

PCB 4723C: Physiology & Molecular Biology of Animals
Spring 2024 – All Sections

COURSE OVERVIEW AND OBJECTIVES

In this course, you will learn physiology at the molecular, cellular, tissue, and systemic levels emphasizing application of concepts and analysis of information. The course is not a survey of how different animals function, it is an in-depth exploration of core unifying principles that are broadly applicable to animals and humans. This approach is well suited for students preparing to enter health professional schools (e.g., pre-med, pre-vet, pre-dental) and graduate school.

The ‘discussion/lab’ portion of the course will utilize discussions, a “hands-on” exercise, problem sets, and team projects to reinforce principles discussed in lectures, promote problem-based learning, introduce students to primary scientific literature, and give students experience working in teams and communicating scientific information.

Recommended prerequisites: General biology (BSC 2010&2011), general chemistry (CHM 2046/2046L), and general physics (either PHY 2048/2048L or PHY 2053/2053L), all with a grade of at least C. Genetics, cell biology, and biochemistry are also recommended.

INSTRUCTORS

Lecturer:

Scott M. Taylor, PhD, Carr Hall room 417, office hours: **Wednesday and Thursday 1:00-3:00pm.**
sm.taylor@ufl.edu

Teaching Assistants:

Undergraduate Teaching Assistants for lecture: **TBA**

- Graduate TAs for lab/discussion sessions: Sarah Johnson (johnson.s@ufl.edu), Wesley Dillard (wdillard@ufl.edu)

WEEKLY SCHEDULE – LECTURES – TUES 8:30-10:25, THURS 9:35-10:25, TURL007

Approximate Week	#	Topics	Reading*
1/9	1	1-Homeostasis & Integration; 2-Cell & Molecular Physiology;	Chap. 1, 2
1/16	2	2-Cell & Molecular Physiology; 3-Membrane Physiology	Chap. 2, 3
1/23	3	3-Membrane Physiology; 4-Membrane potentials and Neurons	Chap. 3, 4
1/30	4	Discussion, Review; Exam 1 R 2/1	
2/6	5	4-Membrane potentials and Neurons, 5-Nervous Systems	Chap. 4, 5
2/13	6	5-Nervous Systems	Chap. 5
2/20	7	7-Endocrine System	Chap. 7
2/27	8	Discussion, Review; Exam 2 R 2/29	
3/5	9	11-Respiratory System, 12-Kidney	Chap. 11, 12
3/12		Spring Break	
3/19	10	12-Kidney, 13-Salt and Water Balance	Chap. 12, 13
3/26	11	Discussion, Review; Exam 3 R 3/28	
4/2	12	8-Muscle physiology	Chap. 8
4/9	13	9-Cardiovascular Physiology	Chap. 9
4/16	14	9-Cardiovascular physiology, 14-Digestion and Absorption	Chap. 9, 14
4/23	15	14-Digestion and Absorption; Review (4/25 Reading day)	Chap. 14
5/2	16	Exam 4 R 5/2 12:30-2:30 PM – finals week	

*Note that chapters are listed only as a rough guide; we will not cover all sections or material in each chapter. Use your judgement to read the sections of the book that are most relevant to the study questions and learning objectives.

Exam times: Exams 1, 2, and 3 are on Thursdays in class according to the schedule above. Exam 4 is on the Thursday of finals week R 5/2 12:30 PM-2:30 PM (not cumulative).

GRADING

Exam 1	18.75%
Exam 2	18.75%
Exam 3	18.75%
Exam 4	18.75%
[Lab] Simulations and exercises**	7.5%
[Lab] Problem sets**	7.5%
<u>[Lab] Literature presentation and participation**</u>	<u>10%</u>
Total	100%

**Lab/Discussion points will be covered by your graduate teaching assistants.

Grading scale

low	High	letter
93.5	100.00	A
89.5	93.49	A-
86.5	89.49	B+
83.5	86.49	B
79.5	83.49	B-
76.5	79.49	C+
69.5	76.49	C
66.5	69.49	D+
63.5	66.49	D
59.5	63.49	D-
0	59.49	E

REQUIRED/RECOMMENDED COURSE MATERIALS

Animal Physiology: from genes to organisms, 2nd Edition by Sherwood, Klandorf, and Yancey, Brooks/Cole 2013. This version has an owl on the cover. Options for access are:

- Buy new or used Hardcover ~\$100-150: From Cengage, Amazon, UF others...
- Rent Hardcover ~\$20-50
- Rent Electronic ~\$40-80
- First Edition (2004) new or used from \$3 and up. This version has a mountain lion on the cover: From Amazon, Textbooks.com, others... Note – The instructor has not seen the first edition. Some material may be outdated, and in different places, but this can be an inexpensive option if you want to spend the least amount of money. Use this option at your own risk.
- Search Google/shopping for more options

We will use the iClicker Cloud instant response system during lectures to help stimulate understanding and discussions. The instructor will explain how to use the system.

