System Physiology I: Cardiovascular, Respiratory, and Renal Systems

Description
The goal of this course is to understand the concepts and mechanisms of systemic cardiovascular physiology in human and animal systems. The course assumes a basic knowledge of human or animal physiology. We build on that knowledge by examining regulation and control of systems as well as their structure-function relationships. We will also introduce pathophysiological mechanisms relevant for clinical diagnosis and therapy. There is substantial emphasis on engineering approaches, quantitative methods, and simulation.

The prerequisite for the course are knowledge of university undergraduate level calculus and physics.

Assignments will require the use of Matlab and other software. All course materials will be available through the University of Utah Canvas software and the class will communicate using this software.

Schedule
Class times: Wednesday and Friday, 9:10-10:30
Classroom: MEB 2325
Labs: Friday, 1:00-4:00pm and, if large class size, Monday, 12:00-3:00pm in MEB 1480
For detailed lab, homework and exam schedule see Canvas

Instructors
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Lab Exercises
Dissection of bovine heart, lungs and kidneys
Regulation of heart rate and contraction
ECG measurement
ECG simulation
Exercise and blood pressure
Pulmonary function

Textbook
Costanzo, Physiology, 6th Edition
Additional readings will be assigned throughout the course.

Grading
45% Exams - exams I, II, and III with 15% each
30% Laboratory exercises
20% Semester Project
5% Homework assignments