Health and Human Physiology Courses (Health, Sport, and Human Physiology) (HHP)

HHP Courses

This is a list of courses with the subject code HHP. For more information, see Health, Sport, and Human Physiology (College of Liberal Arts and Sciences) in the catalog.

HHP:1000 First-Year Seminar **1 s.h.**
Small discussion class taught by a faculty member; topics chosen by instructor; may include outside activities (e.g., films, lectures, performances, readings, visits to research facilities). Requirements: first- or second-semester standing.

HHP:1050 Exploring Health and Human Physiology **1 s.h.**
An onboarding experience for future (or potential) health and human physiology students; introduces and discusses skills critical for future success in college and beyond.

HHP:1200 First Aid/CPR Athletic Training **2 s.h.**
First Aid and CPR with automated external defibrillator (AED); opportunity for certification in basic life support through the American Heart Association; satisfies the first aid and CPR requirement for the athletic training program application; for declared athletic training interest majors. Requirements: completion of or current enrollment in AT:1010.

HHP:1400 Human Anatomy and Physiology **3 s.h.**
Introductory human anatomy and physiology; overview of the structures and functions of most organ systems of the body, including the integumentary, skeletal, muscular, nervous, endocrine, cardiovascular, respiratory, digestive, urinary, and reproductive systems; how multiple organ systems work together to maintain health; health-related information literacy and communication skills related to human function. GE: Natural Sciences without Lab.

HHP:2020 Developing Your Professional Brand **2 s.h.**
Development and preparation for professional growth; focus on image as a brand; how to manage brand on social media, LinkedIn, and professional documentation; expansion of brand; preparation for experiential learning and job searching. Corequisites: HHP:2200.

HHP:2061 Recreation Leadership and Programming **3 s.h.**
Leadership principles, techniques; programming techniques. Same as TR:2061.

HHP:2100 Human Anatomy **3 s.h.**
Intermediate human anatomy; anatomical language and the organ systems of the body.

HHP:2110 Human Anatomy Laboratory **1 s.h.**
All major systems of the human body, understood through computer-generated images, models, histological slides, anatomical specimens. Corequisites: HHP:2100 or HHP:3105 or HHP:1400, if not taken as a prerequisite. GE: Natural Sciences Lab only.

HHP:2130 Human Development Through the Life Span **3 s.h.**
Overview of human developmental theories across the lifespan; aspects of cognitive, physical, social, and emotional development from birth to death; the role of culture, environment, health, and economic factors over the developmental process and life continuum.

HHP:2148 Personal Training **3 s.h.**
Essential aspects of personal training including theory and applied practice of screening, assessment, exercise prescription, and technique for development of safe and effective training programs for clients. Prerequisites: HHP:2400 and HHP:2200.

HHP:2200 Physical Activity and Health **3 s.h.**
Physical activity determinants in society; school, workplace, community-based health promotion interventions to improve activity levels.

HHP:2280 Cultural Competency and Health **3 s.h.**
Learn the cultural competency awareness, knowledge, and skills vital to effectively delivering healthcare services that meet the social, cultural, and linguistic needs of patients; address the disparities that people of culturally diverse backgrounds often experience, and influence patient outcomes. GE: Understanding Cultural Perspectives.

HHP:2310 Nutrition and Health **3 s.h.**
Physiology, biochemistry of human nutrition; appropriate food sources; qualitative and quantitative evaluation of diets using standard references. GE: Natural Sciences without Lab.

HHP:2350 Biomechanics of Sport and Physical Activity **3 s.h.**
Learn how to apply principles of biomechanics and musculoskeletal anatomy to better understand movement for the purpose of injury prevention, fitness, and performance. Prerequisites: HHP:2100.

HHP:2400 Fundamentals of Human Physiology **3 s.h.**
Introduction to function and regulation of the human body. Recommendations: high school chemistry and basic biology.

HHP:2410 Human Physiology Laboratory **1 s.h.**
Laboratory course illustrating principles of physiological principles through experimental measurements, practical assessments, and computer-based illustrations of human function. Corequisites: HHP:2400 or HHP:1400, if not taken as a prerequisite. Recommendations: one semester of biology.

