of the sources listed below. The presentation must be an original work by the student involved. Plagiarism in this matter, as in connection with everything concerning this course and your University activities, is strictly forbidden and will be treated with the usual University rules if it is encountered. Please visit

<http://www.usc.edu/dept/publications/SCAMPUS/gov/gov05.html> regarding the University's policy on plagiarism, and <http://www.usc.edu/dept/publications/SCAMPUS/gov/gov11.html> regarding Academic Dishonesty Sanction Guidelines. The recommended sanction for plagiarism is an F for course.

The term paper due date: **Friday, November 6th, 2015**

Subject Matter

The choice of subject for the term paper is up to the student, but must deal with the material of the course. In general, a subject that deals with any aspect of human physiology or disease will be accepted. Students are urged to discuss the subject of their paper with any of the teaching staff of the course. Topics that are not suitable will result in reduced credit. If you are in doubt as to whether a subject is suitable or not, please present it to the instructors or one of the teaching assistants prior to the 6th week of class to obtain permission. It is not necessary that every student choose a different topic; many students can, and often do, present the same subject. In this case, of course, all the students must work independently.

Sources of Material

There exist a large variety of different reference sources. These include the following popular level scientific magazines:

<i>Scientific American</i>	<i>Science</i>	<i>Science News</i>
<i>American Scientist</i>	<i>Discover</i>	
<i>New Scientist</i>	<i>Nature (any version)</i>	

Any of these sources can serve as a rich supply of ideas and information. You may use references from any of them freely. You will often find good articles in *Time*, *Newsweek*, the newspapers (particularly the

New York Times and the *Los Angeles Times*), and other news periodicals. Most of these are now available on the web. Newspaper articles are quite satisfactory as sources, but must be appropriately referenced.

In addition to the popular magazines concerning science, there exist a number of more formal scientific journals used by the professionals in the field. You will usually find these articles too advanced to be read easily, but you may certainly feel free to use them if you wish. In particular, review articles in journals such as *Trends in Neuroscience* and *Trends in Pharmacology* are often of value.

The World Wide Web is an extraordinary source of information and ideas. If you are not already familiar with the Web, go to Leavey and learn about it. The Web and associated electronic means of communication are changing our society. While they are very powerful, be careful of information from the Web. This material is almost completely un-refereed, and may (and often does) contain significant errors. You are responsible for checking your sources to be sure that the information you report is correct. This is a significant part of modern scholarship. You may not use only the Web as a source of information. Of course, you can use peer-reviewed publications available online such as medical journals and the scientific journals listed above. Always cite scientific journals as journals whether accessed online or in print.

Some web sites of interest are:

www.medlineplus.gov

<http://www.cdc.gov/>

<http://www.fda.gov/>

<http://www.nih.gov/>

<http://www.ncbi.nlm.nih.gov/pubmed>

<http://www.usda.gov/>

You may trust any information from these governmental web sites.

Finally, there are a wide variety of medical journals. Many of these are written for physicians and are difficult to read, but many are written for a less highly trained audience. This latter group should be understandable by you as we move into the second half of the course. You may feel free to include references from any of these.

Turnitin for Term Papers

The following statement provided by USC's Center for Scholarly Technology applies. "USC is committed to the general principles of academic honesty that include and incorporate the concept of respect for the intellectual property of others, the expectation that individual work will be submitted unless otherwise allowed by an instructor, and the obligations both to protect one's own academic work from misuse by others as well as to avoid using another's work as one's own. By taking this course, students are expected to understand and abide by these principles. Please note the academic integrity standards of the University as explained in SCampus. All submitted work for this course may be subject to an originality review as performed by Turnitin technologies (<http://www.turnitin.com>) to find textual similarities with other Internet content or previously submitted student work. Students of this course retain the copyright of their own original work, and Turnitin is not permitted to use student-submitted work for any other purpose than (a) performing an originality review of the work, and (b) including that work in the database against which it checks other student-submitted work." **The term paper is due Friday (November 6th) by 5:00PM.** You will need to upload your paper through the assignments tab in the blackboard lecture section (13001). When you upload your term paper properly you will

receive an email confirmation. If you do not receive an email confirmation... you will need to resubmit your paper. You can only submit a paper once... so make sure you are uploading your final version. A paper received at 5:01 PM is late, given that blackboard can be temperamental, I would not wait until 4:50 or later to submit your paper. Term Papers receive a 20% late penalty per 24 hours that they are late (this includes weekends - therefore by 5:01PM on Tuesday Nov 10th your paper is now worth 0, if not already submitted). It is your responsibility to make sure that your term paper has been submitted (and that it is the correct version). Only the electronic version received via the term paper assignment will be accepted... no hard copies, no emails to TAs or instructors... etc.

