PSIO 101 - Tackling Physiological Topics in Today’s Society (3 units)
Physiology is the study of how the body works. By focusing on current public issues of physiology in health, medicine and society, students will explore the essential concepts of physiology, up-to-date research and resources needed to address these topics, as they learn to 'think like a physiologist'. Starting with an overview of basic anatomy and physiology key to each issue, students will begin to develop critical thinking and problem-solving skills founded in techniques and approaches common to professionals in the field. Students will also gain an appreciation for the diversity of disciplines and careers that are supported by a foundation in physiology.

PSIO 201 - Human Anatomy and Physiology I (4 units)
Study of structure and function of the human body. Topics include basic anatomical and directional terminology; fundamental concepts and principles of cell physiology; histology; the integumentary, skeletal, muscular and nervous systems; special senses. Primarily for majors in physiology, biology, and health professions.

PSIO 202 - Human Anatomy and Physiology II (4 units)
Study of structure and function of the human body. Topics include cardiovascular, lymphatic, respiratory, urinary, gastrointestinal, endocrine and reproductive systems. Primarily for majors in physiology, biology, and health professions.

PSIO 295H - Introduction to Honors in Physiology (2 units)
This colloquium is designed for Physiology students who are considering graduation with Honors. Content and experiences will provide exposure to the research process in general, specific research in Physiology being done across campus, potential options available for undertaking an honor thesis and maximizing the educational experience within the Physiology major.

PSIO 199/199H/299/299H - Independent Study/ Honors Independent Study (1-3 units)
Individual studies programs provide motivated students with an opportunity for education that extends beyond the normal classroom experience.

PSIO 303 - Integrative Cellular Physiology (3 units)
Integrative Cellular Physiology will introduce the student to several fundamental concepts in physiology, including signaling transduction processes, regulation of membrane transport, and the regulation of cell-cell and cell-tissue communication. The course will integrate these fundamental physiological concepts across cell, organ, and systems levels within the context of the three selected systems and will empower the student to be able to critically evaluate the pathophysiological basis of various disease states in the context of cellular and molecular defects in these fundamental processes.

PSIO 305 - Integrative Systems Physiology (3 units)
This course is designed to provide students with a systems-focused approach to fundamental physiological processes faced by humans including homeostasis, growth and development, adaptation and response to trauma. Utilizing a case study context, the integrated actions by multiple systems to accomplish these fundamental processes will be explored.

PSIO 380 - Fundamentals of Human Physiology (4 units)
Designed to provide upper-division non-physiology majors with a working understanding of the fundamentals of human biological function, elucidating general principles of human physiology,
mechanisms of regulation and the normal variations in human biology, while weaving daily-life applications throughout. A combination of lecture, small and large group discussions, and in-class activities will be utilized to provide an understanding of how the body works from the cellular to the organ system level.

**PSIO 391 - Preceptorship (1-6 units)**
Specialized work on an individual basis, consisting of instruction and practice in actual service in a department, program, or discipline. Teaching formats may include seminars, in-depth studies, laboratory work and patient study.

**PSIO 391H - Honors Student Preceptorship in Physiology (1-2 units)**
This course offers the opportunity for selected students to become more actively engaged in the educational and research goals of the Honors Academy in Physiology. Specific goals for Honors Preceptors are three-fold: 1) To gain a more in-depth view of the on-going research done by Physiology faculty. 2) To develop both presentation and web formats for sharing that information with Physiology majors and pre-majors. 3) To serve as information resources for other students regarding the Honors experience within the Physiology major.

**PSIO 395A - PhysioConnects A (2 units)**
PhysioConnects A provides Physiology students an initial connection with Engagement Experiences that can enable them to expand their learning outside the classroom. Experiences include research opportunities, clinical shadowing, professional and work experiences, club activities and volunteering. Students in PhysioConnects A will work together to prepare for and maximize the benefit from these experiences. The format will include guest lectures, class and small group discussions, individual and group work, as well as panel discussions. Combined, these will help students gain an understanding of the breadth of involvements available to them, as well as what is expected of them in an engagement experience. After the 2nd week of class, students will be provided access to the PhysioWorks database of engagement experiences where they can explore their options and use feedback from peers to find the best-matched opportunities and subsequently assist in feedback and expansion of the database.

