BIOL 1300.1 Anatomy and Physiology  
M,T,W,Th 8:15-11:00  
Summer 2015

**Professor:** Carol Chaia Halpern, Ph.D.

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Telephone # 552-3565  
email: halpern@bc.edu

Office hours: Th 11:30 – 1 and by appointment

Students are strongly encouraged to come see me (either during office hours or by appointment) regarding questions or difficulties with the material covered and/or other difficulties that interfere with the learning process.

**Textbook:** Marieb, Elaine N and Katja Hoehn  
*Human Anatomy and Physiology*  
Ninth edition, Pearson/Benjamin Cummings, 2013

**Additional Readings:**

Please find these on Canvas under this course.

**Boston College Mission Statement**

Strengthened by more than a century and a half of dedication to academic excellence, Boston College commits itself to the highest standards of teaching and research in undergraduate, graduate and professional programs and to the pursuit of a just society through its own accomplishments, the work of its faculty and staff, and the achievements of its graduates. It seeks both to advance its place among the nation's finest universities and to bring to the company of its distinguished peers and to contemporary society the richness of the Catholic intellectual ideal of a mutually illuminating relationship between religious faith and free intellectual inquiry.

Boston College draws inspiration for its academic societal mission from its distinctive religious tradition. As a Catholic and Jesuit university, it is rooted in a world view that encounters God in all creation and through all human activity, especially in the search for truth in every discipline, in the desire to learn, and in the call to live justly together. In this spirit, the University regards the contribution of different religious traditions and value systems as essential to the fullness of its intellectual life and to the continuous development of its distinctive intellectual heritage.

**BIOL 130001 Anatomy and Physiology I**

Corequisite: BIOL 13100  
This introductory course lays the foundation for the understanding of human anatomy and physiology and is intended for Nursing/Allied Health Professions students. The first portion of the course covers cellular and molecular aspects of eukaryotic cell function: basic chemistry, macromolecules, cell structure, membrane transport, metabolism, gene expression, cell cycle control, and genetics. The course continues with the study of several organ systems beginning with the Integument, which is followed by the Skeletal and Muscular Systems, and ending with the Nervous System. The cellular and molecular basis for the functions of these systems is an integral element of this portion of the course. Does not satisfy Natural Science Core Requirement for BC students. This course is intended for Nursing/Allied Health Professions students. Boston College biology majors/premed students must obtain department approval before registering for this course.

**General Information – Philosophy and Policies:**
This Course provides the foundation for an understanding of life and the Human Body, primarily based on the Western Scientific perspective in which Reductionism is applied to comprehend the whole. That involves looking at the molecular basis for cellular function, which then forms the basis for the understanding of physiological function at the organismal level. In other words, the reductionist or traditional Western Scientific approach understands the activities of the cell based on the complex interplay among the molecules in and around them, and the function of the organism based on the cells, organs or structures that make it up as well as the environmental factors impinging on it. An additional perspective that will be offered in this course considers the fact that for us humans, thoughts, beliefs, and feelings, be they conscious or not, profoundly affect our cells, our physiology, our health, as well as our life experience. This has become the basis for the field of Mind-Body-Medicine, and suggests the importance of self-knowing as a way for our deepening spiritual development and understanding. Therefore, integrating both perspectives is crucial for a fuller understanding of ourselves as whole beings who long to be in balance and healthy.

My invitation to you is to approach this class with openness, and willingness to do your part in this journey we are embarking on together.

**Grading**

**Exams and Your Grade:**

Exams must be taken at the scheduled times. In case of a medical emergency you must contact me PRIOR to the exam time. If you fail to do so, you will get a ZERO for that exam. Please review the exam dates, and make certain that neither you nor your family makes appointments for those dates/times.

Exams will be based largely on the material covered in class, but at times you will be held responsible for material not covered but assigned (you will be informed of such prior to the exam).

