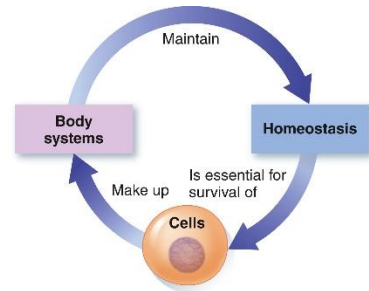


Syllabus for Biology 351: Principles of Anatomy & Physiology I

Overview

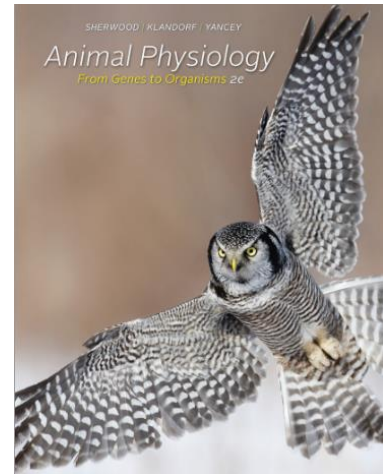
BBio 351 is one half of UW-Bothell's two-quarter series in comparative animal anatomy and physiology. BBio 351 focuses on the endocrine, nervous, reproductive, and sensory systems, while BBio 352 focuses on other systems (skeletal, muscular, digestive, urinary, cardiovascular, and respiratory). BBio 351 and 352 are appropriate for students who intend to work in health sciences-related fields and will include some clinically oriented examples; however, these courses have a strong **comparative** theme, meaning that we will examine structures and functions of diverse animals, rather than restricting ourselves to humans. It may seem paradoxical that our understanding of *human* physiology can be deepened by studying other species, but it's true!



Above: Figure 1-6 from your textbook.

Basic requirements

- Prerequisite: BBio 220.
- Lectures: Mondays and Wednesdays, 11:00am-1:00pm, Discovery Hall 252.
- Labs: Thursdays, 8:45-11:45am, or 1:15-4:15pm, Discovery Hall 267.
- Textbook: *Animal Physiology: From Genes to Organisms* by Sherwood, Klandorf, and Yancey. You should have access to a hard copy and/or an online version ("e-book"). The 2nd edition (2013) is the current and best version of this textbook and is strongly recommended because my materials will refer to 2nd-edition figures, page numbers, and questions.
- Consistent access to the Internet and a printer.



Website and contact information

How I will reach you outside of class: I will post ALL important course information (assignments, announcements, grades, etc.) to the course website in Canvas: <https://canvas.uw.edu/courses/1031592>. I encourage you to make daily checks of the Discussions page (where I will post announcements and tips), Assignments page, and Files section. I will also send messages to individuals via Canvas's messaging system.

How you can reach me outside of class: In general, the best ways to reach me are via email (crowther@uw.edu) and/or via Canvas messages/comments. You are also welcome to try my office (room 107J of UWBB, a.k.a. "The Beardsley Building"; 425-352-3358).

Skills and outcomes

By the end of this course, you will be awesomely capable of the following tasks:

- Identify gross and microscopic components of the endocrine, nervous, reproductive, and sensory systems.
- Explain the how structures (anatomy) of these components support their functions (physiology) at the molecular, cellular, and tissue/organ levels.
- Provide examples of how the endocrine, nervous, reproductive, and sensory systems maintain homeostasis via negative feedback and diverge from homeostasis via positive feedback or feedforward control.
- Plan, perform, and analyze your own and others' experiments involving the endocrine, nervous, reproductive, and sensory systems.

Schedule

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

- Purple: integrative or cross-cutting topics
- Orange: endocrinology
- Red: reproduction
- Green: neurophysiology
- Blue: sensory physiology

Dates of quizzes and exams will not change; other aspects of the schedule may be adjusted as the quarter progresses. Relevant sections of the textbook (2nd edition) are listed in parentheses.

Week	Monday lecture	Wednesday lecture	Thursday Lab
1/4-1/8	Introduction (1.1-1.4)	Homeostasis and cell signaling (1.5-1.7, 3.4)	No lab
1/11-1/15	Endocrinology: introduction (7.1-7.3)	Endocrinology: thyroid, stress (7.5-7.6); Quiz 1	Lab 1: orientation; scientific uses of animals
1/18-1/22	No class (MLK Day)	Endocrinology: fuel metabolism (7.7); Quiz 2	Lab 2: hormones & pizza (part 1)
1/25-1/29	Reproduction: introduction (16.1, 16.3-16.5)	Reproduction: development (7.4, 16.2, 16.6); Quiz 3	Lab 3: hormones & pizza (part 2)
2/1-2/5	Neurophysiology: membrane potentials, action potentials (4.1-4.3)	Exam 1	Lab 4: endocrine and reproductive dissections
2/8-2/12	Neurophysiology: synapses (4.4-4.5)	Neurophysiology: circuits & integration (4.7); Quiz 4	Lab 5: cockroach sensory nerve
2/15-2/19	No class (Presidents' Day)	Neurophysiology: nervous system evolution (5.1, 5.4); Quiz 5	Lab 6: earthworm action potential
2/22-2/26	Neurophysiology: CNS (5.3-5.5)	Exam 2	Lab 7: brain dissection & cranial nerves; histology (part 1)
2/29-3/4	Sensory physiology: introduction (6.1-6.2)	Sensory physiology: mechanoreceptors (6.3-6.4); Quiz 6	Lab 8: histology (part 2)
3/7-3/12	Sensory physiology: smell & vision (6.5, 6.6)	Catch-up day	Make-up lab, if needed
3/15-3/19	No class (finals week)	Final exam	No lab

Instructor and office hours

I, Greg Crowther, am excited to be your tour guide on this journey through the world of animal anatomy and physiology. I am fascinated by this material both as a biologist and as a long-distance runner. (My Ph.D. research was on energy metabolism in exercising leg muscles.) Much more information about me is available via my faculty website, <http://faculty.washington.edu/crowther/>.

