

PHYSIOLOGY (PHZB)

Subject-area course lists indicate courses currently active for offering at the University of Louisville. Not all courses are scheduled in any given academic term. For class offerings in a specific semester, refer to the Schedule of Classes (https://csprd.louisville.edu/psp/ps_class/EMPLOYEE/PSFT_CS/c/COMMUNITY_ACCESS.CLASS_SEARCH./x/?state=62dab551a0d600a5e8237359c50704e59007&duo_code=sjUx20STj21bWfEg3Z1Y8jhm6pqrV).

500-level courses generally are included in both the undergraduate- and graduate-level course listings; however, specific course/section offerings may vary between semesters. Students are responsible for ensuring that they enroll in courses that are applicable to their particular academic programs.

Course Fees

Some courses may carry fees beyond the standard tuition costs to cover additional support or materials. Program-, subject- and course-specific fee information can be found on the Office of the Bursar website (<https://louisville.edu/bursar/tuitionfee/university-fees/>).

PHZB 602. Physiological Concepts for General Life Sciences 2 Units

Term Typically Offered: Fall Only

Description: This course covers the fundamental function of membranes; autonomic (ANS), hypothalamic, and central (CNS) neural control; and for integrated function of muscle, heart, circulatory, renal, endocrine, reproduction, and gastrointestinal organ systems. Emphasis is placed on physiological mechanisms for integrated feedback control of organ and tissue function in humans. Overall, this course offers a solid basis in physiological concepts for post-baccalaureate life-science graduate students to enhance their advanced studies of life sciences. This course teaches by combined didactic lecture and student problem-solving class sessions, and by concept-problem reviews. This course is offered only on a letter-grade basis. The Course Faculty reserves the right to make changes in this syllabus when necessary to meet learning objectives and course management.

For class offerings for a specific term, refer to the Schedule of Classes (<http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm>)

PHZB 604. Stem Cell Biology and Regenerative Medicine 2 Units

Term Typically Offered: Fall Only

Prerequisite(s): Permission from the Department of Physiology & Biophysics This course will provide a comprehensive overview on this intriguing and highly debated topic.

Description: The course will focus on the biology of stem cells and their role in health and disease with emphasis on development, carcinogenesis and tissue engineering. Lectures on various aspects of stem cells from renowned experts will cover both embryonic, induced pluripotent and adult stem cells. Specific lectures will include stem cell types present in the blood, liver, brain, muscle, kidney, pancreas, prostate, lung, gut, skin, and eye. Fellows/graduate students will also be educated on therapeutic cloning as well as bio-ethical issues and existing laws governing stem cell research.

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PHZB 605. Systemic Physiology I 5 Units

Term Typically Offered: Fall Only

Prerequisite(s): Admitted into SIGS.

Description: The first of two human physiology courses that are offered the first year of the graduate programs in the Department of Physiology and Biophysics and other basic science departments at the SOM. This course contains four lectures and one hour of recitation/application of the preceding four lectures per week. Mandatory attendance is required for all class sessions.

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PHZB 606. Systemic Physiology II 5 Units

Term Typically Offered: Spring Only

Prerequisite(s): Admitted into SIGS.

Description: The second of two human physiology courses that are offered the first year of the graduate programs in the Department of Physiology and Biophysics. This course contains four lectures and one hour of recitation/application of the preceding four lectures per week. Mandatory attendance is required for all class sessions.

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PHZB 607. Principles of Presentations: Self, Science, Interviews 2 Units

Term Typically Offered: Fall Only

Prerequisite(s): Permission of the Dept.

Description: of Physiology & Biophysics This course will provide instruction in best practices for oral-based presentations. There will be multiple oral presentation topics covered, including: Basic Presentations; Using Visual Aids, Charts and Figures; Distilling and Presenting a Clear and Understandable Hypothesis and Specific Aims; Interviews; and Scientific Poster Presentations. Students will attend lectures, participate in small group discussions and present five different types of oral-based presentations. A mid-term and final exam (each 50% of overall grade) will be used to assess student understanding of the knowledge centered on making clear, concise and purposeful oral presentations.

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PHZB 608. Physiological Concepts Related to the Metabolic Syndrome 2 Units

Term Typically Offered: Spring Only

Description: This course will provide students with the basic physiological and biochemical concepts necessary to understand the factors involved in the development of the Metabolic Syndrome. Students will 1) learn the risk factors for metabolic syndrome; 2) learn the diseases and medical complications associated with metabolic syndrome; 3) understand the role of insulin resistance, obesity, hypertension and atherosclerosis in the onset of metabolic syndrome; and 4) survey the current and future approaches to diagnosis and treatment of the metabolic syndrome.

