

**BISC 104 – How the Body Works**  
**Fall 2019**

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.

**Learning Objectives:** After completing this course, students will have a clear understanding of how the major physiological systems of the human body function. In addition, they will appreciate how the systems both influence and depend upon one another.

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**Laboratory Director:** Michael Moore; moore@college.usc.edu  
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**Textbook:** (recommended, not required)  
Visualizing Human Biology by Kathleen Anne Ireland, 4<sup>th</sup> edition; Publisher: Wiley

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

**Lecture:** MWF 1–1:50 PM, THH 102

PowerPoint slides of the lectures will be posted to Blackboard in advance of each class meeting. The contents of these slides will be drawn largely from the textbook readings but may also contain information from other sources. A successful learning strategy is to read over the lecture notes before class so that class time can be efficiently spent learning the material in greater depth.

**Grading (there is no “extra credit” so please, don’t ask):**

|  |   |
|--|---|
| Lecture Exam 1 (Friday, September 20)                          | 75 points   |
| Lecture Exam 2 (Wednesday, October 16)                         | 75 points   |
| Lecture Exam 3 (Monday, November 11)                           | 75 points   |
| Final Exam (Wednesday, December 18; 11AM-1PM)                  | 175 points  |
|  | (75 points for Exam 4 plus 100 points cumulative) |
| <u>Laboratory (see lab schedule below for point breakdown)</u> | <u>100 points</u>                                 |
| Total  | 500 points  |

**Exam content:** 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 class generally do not do as well on examinations. There will be four in-class exams that will consist of a mix of short-answer, multiple choice, true/false, fill-in-the-blank and matching type questions. The final exam will cover material since the third exam and will also have a cumulative portion covering the entire course.

**Exams days:** 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.

**Missed Exams, assignments, quizzes, etc.:** No make-up exams will be given. Students who are unable to take an exam at the scheduled time must give written notification, preferably in advance. Students who miss an exam, assignment, quiz, etc. for a legitimate reason (either a medical issue or a University-sanctioned event) must provide written documentation of said reason within seven days of the exam or assignment due date. Documentation must be sent to Dr. Moore. If documentation is not received within seven days the score for the missed assignment will be a zero. Upon receipt of valid documentation, the score for the missing assignment will be prorated. In other words, the score for the missed assignment will be the average of the score for the other like assignments. (For example, if exam 2 is missed, that score will become the average of exams 1, 3, and 4.) Note that proration will only be done for one missed exam. This policy does not apply for the Final Exam which cannot be missed.

Please note that this course involves conceptual ideas that may not easily be 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.

**Final grades:** Grades will be assigned on a curve, based 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 students' 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 provided on Blackboard is provisional as it is based on the number of points possible at that point in the course. Only the total number of points earned by the end of the semester will determine course grades.

**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 to change status has passed.

**Laboratory portion:** Each student must enroll in one section of laboratory. Lab sections will start the week of August 28. (There will be no labs during the first week of classes.) The lab section meets once each week for

two hours. The labs will serve to further elucidate various lecture topics either through discussion and/or laboratory exercises and activities. The material covered in the labs is critical to understanding the overall course. As a result, the lab is an integral part of this course, and cannot be taken separately. For certain exercises and activities additional handouts will be provided in lab and/or on Blackboard. More information about the labs will be supplied at a later date. Be sure to attend the first offering of your lab section.

**Academic conduct, 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 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.