HHP:3030 Lifestyle Medicine **3 s.h.**
Overview of influences of lifestyle medicine on chronic disease treatment and prevention; understanding evidence-based lifestyle medicine factors on holistic well-being; development of communication skills to support behavioral and lifestyle medicine changes for treatment and prevention of chronic conditions. Prerequisites: HHP:2200 and HHP:2310.

HHP:3045 Physical Activity Psychology **3 s.h.**
Application of psychological principles to the adoption and maintenance of physical activity as well as the psychological effects of physical activity. Prerequisites: HHP:2200.

HHP:3050 Obesity **3 s.h.**
A broad overview of the causes and consequences of the obesity epidemic; evidence-based approaches for preventing and treating obesity. Prerequisites: HHP:2200 and HHP:2310.

HHP:3105 Anatomy for Human Physiology **3 s.h.**
All major systems of the body are covered with focus on the normal structure of the human body; appropriate for preprofessional students planning on careers in the various health professions. Prerequisites: BIOL:1411.

HHP:3110 Advanced Anatomy Laboratory 2 s.h.
Detailed gross anatomy of all major systems of the body; structure of the human body at organ, tissue, and cellular levels; examination of various human and other mammalian specimens. Prerequisites: HHP:3105.

HHP:3115 Anatomy for Human Physiology With Lab 5 s.h.
Coverage of all major systems of the body in a combined lecture and laboratory anatomy course; focus on normal structure of the human body; inclusion of gross anatomy of human structures in the laboratory; appropriate for preprofessional students planning on careers in various health professions. Prerequisites: BIOL:1411.

HHP:3150 Program Design in Strength and Conditioning 3 s.h.
Examination of elements of program design for developing muscular fitness and skill related to fitness; applies to programming for individuals with whom a major goal of their physical activity program is to maximize human performance potential; these goals can either be for personal fitness, success in specific sports, or for applications in occupational athletes.

HHP:3175 Physical Activity and Recreation for Aging Populations 3 s.h.
Provides an overview of physical, social, and psychological aspects of aging and how these changes relate to designing exercise programs and leisure opportunities to improve the quality of life for older adults. Prerequisites: TR:2160 or HHP:2200. Same as ASP:3175, TR:3175.

HHP:3199 Topics in Health and Human Physiology 3 s.h.
Exploration of various subject matters shaping the future of health and human physiology; in-depth focus on a specific topic within related fields, utilizing instructor expertise.

HHP:3200 Health Behavior and Health Promotion 3 s.h.
Principles of epidemiology and health behavior theories applied to multilevel frameworks for health promotion. Prerequisites: HHP:2200 and HHP:2310.

HHP:3250 Motor Learning 3 s.h.
Explore how humans acquire and refine movement skills; examine the cognitive, behavioral, and environmental factors that influence motor skill development and performance in both health and disease. Corequisites: HHP:2100 or HHP:3115 or HHP:2400 or HHP:3550.

HHP:3261 Inclusive Recreation 3 s.h.
Introduction to inclusive recreation topics. Focus on offering recreation programs and services for individuals of all abilities and backgrounds. Same as TR:3261.

HHP:3300 Human Growth and Motor Development 3 s.h.
Growth, maturation, and development of the human body and its various tissues from conception through infancy, childhood, and adolescence; topics include the biological maturation of systems important for physical activity (nervous, musculoskeletal, cardiopulmonary systems) as well as the effects of genes and the endocrine system on growth and development. Recommendations: prior course in anatomy, human physiology, or biology.

HHP:3361 Animal-Assisted Interventions in the Helping Professions 3 s.h.
Explore the principles and practices of Animal-Assisted Interventions (AAIs); provide a comprehensive understanding of the theoretical foundations, ethical considerations, and practical applications of incorporating animals into therapeutic settings. Students will gain insight into how animals can enhance therapeutic experiences, promote well-being, and contribute to the overall effectiveness of programs and services. Overviews diverse populations and settings, emphasizing the role of animals as cofacilitators in promoting therapeutic outcomes within helping professions. Same as TR:3300.

