

# MCB 402 Systems and Integrative Physiology (Spring 2022)

## 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 (6<sup>th</sup> 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:** Burrill Hall 124

- See the **HOME PAGE** (<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. Tsai a Letter of Accommodation (LOA) before February 1st.
- Your **FINAL GRADE** will be in letter grade (with plus/minus). It will be determined by your mean performance as weighted below:
  - Exam 1: 20%
  - Exam 2: 20%
  - Exam 3: 20%
  - Final Exam: 20%
  - iClicker
    - up to 5% for participation throughout the semester
  - Assignment 1: 7.5%
  - Assignment 2: 7.5%
  - Total scoring above 90% or in the top fourth of the class guarantees an A, scoring above 80% or in the top half of the class guarantees a B.
- Exams will occur during class time.
- 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. Tsai) 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 final exam, the student must inform Dr. Tsai at least 10 days prior to the exam date.
- **iClicker:** Each student remote has a unique serial number printed on the back. This number is referred to as the clicker ID. You must register your clicker ID in order to receive credit for voting in class (i.e., participation and performance in pop quizzes). To register, go to [www.iclicker.com](http://www.iclicker.com), click on REGISTER and enter your personal information (use your UIN in the Student ID field) and iClicker ID.
- 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	<a href="mailto:enels@illinois.edu">enels@illinois.edu</a>
Dr. Nien-Pei Tsai*	244-5620	423A Burrill Hall	<a href="mailto:nptsai@illinois.edu">nptsai@illinois.edu</a>

\* = course coordinator

## Lecture Sequence

Jan. 19 Introduction and Neurophysiology 1 [Tsai]

Jan. 21 Neurophysiology 2 [Tsai]

Jan. 24 Neurophysiology 3 [Tsai]

Jan. 26 Neurophysiology 4 [Tsai]

Jan. 28 Neurophysiology 5 [Tsai]

Jan. 31 Neurophysiology 6 [Tsai]

Feb. 2 Neurophysiology 7 [Tsai]

Feb. 4 Neurophysiology 8 [Tsai]

Feb. 7 Introduction to Homeostasis and Endocrinology 1 [Nelson]

Feb. 9 Introduction to Homeostasis and Endocrinology 2 [Nelson]

Feb. 11 **EXAM 1**

Feb. 14 Blood & Immune 1 [Nelson]

Feb. 16 Blood & Immune 2 [Nelson]

Feb. 18 Blood & Immune 3 [Nelson]

Feb. 21 Muscle Physiology 1 [Tsai]

Feb. 23 Muscle Physiology 2 [Tsai]

Feb. 25 Muscle Physiology 3 [Tsai]

Feb. 28 Cardiovascular System 1 [Tsai]

March 2 Cardiovascular System 2 [Tsai]

March 4 Cardiovascular System 3 [Tsai]

March 7 Cardiovascular System 4 [Tsai]

March 9 Cardiovascular System 5 [Tsai]

March 11 **EXAM 2**

March 12-20 spring break (no class)

March 21 Respiratory System 1 [Tsai]

March 23 Respiratory System 2 [Tsai]

March 25 Respiratory System 3 [Tsai]

March 28 Respiratory System 4 [Tsai]

March 30 Renal Physiology 1 [Nelson]

April 1 Renal Physiology 2 [Nelson]

April 4 Renal Physiology 3 [Nelson]

April 6 Renal Physiology 4 [Nelson]

April 8 Renal Physiology 5 [Nelson]

April 11 **EXAM 3**

April 13 Bone and Ca<sup>2+</sup> Physiology 1 [Nelson]

April 15 Bone and Ca<sup>2+</sup> Physiology 2 [Nelson]

April 18 Bone and Ca<sup>2+</sup> Physiology 3 [Nelson]

April 20 Gastrointestinal Physiology and Energy Homeostasis 1 [Nelson]

April 22 Gastrointestinal Physiology and Energy Homeostasis 2 [Nelson]

April 25 Gastrointestinal Physiology and Energy Homeostasis 3 [Nelson]

April 27 Gastrointestinal Physiology and Energy Homeostasis 4 [Nelson]

April 29 Endocrine Disorders and Dysregulation of Homeostasis 1 [Nelson]

May 2 Endocrine Disorders and Dysregulation of Homeostasis 2 [Nelson]

May 4 Endocrine Disorders and Dysregulation of Homeostasis 3 [Nelson]

Final exam to be scheduled by registrar (May 6-13)