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PHZB 609. Integrated Systemic Physiology Term Typically Offered: Fall Only Description: Designed to provide reinforcement, expansion and integration of basic physiologic concepts of human organ systems. For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)	3 Units	PHZB 625. Experimental Physiology Methods Term Typically Offered: Fall Only Prerequisite(s): Admitted into SIGS. Description: Experimental Physiology Methods is a first course available to matriculating students in the initial year of graduate physiology programs. This course is designed to broadly introduce the use of the scientific methods on studying hypothesis-related research in physiology. This course is now designed to be taken by all matriculating graduate students, but only 1 credit hour (instead of the previous listing for 3). Beginning doctoral students will take this course in concurrence with the general "methods course" by the Interdepartmental Programs in Basic Science each fall semester. For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)	1 Unit
PHZB 611. Advanced Human Cardiovascular Physiology Term Typically Offered: Spring Only Description: Utilizes lectures on the physiological and biochemical processes in the heart, blood vessels and blood elements to provide more detailed mechanisms from molecular to systematic levels and normal to pathological states. For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)	2 Units	PHZB 630. Biomedical Applications of Physiology in the Eye Term Typically Offered: Fall, Spring Description: This course gives the basic physics and advanced physiologic principles that relate to function of the eye as an organ system, uncovers the physics behind basic instruments used for diagnostics of eye health, introduces the student to various professions that are involved in eye health, and discusses the biomedical aspects of several problems that are frequently encountered in medical eye health. Overall, this course offers a solid background in physiology, pathophysiology, measurements methods, and biomedical aspects of the eye to well-prepare a student for pursuit of a career in professions related to eye health. For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)	2 Units
PHZB 616. Selected Topics in Physiology and Biophysics Term Typically Offered: Fall, Spring, Summer Description: Detailed discussion of physiological and biophysical problems of particular interest to students and staff. Topics will be announced in the schedule. For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)	1-12 Units	PHZB 640. Systemic Membrane, Nerve, and Muscle Physiology Term Typically Offered: Fall Only Description: This course covers Cell-Membrane, Nerve, and Muscle Physiology and incorporates molecular, cellular, and systemic mechanisms to teach physiological processes. The course uses a team-taught, integrative organ-systems approach to emphasize the systemic physiological function that arises from interaction among individual cellular and organ level components. Lectures, post-lecture quizzes, interactive group exercises (GEs) and team-based learning sessions (TBLs), and examinations with multiple learning methods foster student-directed self-learning. Students are highly encouraged to take both PHZB 640 and 641 in the same semester. For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)	3 Units
PHZB 617. Seminar in Physiology and Biophysics Term Typically Offered: Fall, Spring For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)	1 Unit	PHZB 641. Systemic BF, Heart, and Circulatory Physiology Term Typically Offered: Fall Only Description: This course covers Body-Fluid (BF), Cardiac and Circulatory Physiology and incorporates molecular, cellular, and systemic mechanisms to teach physiological processes. The course uses a team-taught, integrative organ-systems approach to emphasize the systemic physiological function that arises from interaction among individual cellular and organ level components. Lectures, post-lecture quizzes, interactive group exercises (GEs) and team-based learning sessions (TBLs), and examinations with multiple learning methods foster student-directed self-learning. Students are highly encouraged to take both PHZB 640 and 641 in the same semester. For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)	3 Units
PHZB 619. Research Term Typically Offered: Fall, Spring, Summer For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)	1-20 Units		
PHZB 620. Thesis For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)	1-6 Units		
PHZB 621. Physiological Adaptions to Exercise, Immobility and Inactivity Term Typically Offered: Spring Only Description: This course is an in-depth study of the physiological adaptations that occur due to exercise, immobilization, and physical inactivity. The course expands the knowledge on how the body responds, adjusts, and adapts to stress. Health aspects of exercise will be emphasized. For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)	2 Units		

PHZB 642. Systemic Respiratory, Renal, & Acid -Base Physiology 3 Units
Term Typically Offered: Fall Only

Description: This Course covers respiratory, Renal, and Acid-base (AB) Physiology and incorporates molecular, cellular, and systemic mechanisms to teach physiological processes. The course uses a team-taught, integrative organ systems approach to emphasize the system's physiological function that arises from interaction among individual cellular and organ-level components. Lectures, post-lecture quizzes, interactive group exercises (GEs) and team-based learning sessions (TBLs), and examinations with multiple learning methods foster student-directed self-learning. Students are highly encouraged to take both PHZB 642 & 643 in the same semester.

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PHZB 643. Systemic Endocrine, Reproductive, and Gastrointestinal Physiology 3 Units

Term Typically Offered: Spring Only

Description: This course covers Endocrine, Reproductive, and Gastrointestinal (GI) Physiology and incorporates molecular, cellular, and systemic mechanisms to teach physiological processes. The course uses a team-taught, integrative organ-systems approach to emphasize the systemic physiological function that arises from interaction among individual cellular and organ level components. Lectures, post-lecture quizzes, interactive group exercises (GEs) and team-based learning sessions (TBLs), and examinations with multiple learning methods foster student-directed-self-learning. Students are highly encouraged to take both 642 & 643 in the same semester.

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PHZB 644. Cardio Pulmonary Clinical Physiology 3 Units

Term Typically Offered: Summer Only

Description: This 3-credit hour course uses clinical situations to examine and reinforce mechanisms important to understanding systemic physiology related to 1) Heart Electrical function, 2) Myocardial Blood Flow, and 3) Pulmonary compliance and breathing. This course utilizes a combination of faculty-lead teaching techniques that include team-based learning (TBL), problem-based learning (PBL), and in-class exercises. All course materials have been prepared by the supervising faculty and will be available to students as needed.

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PHZB 645. Gastrointestinal Renal Endocrine Clinical Physiology 3 Units

Term Typically Offered: Summer Only

Description: This 3-credit hour course uses clinical situations to examine and reinforce mechanisms important to understanding systemic physiology related to 1) gastrointestinal blood flow and acid production, 2) renal control of arterial blood pressure, and 3) control of endocrine functions. This course utilizes a combination of faculty-lead teaching techniques that include team-based learning (TBL), problem-based learning (PBL), and in-class exercises. All course materials have been prepared by the supervising faculty and will be available to students as needed.

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PHZB 799. Dissertation 1-12 Units

Prerequisite(s): Permission of departmental chair.

Description: The terminal research course for the PhD degree to finalize data analyses and manuscript preparation for the doctoral dissertation. For class offerings for a specific term, refer to the Schedule of Classes (<http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm>)

PHZB 816. Special Project-Physiology 1-16 Units

Prerequisite(s): Consent of Department Chair.

Description: A special course arrangement to provide an in-depth exposure to a specific area of physiology (such as circulatory mechanisms in shock) that involves the interaction of basic science research and clinically relevant problems.

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