HHP:3400 Applied Exercise Physiology 3 s.h.
Effects of acute exercise and chronic exercise training on different physiological systems (energy, neuromuscular, circulatory, respiratory, endocrine); overview of physiological principles necessary for more advanced study of fitness evaluation and exercise prescription; preparation for ACSM certification. Prerequisites: HHP:2200 and HHP:2400.

HHP:3410 Applied Exercise Physiology With Lab 4 s.h.
Effects of acute exercise and chronic exercise training on different physiological systems (energy, neuromuscular, circulatory, respiratory, endocrine); overview of physiological principles and lab activities necessary for more advanced study of fitness evaluation and exercise prescription; preparation for American College of Sports Medicine certification. Prerequisites: HHP:2100 with a minimum grade of C- and HHP:2200 with a minimum grade of C- and HHP:2310 with a minimum grade of C- and HHP:2400 with a minimum grade of C-.

HHP:3420 Practicum in Health Education and Outreach 3 s.h.
Coursework and experiential learning with the Office of Student Wellness; practical experience in planning, implementing, and evaluating health programs; students spend at least 20 hours assisting with health outreach events, programs, and opportunities which may include staffing a table, assisting with group fitness assessments, or participating in health promotion-related opportunities; students also work on a team health project and plan their own health event; reflection on how health issues apply to students personally and to their communities; foundation of theories/models that guide health behavior change in college setting; papers, projects, outreach events, presentations. Prerequisites: HHP:2310 and HHP:2200.

HHP:3430 Health Management and Administration 3 s.h.
Introduction to management, administration, and leadership principles as they relate to health promotion programs. Prerequisites: HHP:2200 and HHP:2310.

HHP:3450 Immunology in Health and Disease 3 s.h.
Overview of immunology, beginning at the molecular level and ending with the role of the immune system in disease; fundamental concepts of the immune system; innate and adaptive immunity, focusing on cell-mediated and humoral immune responses, in addition to effector mechanisms in both of these responses; concepts of immunologic tolerance; autoimmune disease; immunodeficiency syndromes; the inflammatory process in disease. Prerequisites: HHP:3550.

HHP:3490 Biomedical Ethics 3 s.h.
Moral principles, ethical decision-making, groundbreaking cases, and legal standards in medical practice. Emphasis is placed on applying ethical frameworks to real-world medical controversies, understanding patient rights, and engaging in respectful ethical debates. Prerequisites: HHP:3115.

HHP:3500 Human Physiology 3 s.h.
Organ system approach to physiology in order to understand normal function of the human body from the submolecular and cellular levels to the whole organism; emphasis on the development of a mechanistic understanding of organ system function and integrated physiological function across systems to promote homeostatic regulation in the human body. Prerequisites: (HHP:2400 or BIOL:1141 or BIOL:1140 or BIOL:1411) and (CHEM:1070 or CHEM:1110).

HHP:3550 Human Physiology With Laboratory 5 s.h.
Mechanistic approach to understand organ system function and integrated function across systems as the basis for homeostatic regulation within the human body; laboratory activities that incorporate fundamental measurements of human function and analysis, interpretation, and presentation of experimental findings. Prerequisites: (HHP:2400 or BIOL:1141 or BIOL:1140 or BIOL:1411) and (CHEM:1070 or CHEM:1110). Recommendations: HHP:1050, one semester of human anatomy, and one semester of statistics or biostatistics.

HHP:3555 Lab for Human Physiology 2 s.h.
Experiential laboratory activities that incorporate fundamental measurements of human function and analysis, interpretation, and presentation of experimental findings. Prerequisites: HHP:3550. Recommendations: one semester of statistics or biostatistics.

HHP:3700 Health Care Communications 1 s.h.
Health care provider communication with patients and other health care workers; students communicate with digital patient(s) within a software platform to establish a patient history and relevant documentation.

HHP:3820 Community Wellness Guided Practicum arr.
Application of theory into practice to support personal and professional skill development; students work to deliver wellness programming, develop, implement, and evaluate behavior change interventions for various populations, deliver education; utilize skills in marketing, design, presentation, and cultivating connections. Prerequisites: HHP:2200 and HHP:2310 and (HHP:2100 or HHP:2400 or HHP:1400).

