Syllabus for Biology 241: Human Anatomy & Physiology I

Overview

BBIO 241 is the first half of a two-quarter series in human anatomy and physiology. BBIO 241 focuses on the integumentary, skeletal, muscular, and nervous systems, while BBIO 242 focuses on other systems (endocrine, circulatory, respiratory, digestive, urinary, and reproductive). BBIO 241 and 242 are designed for pre-nursing students – not biology majors – and will include clinically relevant examples whenever possible.

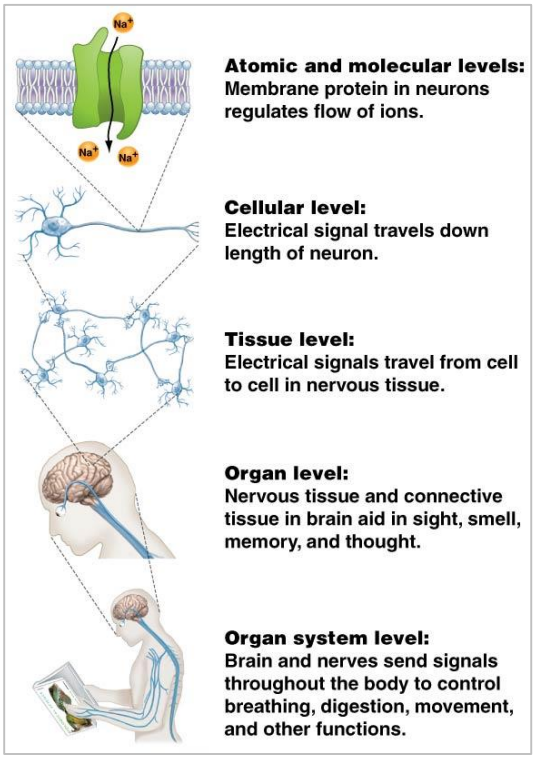
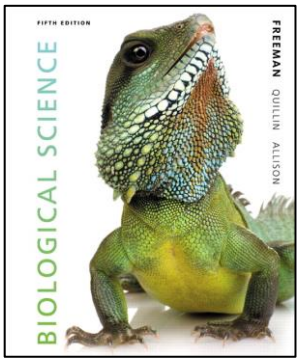


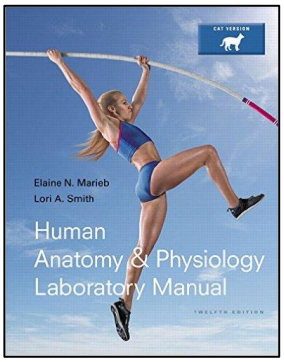
Figure 42.8 from Scott Freeman et al., Biological Science (5th edition/2014).

Instructor-student communication

- Course website in Canvas: https://canvas.uw.edu/courses/1053051. All important course information will be posted here!
- Office hours:
  - Mon/Thurs, 12-1, UWBB-107J
  - Tues/Thurs, 3:20-4, UW1 commons
- Outside of office hours, I usually communicate with students via Canvas messages and via email address crowther@uw.edu.

Basic requirements





- Prerequisites: Successful completion of BBIO 240 or BBIO 200 or an equivalent course.
- Lectures: 1:15 to 3:15 on Tuesdays and Thursdays in Room 220 of UW1.
- Textbook: *Biological Science* (5th edition/2014) by Scott Freeman et al.
- Labs: 8:45-10:45 or 11:00-1:00 on Tuesdays and Fridays in Room 267 of Discovery Hall.
- Lab manual: *Human Anatomy & Physiology Lab Manual*, cat version (12th edition/2016) by Elaine N. Marieb and Lori A. Smith, plus access to the website MasteringAandP.com, which includes the PhysioEx laboratory simulations. The course ID for MasteringAandP.com is: CROWTHER2016SPRING.
- Consistent access to Canvas, the Internet, and a printer.

Skills and outcomes

By the end of this course, you should be able to rock the following tasks:

- Identify gross and microscopic components of the integumentary, skeletal, muscular, and nervous systems.
- Explain the how structures (anatomy) of these components support their functions (physiology) at the molecular, cellular, tissue, and organ/organ system levels.
- Provide examples of functional trade-offs: how specializations for performing some functions limit the performance of other functions.
- Provide examples of how the integumentary, skeletal, muscular, and nervous systems maintain homeostasis via negative feedback and diverge from homeostasis via positive feedback or feedforward control.
- Describe basic clinical techniques relevant to the integumentary, skeletal, muscular, and nervous systems.
- Plan, perform, and analyze experiments in which the integumentary, skeletal, muscular, and nervous systems are perturbed.
- Infer possible anatomical and physiological problems underlying medical symptoms.