Your grade will be based on your exam average. Your letter grade will roughly reflect the following: the A range is in the 90s; the B range in the 80s; the C range in the 70s, etc. I will determine the exact cut off for a given letter grade after the final exam, and the calculation of the class average.

**Summer Grading System**

The undergraduate grading system consists of twelve categories: A (4.00), A- (3.67), excellent; B+ (3.33), B (3.00), B- (2.67), good; C+ (2.33), C (2.00), C- (1.67), satisfactory; D+ (1.33), D (1.00), D- (.67), passing but unsatisfactory; F (.00), failure; I (.00), incomplete; F (.00), course dropped without notifying office; W (.00), official withdrawal from course. The graduate grading system is A (4.00), A- (3.67), Excellent; B+ (3.33), B (3.00), good; B- (2.67), C (2.00), passing but not for degree credit; F (.00), failure.

Grade Reports. All students are required to log into the web through Agora to access their summer grades. Students must utilize their BC username and password to log on. If your username or password is not known, the HELP Desk located in the Campus
Technology Resource Center (CTRC) in O’Neill Library will issue a new one. The CTRC requires a valid picture ID (a BC ID, driver’s license or passport) to obtain your password.

Important Policies
http://www.bc.edu/content/bc/schools/advstudies/guide/academicinteg.html

Scholarship and Academic Integrity
It is expected that students will produce original work and cite references appropriately. Failure to reference properly is plagiarism. Scholastic dishonesty includes, but is not necessarily limited to, plagiarism, fabrication, facilitating academic dishonesty, cheating on examinations or assignments, and submitting the same paper or substantially similar papers to meet the requirements of more than one course without seeking permission of all instructors concerned. Scholastic misconduct may also involve, but is not necessarily limited to, acts that violate the rights of other students, such as depriving another student of course materials or interfering with another student’s work.

Request for Accommodations
If you have a disability and will be requesting accommodations for this course, please register with either Dr. Kathy Duggan (dugganka@bc.edu), Associate Director, Connors Family Learning Center (learning disabilities or AHD) or Dean Paulette Durrett, (paulette.durrett@bc.edu), Assistant Dean for students with disabilities, (all other disabilities). Advance notice and appropriate documentation are required for accommodations.
http://www.bc.edu/content/bc/libraries/help/tutoring/specialservices.html.

Attendance
Class attendance is an important component of learning. Students are expected to attend all classes and to arrive by the beginning of and remain for the entire class period. When an occasion occurs that prevents a student from attending class, it is the student’s obligation to inform the instructor of the conflict before the class meets. The student is still expected to meet all assignment deadlines. If a student knows that he or she will be absent on a particular day, the student is responsible for seeing the instructor beforehand to obtain the assignments for that day. If a student misses a class, he or she is responsible for making up the work by obtaining a classmate's notes and handouts and turning in any assignments due. Types of absences that are not typically excused include weddings, showers, vacations, birthday parties, graduations, etc. Additional assignments, penalties and correctives are at the discretion of the instructor. If circumstances necessitate excessive absence from class, the student should consider withdrawing from the class. In all cases, students are expected to accept the decision of the instructor regarding attendance policies specific to the class.

Consistent with our commitment of creating an academic community that is respectful of and welcoming to persons of differing backgrounds, we believe that every reasonable
effort should be made to allow members of the university community to observe their religious holidays without jeopardizing the fulfillment of their academic obligations. It is the responsibility of students to review course syllabi as soon as they are distributed and to consult the faculty member promptly regarding any possible conflicts with observed religious holidays. If asked, the student should provide accurate information about the obligations entailed in the observance of that particular holiday. However, it is the responsibility of the student to complete any and all class requirements for days that are missed due to conflicts due to religious holidays.

There may be circumstances that necessitate a departure from this policy. Feel free to contact the Summer Session Office at 617-552-3800 for consultation.

**Deadlines**

Assignments are due at the specified dates and times. Late assignments will not be accepted.