### Lecture Schedule, BISC 104, Fall 2018

| Lecture # | Date             | Topic  | Chapter(s) |
|-----------|------------------|--|------------|
| 1         | M Aug 26         | Introduction to and overview of the course.                                      |            |
| 2         | W Aug 28         | How are we put together, anyway?<br>(Organization of the human body)             | 1&2        |
| 3         | F Aug 30         | A (little) bit of chemistry.<br>(Bonding of atoms)                               | 3          |
|           | M Sept. 2        | <i>University Holiday (Labor Day)</i>  |            |
| 4         | W Sept. 4        | What exactly are all those chemicals for?<br>(Molecules important for biology)   | 3          |
| 5         | F Sept. 6        | The (fun)damental unit of life.<br>(Cell structure and organization)             | 4          |
| 6         | M Sept. 9        | Cells talk to each other. Wait, what?<br>(Chemical messengers of communication)  | 4          |
| 7         | W Sept 11        | Cells are OK by themselves, but they're even better together.<br>(Body tissues)  | 5          |
| 8         | F Sept 13        | We're soft on the outside, crunchy on the inside.<br>(Bones and joints)          | 6          |
| 9         | M Sept 16        | Don't just sit there...move your body around.<br>(Musculoskeletal system)        | 6          |
|           | W Sept 18        | Review for Exam 1  |            |
|           | <b>F Sept 20</b> | <b>Exam 1, 75 points (Covers lectures 1-9)</b>                                   |            |
| 10        | M Sept 23        | When muscles are excited, they get shorter.<br>(Excitation-contraction coupling) | 6          |
| 11        | W Sept 25        | The brain is rechargeable.<br>(Electrical properties of neurons)                 | 7          |

|    |           |   |         |
|----|-----------|---|---------|
| 12 | F Sept 27 | Neurons have their own language.<br>(Synaptic transmission)   | 7       |
| 13 | M Sept 30 | What is that three pounds of flesh up there between our ears?<br>(Structure and organization of the nervous system) | 7       |
| 14 | W Oct 2   | What could possibly go wrong?<br>(Your brain on drugs)  | 7       |
| 15 | F Oct 4   | I know you're out there...I can hear you.<br>(The special senses)   | 8       |
| 16 | M Oct 7   | What <i>is</i> that smell? (Don't eat it!)<br><br>(The chemical senses)   | 8       |
| 17 | W Oct 9   | The eyes have it.<br>(Visual system)  | 8       |
| 18 | F Oct 11  | More than 20/20?<br>(Eye dysfunctions)  | 8       |
|    | M Oct 14  | Review for Exam 2   |         |
|    | W Oct 16  | <b>Exam 2, 75 points</b> <b>(Covers lectures 10-18)</b>   |         |
|    | F Oct 18  | <i>University Holiday (Fall Recess)</i>   |         |
| 19 | M Oct 21  | Cover your mouth when you cough!<br>(The immune system)   | 9, 10   |
| 20 | W Oct 23  | What beats 3 billion times without stopping?<br>(Heart structure and function)                                      | 12      |
| 21 | F Oct 25  | There will be blood...<br><br>(Arteries, veins capillaries)   | 12      |
| 22 | M Oct 28  | It's not ketchup.<br>(Composition of blood)   | 12      |
| 23 | W Oct 30  | Take a deep breath...<br>(Lung structure and ventilation)   | 13      |
| 24 | F Nov 1   | In with the good air out with the bad air.<br>(Gas exchange in the respiratory system)                              | 13      |
| 25 | M Nov 4   | Step away from the cigarette.<br>(Respiratory diseases)   | 13      |
| 26 | W Nov 6   | I can't believe I ate the whole thing.<br>(Nutrition and the digestive system)                                      | 14 & 15 |
|    | F Nov 8   | Review for Exam 3   |         |

