

MCB 402 Systems and Integrative Physiology (Spring 2024)

Information and Policies

The aim of this course is to teach advanced undergraduate and graduate students in life sciences the fundamental principles of mammalian physiology. This course will provide a comprehensive understanding of the concepts of how the body works. Major emphasis will be placed on homeostatic control and integration of body systems. Diseases resulting in dysregulation of these systems will be highlighted throughout. The course will cover cellular physiology, the nervous and endocrine systems, muscle physiology, cardiac physiology, respiratory physiology, blood and immune homeostasis, renal physiology, and gastrointestinal physiology and energy homeostasis. In an active learning style, case studies and sample MCAT questions will be used to bring relevance to covered topics. This course is ideal for those interested in medicine, veterinary medicine, nursing, kinesiology, pharmacy, pharmacology or graduate school in the life sciences.

Textbook:

Required Textbook

Physiology (6th Edition) by Costanzo (Elsevier)

Optional Textbook

Principles of Anatomy & Physiology (15th Edition) by Tortora and Derrickson

Lecture Time: 11:00 – 11:50 pm on every Monday, Wednesday, and Friday except for University-designated holidays.

Lecture location: 114 David Kinley Hall

- See the HOMEPAGE (<https://canvas.illinois.edu/courses/16939/pages/mcb-402-integrative-physiology-home-page>) to obtain a copy of the lecture notes/outlines.
- ATTENDANCE of lectures is required. Announcements made in class are considered official.
- In the event of ABSENCE from class, a documented excuse must be presented to obtain credit for clicker questions for that day. The instructor may request verification from the Emergency Dean. More than 3 excused absences will only be allowed at the discretion of the instructor.
- To request DRES ACCOMMODATIONS, please send Dr. Nelson a Letter of Accommodation (LOA) before February 1st.
- Your FINAL GRADE will be in letter grade (with plus/minus). It will be determined as weighted below:
 - Exam 1: 100 points
 - Exam 2: 100 points
 - Exam 3: 100 points
 - Final Exam: 100 points
 - iClicker
 - 1 point per class, up to a total of 30 points for participation throughout the semester
 - Assignment 1: 35 points
 - Assignment 2: 35 points
 - Total points above 450 or in the top fourth of the class guarantees an A, scoring above 400 points or in the top half of the class guarantees a B.
- **Exams will take place in-person during class time in the classroom.**
- Exams will not specifically test material covered on previous exams. However, some material requires working knowledge of concepts covered in other sections of the class.
- MAKEUP EXAMS will be given in case of illness or other emergency. A letter from health care practitioner is MANDATORY. The student must contact the course coordinator (Dr. Nelson) within 48 hours of the scheduled exam. No exceptions would be made if the student fails to notify him within this period.
- If there is a CONFLICT with the scheduled exam, the student must inform Dr. Tsai at least 10 days prior to the exam date.
- **iClicker:** Each student will use his/her phone, tab or laptop to check in to the class during class time in the classroom. Please download free iClicker student app via <https://www.iclicker.com/students/apps-and-remotes/apps>
- The course coordinator reserves the right to make necessary adjustments to the policies and to grading in order to meet learning objectives.

Instructors

Faculty	Office Phone	Office Address	Email Address
Dr. Erik Nelson*	244-5477	523A Burrill Hall	enels@illinois.edu
Dr. Nien-Pei Tsai	244-5620	423A Burrill Hall	nptsai@illinois.edu

* = course coordinator

Lecture Sequence

Jan. 17 Introduction and Neurophysiology 1 [Tsai]

Jan. 19 Neurophysiology 2 [Tsai]

Jan. 22 Neurophysiology 3 [Tsai]

Jan. 24 Neurophysiology 4 [Tsai]

Jan. 26 Neurophysiology 5 [Tsai]

Jan. 29 Neurophysiology 6 [Tsai]

Jan. 31 Neurophysiology 7 [Tsai]

Feb. 2 Neurophysiology 8 [Tsai]

Feb. 5 Introduction to Homeostasis and Endocrinology 1 [Nelson]

Feb. 7 Introduction to Homeostasis and Endocrinology 2 [Nelson]

Feb. 9 **EXAM 1**

Feb. 12 Muscle Physiology 1 [Tsai]

Feb. 14 Muscle Physiology 2 [Tsai]

Feb. 16 Muscle Physiology 3 [Tsai]

Feb. 19 Blood & Immune 1 [Nelson]

Feb. 21 Blood & Immune 2 [Nelson]

Feb. 23 Blood & Immune 3 [Nelson]

Feb. 26 Cardiovascular System 1 [Tsai]

Feb. 28 Cardiovascular System 2 [Tsai]

March 1 Cardiovascular System 3 [Tsai]

March 4 Cardiovascular System 4 [Tsai]

March 6 Cardiovascular System 5 [Tsai]

March 8 **EXAM 2**

March 9-17 spring break (no class)

March 18 Respiratory System 1 [Tsai]

March 20 Respiratory System 2 [Tsai]

March 22 Respiratory System 3 [Tsai]

March 25 Respiratory System 4 [Tsai]

March 27 Renal Physiology 1 [Nelson]

March 29 Renal Physiology 2 [Nelson]

April 1 Renal Physiology 3 [Nelson]

April 3 Renal Physiology 4 [Nelson]

April 5 Renal Physiology 5 [Nelson]

April 8 EXAM 3

April 10 Bone and Ca²⁺ Physiology 1 [Nelson]

April 12 Bone and Ca²⁺ Physiology 2 [Nelson]

April 15 Bone and Ca²⁺ Physiology 3 [Nelson]

April 17 Gastrointestinal Physiology and Energy Homeostasis 1 [Nelson]

April 19 Gastrointestinal Physiology and Energy Homeostasis 2 [Nelson]

April 22 Gastrointestinal Physiology and Energy Homeostasis 3 [Nelson]

April 24 Gastrointestinal Physiology and Energy Homeostasis 4 [Nelson]

April 26 Endocrine Disorders and Dysregulation of Homeostasis 1 [Nelson]

April 29 Endocrine Disorders and Dysregulation of Homeostasis 2 [Nelson]

May 1 Endocrine Disorders and Dysregulation of Homeostasis 3 [Nelson]

5/3 - 5/10 **Final exam to be scheduled by registrar**