Schedule

The tentative schedule below is color-coded by topic as follows:

- Purple: introductory, integrative, or cross-cutting topics
- Orange: **integumentary system (skin)**
- Red: **skeletal system (bones)**
- Green: **muscular system**
- Blue: **nervous system**

Relevant sections of the textbook (Freeman) and lab manual (Marieb) are listed, but you are only responsible for material covered in lectures, labs, and/or homework assignments.

Week	Tuesday lab (8:45-10:45 or 11-1)	Tuesday lecture (1:15-3:15)	Thursday lecture (1:15-3:15)	Friday lab (8:45-10:45 or 11-1)
3/28-4/1	Introduction: what is A&P? (Freeman 42)	No lecture!	Cell bio review	Marieb 1 & 2 (the language of anatomy; organ systems overview)
4/4-4/8	PhysioEx 1 (cell transport mechanisms and permeability)	Levels of organization; the 4 tissue types (Freeman 42.2, Marieb 6)	Integumentary system (Marieb 7); **Quiz**	Marieb 6 (classification of tissues)
4/11-4/15	Marieb 6 (classification of tissues), continued	Integumentary system (Marieb 7)	Skeletal system: general (Freeman 48.3, Marieb 8); **Quiz**	Marieb 7 (the integumentary system)
4/18-4/22	No lab!	Skeletal system: bone anatomy (Marieb 9-10)	**Exam**	Marieb 8 (overview of the skeleton)
4/25-4/29	Marieb 9 (the axial skeleton)	Muscular system: anatomy (Marieb 13-14)	Muscular system: biomechanics; **Quiz**	Marieb 10 (the appendicular skeleton)

5/2-5/6	Marieb 11 (articulations and body movements)	Muscular system: muscle cells (Freeman 48.1-48.2; Marieb 12)	Muscular system: health & disease; **Quiz**	Marieb 13 (gross anatomy of the muscular system)
5/9-5/13	Marieb 12 (microscopic anatomy and organization of skeletal muscle)	Nervous system: intro (Freeman 46)	**Exam**	PhysioEx 2 (skeletal muscle physiology)
5/16-5/20	Marieb 14 (skeletal muscle physiology: frogs and human subjects)	Nervous system: neurons (Freeman 46.1-46.2)	Nervous system: synapses and circuits (Freeman 46.3); **Quiz**	PhysioEx 3 (neurophysiology of nerve impulses)
5/23-5/27	Marieb 19 (the spinal cord and spinal nerves)	Nervous system: spinal cord, spinal reflexes (Freeman 46.4, Marieb 19)	Nervous system: the brain (Freeman 46.4, Marieb 17); **Quiz**	Marieb 17 (gross anatomy of the brain and cranial nerves)
5/30-6/3	Marieb 21 (human reflex physiology)	Nervous system: sensory systems (Freeman 47)	Nervous system: motor control	No lab!
6/6-6/10	No lab! (finals week)	No lecture! (finals week)	**Final exam**	No lab! (finals week)

Instructor

Lectures and labs will be taught by me, Dr. Greg Crowther. I am fascinated by this material both as a scientist and as a long-distance runner. (My Ph.D. research was on energy metabolism in exercising leg muscles.) My office is in room 107J of UWBB (the "Beardsley Building"). In general, the best ways to reach me are via email (crowther@uw.edu) and/or via Canvas messages. Much more information about me – more than you could ever want to know – is available at my faculty website: http://faculty.washington.edu/crowther/.

Diversity and disabilities

UW-Bothell provides a supportive environment for all students, including students with disabilities. If you have a disability that affects your performance in this course, or if you think you might, please contact UW-Bothell's office of Disability Resources for Students (DRS). In particular, if you need special accommodations for taking quizzes and tests, please set those up with DRS as soon as possible. You are also encouraged to talk to me if your performance in the course is being affected by factors other than disabilities – for example, stereotypes regarding gender, ethnicity, age, sexual orientation, etc.

Inclement weather and suspension of classes

Bad weather occasionally forces the campus to close. Updates on bad-weather situations are available via UW-Bothell's home page (www.uwb.edu) and its information line (425-352-3333). You may also sign up for text-message alerts (www.uwb.edu/alert/).

Use of animals in the laboratory

For hundreds of years, our understanding of animal anatomy and physiology has advanced from the use of animals in dissections and experiments. Likewise, the laboratory component of this course includes such specimens as preserved rats, sheep brains, and (in BBio 242) cats. All students are expected to participate in all of these exercises. If you have concerns about this, please talk with me as soon as possible.

Assignments and grades

Your overall grade will depend on your performance on several different types of assignments, as shown below. Homework assignments will generally be graded for completeness and timeliness; most other assignments will be graded for correctness. Late homework assignments will be accepted with a penalty of 20% off if 0.1 to 24 hours late, 40% off if 24 to 48 hours late, etc.

