

PHYSIOLOGY (PHGY)

PHGY 7010 Readings in Physiology 6 cr

Tutorial course covering recent contributions in an area of physiology related to a student's research interests.

PHGY 7030 Special Physiology 6 cr

Seminar and reading course on physiology of particular systems.

PHGY 7150 Cardiac Physiology 3 cr

Tutorial and reading course on cardiac physiology; emphasis on the energetics of cardiac contraction and its relationship to ultrastructural and biochemical properties of the heart.

PHGY 7160 Vascular Physiology 3 cr

Lectures and seminars on physiology of blood vessels including hemodynamics, rheology of blood, and the function and structure of smooth muscle.

PHGY 7170 Endocrine and Metabolic Physiology 3 cr

Special topics in endocrine and metabolic physiology emphasizing current concepts.

PHGY 7172 Advanced Endocrine and Metabolic Physiology 1.5 cr

A seminar course on advanced topics in endocrine and metabolic physiology and diseases. The course focuses on developing skills required to present and critique research data on endocrine and metabolic physiology & pathophysiology.

PR/CR: A minimum grade of C is required unless otherwise indicated.

Prerequisite: PHGY 7256 or consent of course coordinator.

PHGY 7180 Advanced Topics in Physiology 3 cr

Advances in selected areas of physiology, research proposals related to the student's area of interest, procedures for grant writing and refereeing grant proposals, evaluation of citations and impact factors.

PHGY 7190 Research Topics in Physiology 3 cr

Seminars on research presentations by staff and senior students in physiology.

PHGY 7230 Molecular and Cellular Aspects of Organ Physiology 3 cr

Tutorial course: Function of various organs in the light of current concepts regarding structure and function at the molecular and cellular level.

PHGY 7252 Respiratory Physiology & Pathophysiology 1.5 cr

Lecture, readings, and student-directed discussion course dealing with fundamental biophysical processes and function of major respiratory organ systems (including membrane transport and muscle contraction in respiratory physiology), illustrated with pathophysiological structures and function, and their relationship to disease. The course will also examine current therapeutic approaches and active areas of research interest.

PHGY 7254 Cardiovascular Physiology & Pathophysiology 1.5 cr

Lecture, readings, and student-directed discussion course dealing with fundamental biophysical processes and function of major cardiovascular organ systems, illustrated with pathophysiological structures and function, and their relationship to disease. The course will also examine current therapeutic approaches and active areas of research interest.

PHGY 7256 Endocrine Physiology & Pathophysiology 1.5 cr

Lecture, readings, and student-directed discussion course dealing with fundamental biophysical processes and function of major endocrine (including reproductive) organ systems, illustrated with pathophysiological structures and function, and their relationship to disease. The course will also examine current therapeutic approaches and active areas of research interest.

PHGY 7258 Neurophysiology & Pathophysiology 1.5 cr

Lecture, readings, and student-directed discussion course dealing with fundamental biophysical processes and function of major neurophysiology organ systems, illustrated with pathophysiological structures and function, and their relationship to disease. The course will also examine current therapeutic approaches and active areas of research interest.

PHGY 7260 Advanced Neurological Sciences 3 cr

Seminar, readings and lecture course covering original research papers leading to the most significant advances in the neurological sciences. Emphasis is placed on student comprehension of major research directions in the broad field of neurological sciences.

PR/CR: A minimum grade of C is required unless otherwise indicated.

Prerequisite: PHGY 7240 or equivalent and consent of instructor.

PHGY 7262 Gastrointestinal and Renal Physiology & Pathophysiology 1.5 cr

This course will provide graduate students with basic understanding of physiology and pathophysiology of the gastrointestinal and renal systems

PHGY 7270 Physiology of Striated Muscle 3 cr

A lecture and seminar course dealing with the physiology and biophysics of skeletal and cardiac muscle.

PHGY 7282 Neonatal and Fetal Physiology 3 cr

Lecture course examining developmental changes in lung/heart/brain, in the context of fetal environment, normal neonatal Physiology, Physiology of prenatal hypoxia in related neonatal disease. Prerequisites PGHY 7252, or consent of instructor.