My winter 2016 office hours will be on Tuesdays, 10:30-11:30am, in my actual office (UWBB 107J); Mondays and Wednesdays, 1-2pm, in the 1st-floor lobby of Discovery Hall; and by appointment. I will also hold online office hours on Tuesday nights from 9:00pm to 10:00pm. To interact with me during online office hours, (A) go to the Chat page of the course website and use Canvas's Chat function or (B) send me a private message (via Canvas, or to crowther@uw.edu). I will respond to questions in the order that I receive them, as quickly as I can.

Disability accommodations

UW-Bothell provides a supportive environment for all students, including students with disabilities. If you have a disability that affects your performance in the class, or if you think you might, please contact Disability Resources for Students (www.uwb.edu/studentaffairs/drs).

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 live and preserved 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 preserved cats, live cockroaches, live earthworms, and preserved sheep brains and testes. 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 in this course will be calculated approximately as follows.

3 exams (100 points each)	300 points
6 quizzes (25 points each, lowest 1 dropped)	125 points
Homework/in-class/pre-lab assignments (3-6 points each)	70 points
8 lab worksheets (10 points each)	80 points
Approximate total	575 points

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% => 0.9
92% => 3.7	82% => 2.7	72% => 1.7	62% => 0.8

In general, assignments will NOT be graded on a curve. If a particular assignment turns out to be unusually hard, I reserve the right to adjust the scores upward. I will never adjust scores downward.

Because your lowest quiz score will be dropped, intermediate calculations of your grade in Canvas may be misleading. If you are unsure of how you are doing, please ask me.

In general, quizzes and tests cannot be made up after being missed, although rare exceptions are possible for things like family emergencies and severe acute illnesses. If you know or suspect that you will need to miss a quiz or test, please contact me as early as possible to discuss your options.

If you cannot attend your usual lab section for a given week, please obtain advance permission to attend the other lab section that week. If you cannot attend either lab section during a particular week, please contact me as soon as possible to discuss your options.

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

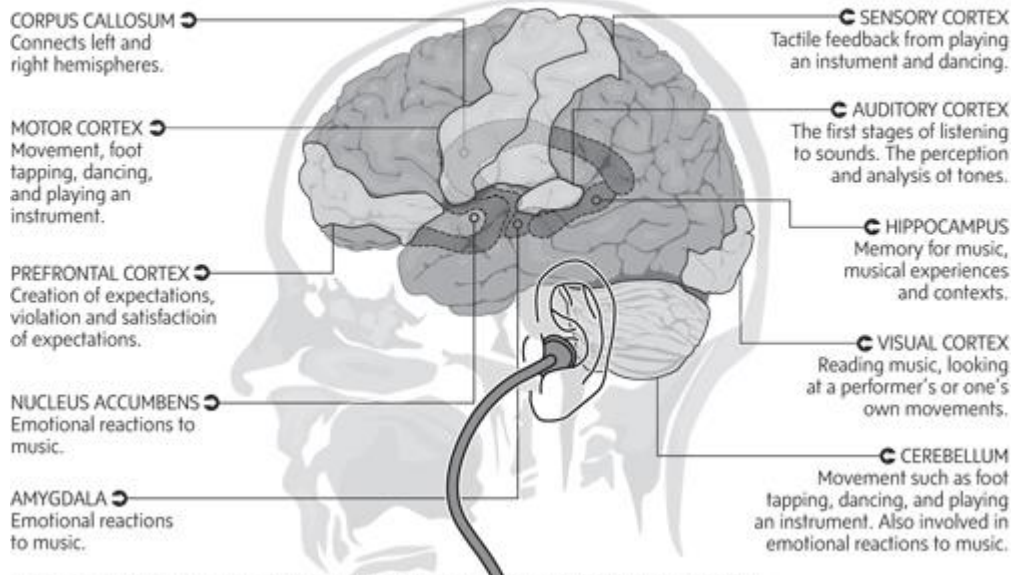
- *Show up for everything.* While it’s possible to learn material without coming to class, it’s much harder that way! Give yourself the benefit of multiple passes through the material by studying at home AND coming to all lectures and labs.
- *Actively participate in everything.* Do all homework assignments,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

Music on the mind

When we listen to music, it's processed in many different areas of our brain. The extent of the brain's involvement was scarcely imagined until the early nineties, when functional brain imaging became possible. The major computational centres include:



MIKE FAILLE/THE GLOBE AND MAIL ■ SOURCE: THIS IS YOUR BRAIN ON MUSIC: THE SCIENCE OF A HUMAN OBSESSION