**Course Assignments**

It is generally expected that students will spend twice as many hours of study and preparation as spent in class. Given the pace of this course, and the amount of material that will be covered daily, students need to develop a disciplined way of study.

Some of the methods that I have recommended in the past and that have helped many students include:
* Preparing flash cards after every class – these will have terms and unfamiliar processes on one side of the card, and the definition or explanation on the other side.
* Students are advised to first study the material in the context it was presented, and then when ready test themselves without notes.
* When they feel ready, to test themselves with information out of context – pulling out flash cards at random and explaining whatever the process is without looking it up.
* Spacing out study so that short brakes can be taken to facilitate more effective concentration while working with the material.

**Learning Outcomes:**

After successfully completing this course students should be able to:
- discuss significance of reductionism and the importance of the body-mind
- explain the structure of atoms and the basis for their participation in chemical bonds
- name and explain the types and characteristics of chemical bonds found in biologically important molecules
- describe the structure of water, its properties, and significance at the macro level
- list and describe the various macromolecules and their roles in our cells and body
- explain the roles and mechanisms of action of enzymes
• discuss the significance of ATP, the ways it is generated, and its role in the interconnectedness of metabolic pathways
• describe the structure and functions of the cell membrane
• recognize and describe the intracellular architecture, organelles, and communication
• describe the structure of DNA and mechanisms of replication
• explain the meaning and steps in the expression of the genetic material and the regulation of these processes
• describe the structure of chromosomes, the phases and events of the cell cycle, and its regulation
• discuss the timing, locations, steps of, and significance of meiosis
• discuss the significance of genetics, sociopolitical aspects inherent in it, Mendelian inheritance, the basis of some inherited disorders in humans
• list the tissue types and their organization into organs
• explain the skin as an essential organ by discussing its structural and functional features
• explain the macro and microscopic structure bone, and its development into the skeletal system
• explain muscle structure from macro to micro levels, and in particular the mechanisms and regulation of contraction
• describe and discuss the structures and functions of the central and peripheral nervous system, the functions of neurons, synapses, and neurotransmitters

Lecture Schedule

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<tr>
<th>Date</th>
<th>Topic</th>
<th>Readings</th>
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<tr>
<td>M 6/22</td>
<td>Introduction</td>
<td>Ch.1 and readings</td>
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<td>The Basis of Life – Western Perspective</td>
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<td>The Body-Mind and The New Medicine</td>
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<td>Atoms and Molecules</td>
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<td>T 6/23</td>
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<td>Proteins</td>
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<td>W 6/24</td>
<td>Enzymes – structure and mechanisms of action</td>
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<td><strong>EXAM 1</strong></td>
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<td>Th 6/25</td>
<td>Cells – The basic units of Life</td>
<td>Ch.3</td>
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<td>The Cell Membrane and Transport</td>
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<td>M 6/29</td>
<td>Cell Organelles – the inner workings of the cell</td>
<td>Appendix D and parts of Ch. 24</td>
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<td>Metabolism</td>
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<td>T 6/30</td>
<td>The Genetic Material – DNA structure</td>
<td>Ch.3</td>
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And function

EXAM 2

W 7/1 Expression of Genetic Material: Ch.3
   Transcription and Translation
   Regulation of Gene expression

Th 7/2 The Cell Cycle, its regulation, and Mitosis Ch.3
   Meiosis pp. 1027-1029

M 7/6 Genetic Inheritance Ch.29
   EXAM 3

T 7/7 The Integument – Skin Ch.5
   Bone Development and The Skeleton Ch. 6, parts of Ch.7
   Muscle Tissue Structure and Function Ch.9, parts of Ch.10

W 7/8 Nervous System Ch. 11 and 12
   The Central Nervous System
   The Peripheral Nervous System Ch.13,14
   Neurons and action potentials Ch. 11
   Synapses and Neural Transmission Ch. 11

Th 7/9 FINAL EXAM