

SPRING SEMESTER PHYSIOLOGY ELECTIVE COURSES

PHSL 3095 – Problems in Physiology

Independent Study/Directed Research Course Credit | 1 - 5 cr; A-F only

Prereq: A faculty member must agree to mentor your project before a registration permission number can be released by the course director.

Course Director: Vincent Barnett, Ph.D.

A directed research opportunity that can be satisfied by either lab based research project or a literature review and term paper. An agreement on the type of project and time commitment between a student and a faculty member must be in place before registration is permitted. Projects vary from literature reviews like the one done for PHSL 3062w to lab research experiences. Most literature reviews run 1 - 2 credits and require 3 ~ 8 hours per week of time commitment, while most lab experiences run in the range of 2 - 5 credits (6 ~17 hours per week). Consult the course director for more details.

PHSL 4021 - Advanced Physiology and Bioengineering: Bionic Human

Tu, Th 11:15pm - 12:30pm | **Prereq:** PHSL 3061 or 5061 or PHSL 3051 | 3 cr; A-F only

Instructor: Susan Keirstead, Ph.D.

Is "Iron Man" technology just around the corner? This course will examine how, and if, biomedical devices can address the needs of humans suffering from various pathologies and/or disabilities, or enhance human performance. Advanced discussion of the physiology of organs/organ systems and relevant devices past, present, and future. Emphasis will be on an in-depth understanding of normal physiology including cardiovascular, respiratory, renal, liver, motor, sensory, and pancreatic physiology. Classes will involve review of the physiology of organ systems, design considerations for medical devices, and discussions of published papers about basic science and clinical trials. Classes will be a combination of content presentation and discussion.



PHSL 4031 - Physiological Discussions: Contemporary Topic

Thursdays 9:45 – 11:15 am | **Prereq:** PHSL 3061/5061 or instr consent | 2 cr; A-F

Instructor: Vincent Barnett, Ph.D.

Explore contemporary issues in physiology through the reading and discussion of recent research papers. This class provides students an opportunity to read, discuss and critically evaluate a range of topics in the physiology research literature.

The topics were covered in Spring 2020 included

- Hypoxia & Hypoxia Inducible Factor (Nobel Prize 2019)
- Circadian Rhythms and Cardiovascular Health Cancer
- Gene Editing of Genetic Disorders
- Obesity: Adipose Tissue Inflammation & Non Alcoholic Fatty Liver Disease (NAFLD)



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PHSL 4242 – Professional Skills Development for Biomedical Scientists

Wednesdays 4:00 – 5:30 pm (Meets with PHSL 8242), 2 credits:

Instructor: Joseph M. Metzger, Ph.D., Catherine Kotz, Ph.D.

Overview: Students will gain valuable experience in professional skills development for biomedical scientists, applicable to academic, clinical, biotech, pharma and other career paths. This course features essential professional skills development, including critical evaluation of the scientific literature, short oral presentations, development of research project specific aims, and development of individual WOW statements (aka the Bill Gates elevator pitch). Students will gain knowledge of grant proposal mechanisms and on strategies to writing a winning grant. Students will evaluate funded research projects, develop and write their own grant, and perform peer review critiques of their submitted grants. There are no conventional tests in this class.

PHSL 5096 - Integrative Biology and Physiology Research Advances

Thursdays, noon – 1 pm Meets with IBP seminar series | **Location:** TBA | **Prereq:** Physiology graduate student, *upper level undergraduates with strong performance in PHSL 3061 and instr consent* | 1 cr; A-F

Instructor: DeWayne Townsend, D.V.M, Ph.D.

The course will have two types of meetings. Weeks in which a seminar is held in the department of Integrative Biology and Physiology seminar series, students are expected to attend the lecture at noon on Thursdays. For weeks in which there is no seminar, a paper will be assigned to read. For both types of classes students are expected to submit questions and/or comments to the course discussion forum maintained on the course's Moodle site. Grade will be based on the quality of a student's participation in the online discussion forum.

PHSL 5116 - Clinical Physiology II

Fridays, 9:05am - 12:05pm | **Prereq:** instr consent | 3 cr; A-F or audit

Instructor: [Lisa Anderson](#), Ph.D.

Cellular mechanisms, disease states and clinical applications of metabolic systems: respiratory physiology, renal physiology, acid base physiology, metabolism, gastrointestinal physiology, endocrine physiology, physiology of pregnancy and labor.

This course was originally designed for advanced practice nursing students in anesthesia (SNRA). This course has now been opened up to academically strong undergraduate students, particularly those majoring in physiology and interested in allied health careers. The SRNAs will have lots of clinical experience whereas the undergraduate physiology majors may have more basic science and research experience. It is my hope that these two student groups will learn from each other and that the learning of the entire class will be enriched.

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PHSL 5197 - Stress Physiology

Tuesdays 10:10 – 11:00 am | **Prereq:** Grad student status or physiology undergraduate who has taken PHSL 3061, Instr consent | 1 cr; A-F only

Instructor(s): [Alessandro Bartolomucci](#), Ph.D.

This class is primarily for graduate students. Undergraduates with some/significant research experience *may* enroll in the course with instructor permission.

This class uses a journal club format to examine stress physiology. There will be a focus on stress-induced pathology with attention to cardiovascular, metabolic, neuroendocrine disorders including:

- Role and Foundations of Stress in Physiology
- Development of Stress and Related Disease
- History and Current Views of Stress Physiology
- Classical and New Mediators of Stress

PHSL 5444 (BioC/BMEn) - Muscle

Tu Th, 4:00pm - 5:15pm | **Prereq:** PHSL 3051 or 3071 or BioC 3021 or BioC 4331 |3 cr; A-F

Multiple Instructor(s): Course Director, [David D. Thomas](#), Ph.D. (BMBB)

An introduction to the physiology, biochemistry, biophysics, and pathobiology of muscle. Lectures and reading assignments will be designed to provide the student with an understanding of current knowledge and models of muscle structure and function. Emphasis will be placed on interdisciplinary research that has contributed to our understanding of muscle function and malfunction at the molecular level. The principles will be illustrated by selected clinical applications, in order to understand muscle disease at the molecular level. Several laboratory demonstration sessions will serve to illustrate principles of muscle research. Primary emphasis will be placed on skeletal muscle, but smooth and cardiac muscle will also be discussed. Source material will be taken primarily from textbooks and review articles, with selected examples from the primary research literature. A term paper allows the student to focus on a particular area of interest. The course is designed for graduate students or advanced undergraduates, with a background in biochemistry and/or physiology. Typical classes include students from Biochemistry, Physiology, Neuroscience, Biomedical Engineering, Kinesiology, Pharmacology, Chemistry, and Biophysical Sciences, as well as extension students from Medtronic and other companies.