**PSIO 395B - PhysioConnects B (2 units)**
PhysioConnects B can be taken either as a continuation of PhysioConnects A, or as a means for students who have already sought out engagement experiences to reflect on the benefits and insights gained from their involvements, and incorporate them into career goal planning and preparation. Students will refine their reflections and translate these to verbal, digital and formats, appropriate for interviews and applications as well as for sharing with future Physiology students. The course can be taken for 7.5 weeks for 1 unit of credit, or for the full 15 weeks for 2 units of credit. Students who wish to take the 15 week course will continue to seek out and interview potential experiences to add to the PhysioWorks database.

**PSIO 399/399H - Independent Study/ Honors Independent Study (1-5 units)**
Qualified students working on an individual basis with professors who have agreed to supervise such work.

**PSIO 404 - Advanced Topics in Cellular Physiology (3 units)**
This course combines lectures on several topics in cellular physiology with an emphasis on key experiments that have contributed to the knowledge base and full discussion among students and faculty of current studies that are being conducted on those topics. Within this course there will be an emphasis on the link between how studies in cellular physiology contribute to the understanding of human health and disease.
PSIO 411 - Scientific Methods and Professional Ethics (3 units)
This course will introduce students to the historical development of scientific scholarship and current controversies within the scientific community; various approaches to scientific methods and the application of these approaches to the natural sciences; elementary background knowledge of experimental design and the statistical procedures commonly used in physiological research; and important procedural, practical, and ethical issues pertaining to physiological research at a modern research university. The course will also provide practical personal experience in selected areas of professional analysis and communication.

PSIO 420 - Exercise and Environmental Physiology (3 units)
Regulation and adjustment of physiological systems during acute exercise and adaptations with chronic exercise in various populations and environments; emphasizes physiological mechanisms.

PSIO 425 - Measurement and Evaluation of Physiological Function (3 units)
Responses of physiological systems to work and environmental stresses. Emphasis on the principles and techniques of assessing physiological function by appropriate methods of data acquisition, analysis, and interpretation. Course includes both lecture and structured laboratory components.

PSIO 426 - Extreme Physiology (3 units)
This course will examine the role of the hypothalamus in regulating homeostasis of a variety of parameters. In particular the response of the body to different environmental stressors such as temperature or altitude that perturb homeostasis will be examined. In addition a variety of environmental insults to the normal physiology of the body such as the effects of ground water pollution or second hand smoke will be considered.

PSIO 427 - Metabolism and Disease (3 units)
In PSIO 427, students will study the biochemical principles that govern metabolism in physiological and pathophysiological states. We will discuss the underlying biochemistry and cell biology of specific diseases that disrupt normal cellular physiology including metabolic diseases, cancer, diabetes, cardiovascular and neurodegenerative diseases. Course activities include lectures, classroom discussions and oral presentations and assessments include exams, presentations and discussions.

PSIO 431 - Physiology of the Immune System (3 units)
Focuses on physiology of the immune system, how it functions correctly, and some problems that occur when the immune system does not function properly (immunopathology).

PSIO 450 - Respiratory Physiology (3 units)
This course will introduce students to the structure and function of the respiratory system, including lung structure and development, physiology of the pulmonary airways, lung fluid balance, pulmonary circulation, pulmonary mechanics, gas exchange, regulation of breathing, respiration in the neonate and cardiopulmonary interactions. Each topic will be addressed from the molecular to the systems level of organization, and respiratory system disease will be used as a framework for understanding basic physiology.

PSIO 452 - Digestive Physiology (3 units)
This course uses an integrative approach to introduce students to the structure and function of the digestive system, and will survey how the digestive system functions correctly, how it is regulated, and some problems that occur when it does not function properly.

**PSIO 465 - Neurophysiology (3 units)**
This course is concerned with how systems of neurons operate together to perform a wide array of functions including the processing of sensory information and generation of motor behaviors. Relevant aspects of neuroanatomy will be covered and some neural diseases will be discussed. A brief review of cellular neurophysiology will be provided at the outset of the course.

**PSIO 467 - Endocrine Physiology (3 units)**
Mammalian endocrine regulation from an integrative physiology perspective. Primary focus is on calcium and fuel metabolism, stress, fluid balance, reproduction, and growth and development.

**PSIO 469 - Human Reproductive Physiology (3 units)**
We will examine contemporary issues in the field of reproductive physiology with particular emphasis on clinical applications and societal concerns. The class structure is designed to encourage application of primary scientific literature and textbook hypotheses to real-world practice and exploration of new issues. Students are encouraged to bring recent articles, newspaper clippings, opinions, ideas and questions to class to promote active learning.