|    |  |  |    |
|----|--|--|----|
|    | M Nov 11   | <b>Exam 3, 75 points (Covers lectures 19-26)</b>                     |    |
| 27 | W Nov 13   | Everyone poops (and pees too).<br>(Kidney functions)                 | 16 |
| 28 | F Nov 15   | It's in your blood.<br>(Hormones)                                    | 17 |
| 29 | M Nov 18   | Blame it on the hypothalamus.<br>(Central endocrine glands)          | 17 |
| 30 | W Nov 20   | What <i>doesn't</i> make a hormone?<br>(Peripheral endocrine glands) | 17 |
| 31 | F Nov 22   | Essentially one long tube.<br>(Male reproductive system)             | 18 |
| 32 | M Nov 25   | Designed to receive sperm.<br>(Female reproductive system)           | 18 |
|    | W Nov 27   | <i>University Holiday (Thanksgiving)</i>                             |    |
|    | F Nov 29   | <i>University Holiday (Thanksgiving)</i>                             |    |
| 33 | M Dec 2  | Where you came from.<br>(Fertilization, pregnancy and development)   | 19 |
| 34 | W Dec 4  | Choose your parents wisely.<br>(Genetics and biotechnology)          | 20 |
|    | F Dec 6  | Review for Final Exam  |    |
|    | <b>Wednesday, Dec 18, 11:00 am -1:00 pm Final Exam, 175 points<br/>(Covers lectures 27-34 and also 1-34)</b> |  |    |

Please note the following important dates:

**Friday, September 13 is the last day to change from a letter grade to Pass/No Pass option.**

**Friday, September 13 is the last day to drop without a "W" and receive a refund.**

**Friday, October 11 is the last day to change from Pass/No Pass option to a letter grade.**

**Friday, October 11 is the last day to drop without a "W" on transcript (no refund).**

**Friday, November 15 is the last day to drop with a "W".**

## Laboratory Portion

There is no lab manual. Lab exercises will be handed out prior to laboratory meetings. Grading of the lab portion will consist of eleven lab quizzes (7 points each) and performance on an oral presentation (23 points). See below for the schedule of these. Presentations will consist of a ten to fifteen minute oral report on a topic of students' choosing. Presentation topics must be related to physiology and must be approved by the TA at least three weeks before the beginning of the three weeks of presentations (see below). The use of visual aids in the presentation is expected (*e.g.* PowerPoint slides). Grades will be assigned on the basis of organization, subject knowledge and the clarity of the presentation. A grading rubric for the presentation will be made available on Blackboard. Lab quizzes will be given in the first five minutes of lab (and only the first 5 minutes of lab). Note: those arriving later than five minutes after the beginning of lab will not be allowed to take the quiz and will earn a zero for that quiz. Lab quizzes will be based on the lab exercise or the presentations from the previous week.

| Week of               | Laboratory Exercise         | Lab Quiz?  |
|-----------------------|-----------------------------|--|
| Aug 26 <sup>th</sup>  | No Labs                     | No   |
| Sept 2 <sup>nd</sup>  | Scientific Method 1         | No   |
| Sept 9 <sup>th</sup>  | Scientific Method 2         | Yes  |
| Sept 16 <sup>th</sup> | Skeletal Muscle Physiology  | Yes  |
| Sept 23 <sup>rd</sup> | EMG-Grip Strength           | Yes  |
| Sept 30 <sup>th</sup> | The Brain                   | Yes (Presentation topics need to be approved by this week) |
| Oct 7 <sup>th</sup>   | Cardiovascular Physiology   | Yes  |
| Oct 14 <sup>th</sup>  | No Labs – Fall Recess       | No   |
| Oct 21 <sup>st</sup>  | ECG-Heart Sounds            | Yes  |
| Oct 28 <sup>th</sup>  | Presentations               | Yes  |
| Nov 4 <sup>th</sup>   | Presentations               | Yes  |
| Nov 11 <sup>th</sup>  | Presentations               | Yes  |
| Nov 18 <sup>th</sup>  | Endocrine System Physiology | Yes  |
| Nov 25 <sup>th</sup>  | No Labs - Thanksgiving      | No   |
| Dec 2 <sup>nd</sup>   | The Senses                  | Yes  |

The Laboratory portion of the course totals 100 points.

| <b>Number</b> | <b>Points</b> | <b>Exercise</b> | <b>Total Points</b> |
|---------------|---------------|-----------------|---------------------|
| 11            | 7             | Lab Quiz        | 77                  |
| 1             | 23            | Presentation    | 23                  |