Oral Presentation

An **oral presentation** must be developed by the student for delivery in lab. The subject matter of the oral presentation will usually be the same as that of the term paper. This presentation should be ten minutes in length. It will be followed by a discussion period of five minutes, during which other students are urged to ask questions and to consider the material. The use of visual aids is expected in the presentation. Grades will be assigned on the basis of significance of the topic and the relevant discussion of the science, quality of the material, and the quality of the presentation. Detailed guidelines will be distributed later. All presentations will be made during the final three weeks of the course.

Ask a Physician.

In addition to the standard lectures, we will have two sessions (10/14 and 11/30) of "Ask a Physician." These two Q&A sessions will provide unique opportunities for students to ask Dr. James R. Jacobs, Medical Director and Acting Executive Director, USC Engemann Student Health Center, and his colleagues any questions that students are most concerned with regarding human health and diseases. Students are encouraged to pose questions (anonymously, if preferred) for the physician on Blackboard prior to the Q&A sessions.

Proposed lectures.

It is anticipated that student involvement during class will be frequent. The content of lectures may change as a result of questions or interests of the students.

Lecture Schedule, BISC 104, Fall 2015

	Date	Topic	Reading	Lecturer
1	Aug 24	Introduction; Scientific Methods; Clinical Trials	Ch 1	Ko
2	Aug 26	Atoms, Ions, and Molecules	Ch 3	Ko
3	Aug 28	Carbohydrates; Lipids	Ch 3	Ko
4	Aug 31	Proteins; Nucleic Acids	Ch 3	Ko
5	Sept 2	Structure and Function of Cells	Ch 4	Ko
6	Sept 4	Cellular Metabolism; Membrane Transports	Ch 4	Ko
	Sept 7	<i>University Holiday (Labor Day)</i>		
7	Sept 9	Tissues; Stem Cells	Ch 5	Ko
8	Sept 11	Bones and Joints	Ch 6	Ko
9	Sept 14	Muscle Structure; Molecular Basis of Contraction	Ch 6	Ko
10	Sept 16	Contractile Properties; Exercise Physiology	Ch 6	Ko
11	Sept 18	Neurons and Bioelectricity	Ch 7	Ko
	Sept 21	Exam I, 75 points (Covers 8/24-9/16, 10 lectures)		
12	Sept 23	Synaptic Transmission	Ch 7	Ko
13	Sept 25	Drug Addictions	Ch 7	Ko
14	Sept 28	The Central Nervous System; Brain Imaging; Brain Diseases	Ch 7	Ko
15	Sept 30	Fight or Flight Responses; Stress	Ch 7	Ko
16	Oct 2	Pain, Taste, Smell, and Hearing	Ch 8	Ko
17	Oct 5	Eyes and Vision	Ch 8	Ko
18	Oct 8	Skin and Hair	Ch 9	Ko
19	Oct 9	The Lymphatic System and Immune Responses	Ch 9	Ko
20	Oct 12	Pathogens; Infection Diseases; AIDS	Ch 10	Ko
	Oct 14	<i>Ask a Physician</i>		Jacobs
21	Oct 16	Heart Structure; ECG; Cardiac Cycle	Ch 12	Yazejian

	Oct 19	Exam II, 75 points	(Covers 9/18-10/12, 10 lectures)	
22	Oct 21	Blood Vessels; Blood Pressure	Ch 12	Yazejian
23	Oct 23	Blood	Ch 12	Yazejian
24	Oct 26	Lung Structure; Ventilation; Lung Volume Changes	Ch 13	Yazejian
25	Oct 28	Gas Exchange; Regulation of Breathing	Ch 13	Yazejian
26	Oct 30	Respiratory Diseases	Ch 13	Yazejian
27	Nov 2	Digestive System	Ch 15	Yazejian
28	Nov 4	Digestion	Ch 15	Yazejian
29	Nov 6	Urinary System (TERM PAPER IS DUE TODAY)	Ch 16	Yazejian
	Nov 9	Exam III, 75 points	(Covers 10/16-11/4, 8 lectures)	
30	Nov 11	Kidneys and Urine Formation	Ch 16	Yazejian
31	Nov 13	Hormones	Ch 17	Yazejian
32	Nov 16	Central Endocrine Glands	Ch 17	Yazejian
33	Nov 18	Peripheral Endocrine Glands	Ch 17	Yazejian
34	Nov 20	Male Reproductive System	Ch 18	Yazejian
35	Nov 23	Female Reproductive System	Ch 18	Yazejian
	Nov 25	<i>University Holiday (Thanksgiving Holiday)</i>		
	Nov 27	<i>University Holiday (Thanksgiving Holiday)</i>		
	Nov 30	<i>Ask a Physician</i>		Jacobs
36	Dec 2	Fertilization, Pregnancy and Development	Ch 19	Yazejian
37	Dec 4	Genetics and Biotechnology	Ch 20	Yazejian
	Dec 16 Wed.	Exam IV, 75 points	(Covers 11/6-12/4, 9 lectures) 11:00-1:00 p.m.	