**PSIO 472 - Quantitative Modeling of Biological Systems (3 units)**
**available as of 08/01/2020**
Techniques for development of mathematical models. Examples of molecular, cellular, and tissue level processes are considered. Underlying mathematical and biological concepts are introduced as needed.

**PSIO 478 - Molecular Physiology Laboratory (4 units)**
**available as of 01/01/2021**
PSIO 478 (4 credits) is designed to teach students basic techniques commonly used in physiology research. This class will contain a theoretical portion that will explain in depth the molecular and physiological theory of scientific experimentation, and the laboratory portion will have selected experiments illustrating methodology in molecular biology and physiology that will involve the study of the central dogma (DNA, RNA and protein) in several levels of living complexity (cells, tissues and whole multicellular organisms).

**PSIO 484 - Cardiovascular Muscle Biology and Disease (3 units)**
This course is geared towards obtaining knowledge and quantitative insights in the molecular and integrative biology of muscle with an emphasis on cardiac muscle and the heart. It will focus on the molecular mechanisms that underlie the function and plasticity of muscle, including mechanisms of disease. In addition to lectures, the course will promote critical thinking and analysis skills by reading and analyzing primary research articles.

**PSIO 485 - Cardiovascular Physiology (3 units)**
Physiology principles of the heart and peripheral vasculature, viewed in an integrative manner, from the cellular to the systems level.
PSIO 487 - Physiology of Aging (3 units)
In this course we will examine the processes of lifecycle development, normal and pathological aging, senescence, and death from an eco-physiological perspective. Course objectives include understanding the impact of aging on major physiological systems; evaluation of relevant research papers from genetics, ecology, gerontology and geriatrics; understanding the role of the elderly in modern society; and analysis of selected eldercare controversies in the scientific, medical, and political communities.

PSIO 489 - Current Topics in Physiology (3 units)
Physiology seniors will explore selected physiological topics of current interest to today's society, providing students the opportunity to integrate and apply knowledge gained throughout their major courses. Guest lectures by experts, weekly readings and discussions will enable students to address the issues and challenges relevant to each of the topics. Working in teams, each issue will be critically analyzed from basic science, application and societal perspectives, and subsequently shared for full class discussion and final integration.

PSIO 492 - Directed Research (1-3 units)
Individual or small group research under the guidance of faculty.

PSIO 495H - Senior Honors Thesis Preparation (2 units)
This colloquium is designed for senior Physiology Honors students who are in the process of undertaking their Honors Thesis project & concurrently enrolled in PSIO 498H. This course is designed to optimize your honors research experience and facilitate successful completion of your honors thesis. Through a combination of lectures, panel discussions, class activities and practice presentations, we'll tackle the key elements needed to organize and share (in both oral and written form) the outcome of your honors project. Assorted relevant issues such as authorship, effective abstracts, referencing and writing for the non-science public as well as ethical issues in research will also be covered.

PSIO 495K - Inflammation and Disease (2 units)
Examines the chemical and cellular aspects of inflammation using different inflammatory disease states as examples.

PSIO 495M - Musculoskeletal Physiology Colloquium (2 units)
Discussion-format class covering musculoskeletal topics related to injury and disease, considering relevant basic science, research and clinical applications.

PSIO 495S - Sex Matters in Medicine (2 units)
Major Goals: To gain an understanding of difference between sex and gender and how both sex and gender affect specific aspects of physiology, medicine and access to healthcare; to understand the role of sex hormones vs sex chromosomes in the presentation of some diseases.
Minor Goals: To be able to describe (verbally and in writing) how gender based inequities affect access to education, economic resources relate to health; to be able to recognize gender bias in research design, implementation and analysis.

PSIO 495T - Topics in Physiology (2 units)
Discussion-format class covering topics in physiological topics of current public interest, considering relevant basic science, research and daily life applications.
PSIO 497A - Physiology of Mind-Body Interactions (3 units)
Students will explore the connections between their own mental/emotional processes and their physiological responses. As a result they will learn how to regulate their autonomic nervous system to reduce stress and improve performance.

PSIO 498H - Honors Thesis (3 units)
An honors thesis is required of all the students graduating with honors. Students ordinarily sign up for this course as a two-semester sequence. The first semester the student performs research under the supervision of a faculty member; the second semester the student writes an honors thesis.

PSIO 499/499H - Independent Study/ Honors Independent Study (1-6 units)
Qualified students working on an individual basis with professors who have agreed to supervise such work.