PHGY 7290 Physiology of the Airways 3 cr

A lecture and seminar course dealing with the physiology of the airways in the intact animal and with the role of smooth muscle in controlling airway function. The fundamental properties of airway smooth muscle in controlling airway function will be emphasized.

PR/CR: A minimum grade of C is required unless otherwise indicated.

Prerequisite: PHGY 7240 or equivalent and consent of instructor.

PHGY 7300 Molecular Endocrinology 3 cr

A lecture and seminar course on advances in molecular and cellular aspects of endocrinology and other systems. The course is taught by members of the Gene Technology Group and topics will reflect current research interests. These include the roles of hormones/growth factors in cancer, growth and development, and reproduction, and the regulation of hormone gene families. This course is designed for individuals with knowledge in the areas of molecular and/or cell biology.

PR/CR: A minimum grade of C is required unless otherwise indicated.

Prerequisite: consent of instructor.

PHGY 7310 Principles of Electronics for Life Sciences 3 cr

Lectures on basic principles of electricity and electronics of particular application to electrophysiology.

PHGY 7320 Instrumentation for Electrophysiology 3 cr

Lectures on the application of principles of electricity and electronics to electrophysiology.

PR/CR: A minimum grade of C is required unless otherwise indicated.

Prerequisite: PHGY 7310.

PHGY 7330 Physiology of Smooth Muscle 3 cr

A lecture and seminar course dealing with the biophysics, electrophysiology, pharmacology and biochemistry of the smooth muscle in the major organ systems.

PHGY 7340 Cardiovascular Electrophysiology 3 cr

A comprehensive lecture and seminar course on the electrical activity of the cardiovascular system. The fundamental electrical properties of cardiac and vascular muscle cell membranes, currents and channels as studied by intracellular microelectrodes, voltage clamp and patch clamp techniques will be stressed.

PHGY 7350 Cardiovascular Pathophysiology 3 cr

A comprehensive lecture course on disease in the cardiovascular system. Topics to be covered include methods of analysis of cardiac viability, heart failure, arrhythmias, heart diseases (congenital, valvular, pericardial, cardiomyopathy), hypertension, stroke, atherosclerosis and myocardial infarction.

PR/CR: A minimum grade of C is required unless otherwise indicated.

Prerequisite: PHGY 7240.

PHGY 7360 Trends in Cardiovascular Sciences 3 cr

This is a comprehensive seminar-based course dealing with recent advances in cardiovascular research given by local fellows and prominent scientists. Students are expected to participate in the series and present their own research data seminar. This course will enable the trainees to learn how to prepare research seminars, handle question/answer sessions after a seminar and prepare a formal report.

PHGY 7370 Cardiovascular Molecular Biology 3 cr

This course introduces the principles of molecular biology and their application to the cardiovascular system in health and disease, with a focus on gene regulation, cardiac development and the use of transgenic models. The course comprises lectures and student self-directed learning assignments.

PR/CR: A minimum grade of C is required unless otherwise indicated.

Prerequisite: PHGY 7254 or permission of instructor.

PHGY 7380 Cardiovascular Cell Biology 3 cr

A comprehensive lecture course on morphology, biochemical composition and function of the cardiac and smooth muscle cell, with particular emphasis on developmental and injury-related issues. Topics include the description of various cardiac cells and their immediate extracellular environment, intercellular communication, cardiac development, control of cell cycle, hyperplasia and hypertrophy, cardiac growth factors, mechanism of injury and cell death, regeneration, heat shock proteins and cardioprotection.

PHGY 7390 Gene Therapy 3 cr

Advanced course detailing new frontiers in the application of gene therapy and technological protocols currently utilized in treating cardiovascular diseases such as cardiomyopathy, hypertension, congenital birth defects and restenosis.

PR/CR: A minimum grade of C is required unless otherwise indicated.

Prerequisites: PHGY 7370, PHGY 7380 or permission of the course coordinator.

PHGY 7400 Cellular and Molecular Biology of the Vascular System 3 cr

This course provides current concepts in vascular biology at the molecular level as well as the pathogenesis and treatment of vascular diseases for the purpose of graduate studies. Students may also learn up-to-date techniques in research of vascular cell biology and the diagnosis of vascular diseases through laboratory demonstrations.