Calculator – any scientific calculator should be sufficient and must be brought to class and exams.

CONTAGIOUS ILLNESSES

In response to highly contagious respiratory illnesses including COVID-19 and influenza, the following recommendations are in place to maintain your learning environment, to enhance the safety of our in-classroom interactions, and to further the health and safety of ourselves, our neighbors, and our loved ones.

- If you are not vaccinated, get vaccinated. Vaccines are readily available and are effective for both COVID-19 and influenza. Visit one.ufl.edu for screening / testing and vaccination opportunities.
- If you are sick, stay home. Please call your primary care provider if you are ill and need immediate care or the UF Student Health Care Center at 352-392-1161 to be evaluated.
- Course materials will be provided to you with an excused absence, and you will be given a reasonable amount of time to make up work.

DISCUSSIONS & EXERCISES

In the Discussion/Lab portion of the course, you will participate in a mixture of discussions, computer-based physiology simulations, and a “hands-on” exercise. Details are in the Discussions/Lab syllabus in Canvas/Resources. A portion of exams 2, 3, and 4 will be related to papers you discuss as groups.

SUGGESTED STUDY METHODS

- Attend and participate in lectures
There is tremendous variation in how people learn and in the foundation they have upon entering this course. The best way to do well in this course is to attend class regularly, participate in discussions, ask questions, and work hard.
- Participate in and understand the concepts behind iClicker questions
iClicker is used to help you learn concepts while in class and to generate an “active learning” environment. It will also introduce you to some of the types of questions and concepts that will be on the exams. Review these questions and try to anticipate how different versions of the questions might show-up on exams.
- Understand the concepts explained in the PowerPoint lectures. Use the PowerPoints as an outline and read the textbook and listen to lectures to gain an understanding of the full concepts.
There is an immense amount of material that is covered in the textbook and a smaller, but still immense amount, covered in this course. To help provide focus, the PowerPoint lectures will emphasize the most important material and exams will be limited to these concepts and material. However, exam questions will require in-depth understanding of these concepts, and this understanding cannot be obtained simply by reviewing bullet-points in the PowerPoint notes.
- Participate in discussions and lab activities as these help to supplement and emphasize key concepts learned in the course.
- Keep up with material and ask questions if there are concepts that you do not fully understand
- Visit the undergraduate TAs or Dr. Taylor during office hours or before/after class

OTHER POLICIES

- Academic Honesty
All students are expected to hold themselves to a high standard of academic honesty.
Of course, you must work alone on all exam questions.
If you witness any instances of academic dishonesty in this class, please notify the instructor or contact the Student Honor Court (392-1631) or Cheating Hotline (392-6999). For additional information on Academic Honesty, please refer to the University of Florida Academic Honesty Guidelines at: <https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/>

- In class iClicker response questions
iClicker questions during lectures facilitate participation and SOMETIMES might be used to award extra credit points. You are responsible for making sure that you bring a fully functioning responder (phone with text service or WIFI device) to each class meeting.
- Absences for an Exam
If you must miss an exam due to an allowable scheduled absence (for example, to participate in a sanctioned university function), you must notify the instructor as soon as the event is scheduled or during the first week of classes. If you miss class due to an allowable but unscheduled absence (e.g., illness), you must contact the instructor as soon as possible. In the case of illness, you must provide a signed note from your primary care provider indicating that you were *unable to attend class* on the day(s) in question; it is not sufficient for the note to simply indicate that you were seen in a clinic on a given day.
If you are feeling ill, you are encouraged to seek medical attention at SHCC <https://shcc.ufl.edu/>.
- Teacher Evaluations
Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/students/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.
- Students with Special Needs
Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the Disability Resource Center at <https://disability.ufl.edu/students/get-started/>. It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.
No accommodations are available to students who lack this documentation. It is the policy of the University of Florida that the student, not the instructor, is responsible for arranging accommodations when needed.
- UF counseling Services
Resources are available on-campus for students having personal problems or lacking clear career and academic goals. The resources include: 1) UF Counseling & Wellness Center, 3190 Radio Rd, 392-1575, psychological and psychiatric services. 2) Career Resource Center, Reitz Union, 392-1601, career and job search services. Many students experience test anxiety and other stress related problems. “A Self Help Guide for Students” is available through the Counseling Center (301 Peabody Hall, 392-1575) and at their web site: <https://counseling.ufl.edu/>.

Your well-being is important to the University of Florida. The U Matter, We Care initiative is committed to creating a culture of care on our campus by encouraging members of our community to look out for one another and to reach out for help if a member of our community is in need. If you or a friend is in distress, please contact umatter@ufl.edu so that the U Matter, We Care Team can reach out to the student in distress. A nighttime and weekend crisis counselor is available by phone

at 352-392-1575. The U Matter, We Care Team can help connect students to the many other helping resources available including, but not limited to, Victim Advocates, Housing staff, and the Counseling and Wellness Center. Please remember that asking for help is a sign of strength. In case of emergency, call 9-1-1.