Your final grade will be calculated approximately as follows.

Exams (3; 100 points each)	300 points
Quizzes (6; 30 points each; lowest 1 dropped)	150 points
Homework (35; 3 points each)	105 points
Lab worksheets (17; 5 points each)	85 points
Approximate total	**640 points**

Intermediate calculations of your grade in Canvas may be misleading. If you are unsure of how you are doing, please ask me.

Participation in lectures is not explicitly counted in your grade. However, since quizzes and tests will be based heavily on in-class activities, I urge you to attend and participate in ALL class sessions.

In general, quizzes and tests cannot be made up after being missed. If you miss a quiz or test, you will receive a 0 for it unless you have a spectacularly good excuse, such as a severe illness or unexpected family emergency. However, your lowest lecture quiz score will be dropped. Do NOT plan to skip a particular quiz that you are able to complete -- save your droppable 0 for an unavoidable absence.

In general, assignments will not be graded on a curve. If an assignment turns out to be unusually hard, I reserve the right to curve scores upward for that assignment.

Final grades will be based on the percentage of total points earned, according to the chart below.

99% => 4.0	89% => 3.4	79% => 2.4	69% => 1.4
98% => 4.0	88% => 3.3	78% => 2.3	68% => 1.3
97% => 4.0	87% => 3.2	77% => 2.2	67% => 1.2
96% => 4.0	86% => 3.1	76% => 2.1	66% => 1.1
95% => 4.0	85% => 3.0	75% => 2.0	65% => 1.0
94% => 3.9	84% => 2.9	74% => 1.9	64% => 0.9
93% => 3.8	83% => 2.8	73% => 1.8	63% => 0.8
92% => 3.7	82% => 2.7	72% => 1.7	62% => 0.7
91% => 3.6	81% => 2.6	71% => 1.6	61% => 0.7
90% => 3.5	80% => 2.5	70% => 1.5	60% => 0.7

Collaboration, attribution, and academic honesty

For quizzes and exams, working with other students is NOT allowed (unless stated otherwise). For all other assignments, working together IS allowed (unless stated otherwise).

If you use a source other than the instructor or textbook – a website, classmate, library book, etc. – you must cite that source. Examples:

- You worked with a classmate on a homework assignment:
  - *Note: Phil, Jane, and I discussed questions #2, #3, and #4.*
- You quoted the exact words used by another source, **using quotation marks**:
  - *According to Wikipedia, "People with extensive, bilateral hippocampal damage may experience anterograde amnesia—the inability to form and retain new memories." (source: http://en.wikipedia.org/wiki/Hippocampus).*
- You gathered information from another source and put it in your own words:
  - *Patients with severe lesions in their hippocampus cannot create new memories (source: http://en.wikipedia.org/wiki/Hippocampus).*

If you have any questions about appropriate attribution, please ask me. I do not hesitate to penalize students for plagiarism, but I much prefer that everyone simply cite their sources properly.

Tips for success

- *Show up for everything*. While it's possible to learn material without coming to class, it's much harder that way! Give yourself the benefit of multiple passes through the material by studying at home AND coming to all lectures and labs.

- *Actively participate in everything.* Do all homework assignments, not just because you get points for them but because they are good preparation for lectures, quizzes, and tests. Take notes in class. Ask questions when you are confused. Ask questions when you are NOT confused but want to know more. Answer questions, even if you have to guess. Don't let your lab partner do all the fun stuff. Take charge of your education!

- *Read over your notes soon after each session and "clean them up," clarifying any confusing points.* That way, when you return to these notes when studying for a quiz or exam, you won't have to do a lot of last-minute deciphering. (This simple strategy helped me a LOT as an undergraduate.)

- *Get help when you're starting to struggle, not after weeks of confusion.* Let's try to solve small problems before they become big problems. Office hours and lab sessions are especially good times to check in with me.

- *Work together.* This can be done both online (via Canvas Discussion posts and Chats) and in person. Form study groups and help each other out! Just be sure that your submitted work reflects your own understanding and cites sources appropriately (see above).

- *Practice metacognition.* Metacognition means "thinking about how you think." Try to figure out which approaches to the material work best for you. For example, with reading assignments, should you plow straight through the text from beginning to end, look first at subject headers

and vocabulary words before going back to fill in the details, focus on the figures, or adopt some other method? In class, should you take tons of notes and sort through them later, or listen more and write less? Different styles work best for different students!

- *Respect each other and me.* Respectful behavior includes: listening carefully when spoken to; giving others the space to think and to ask and answer questions; refraining from harsh or persistent criticism; avoiding language, attire, or movements that are likely to annoy or distract others; restricting conversations to those relevant to the course material; maintaining control over one's emotions; and giving me adequate time to respond to requests.