HHP:3850 Promoting Health Globally 3 s.h.
Major global health threats in the United States and abroad; impact of culture, history, economics on health disparities; approaches, programs, policies to remedy them. Same as GHS:3850.

HHP:3900 Writing for Health and Human Physiology 3 s.h.
Effective written and oral communications specific to careers in the health sciences; projects include cover letters, resumes, personal statements, and writing/presenting scientific information for both general and expert audiences; planning, drafting, revising, editing, and peer-review of materials.

HHP:3930 Practicum in Health and Human Physiology 1-3 s.h.
Practicum experience that consists of shadowing and practicing field specific skills under close supervision of a professional at the organization, subject matter expert, or faculty member in the areas of research, fitness, strength and conditioning, nutrition, clinical rehabilitation, health promotion, health education, community outreach, medical training, or other health-related area; students receive regular feedback, overall performance evaluations, and meet learning objectives for practicum experience that align with professional competencies and/or academic preparation.

HHP:3994 Undergraduate Research 1-3 s.h.
Exposure to laboratory research in health, human physiology, or related science fields; students develop research skills in a supervised research setting.

HHP:4010 Behavioral and Clinical Health Assessment Laboratory 4 s.h.
Learn and practice specific health assessment skills, including the ability to assess and interpret blood pressure, lung function, blood lipids, and heart rate; health behavior measurement issues including how to use objective monitors, self-reports, interviews, and web-based trackers to assess diet, physical activity, and sleep; general measurement and research concepts introduced and students have laboratory practice in sphygmomanometry, spirometry, anthropometry, accelerometry, sleep tracking, computerized dietary assessments, biochemical measures, and exercise testing. Prerequisites: HHP:2200 and HHP:2310 and HHP:2100 and HHP:2400.

HHP:4020 Health Coaching 3 s.h.
Learn, practice, and demonstrate evidence-based, patient-centered skills and processes for helping patients achieve their self-determined health and wellness goals. One of two courses required for the National Board of Health and Wellness Coaching (NBHWC) health coaching pathway. Prerequisites: HHP:2200 and HHP:2310.

HHP:4030 Social Determinants of Health 3 s.h.
Explore how social and economic factors determine opportunities, resources, and health; use of Healthy People 2030 to consider how federal, state, and local-level partners can create opportunities to understand and improve social determinants of health. Prerequisites: HHP:2200 and HHP:2310.

HHP:4040 Health Services 3 s.h.
Barriers to quality health care access (e.g., lack of availability, high costs, lack of insurance coverage, health disparities); consequences of such barriers (e.g., unmet health needs, delays in care, lack of preventive services, preventable hospitalization); innovative solutions for improving access and quality of care (e.g., technologies and innovations, improving access to preventive health services, reducing costs); novel ways to improve access and quality of today's health care system. Prerequisites: HHP:2200 and HHP:2310.

HHP:4110 Advanced Human Anatomy Laboratory 4 s.h.
Regional dissection of the human body. Prerequisites: HHP:3110 or HHP:3115 with a minimum grade of B-.

HHP:4130 Skeletal Muscle Physiology 3 s.h.
Investigation of the role of skeletal muscle in health and disease; skeletal muscle structure, contractile mechanisms, production of movement, energetics, adaptation to increased use and exercise, disuse, injury, pathologies, and therapeutic strategies. Prerequisites: HHP:3550.

HHP:4150 Clinical Exercise Physiology 3 s.h.
Recent advances in exercise physiology for clinical populations; emphasis on acute and chronic responses to exercise in healthy aged adults and in patients with cardiac, vascular, pulmonary, and metabolic diseases; basic and intermediate electrocardiography (ECG), pathophysiology of disease process, clinical assessment of disease severity, diagnostic testing, acute exercise responses, and exercise rehabilitation. Prerequisites: HHP:3400 or HHP:3550. Recommendations: HHP:4460.

HHP:4190 Scientific Basis of Training for Elite Performance 3 s.h.
Application of scientific principles to goal of improving strength, speed, endurance, and overall human function; general overview of structure and function of muscular, nervous, cardiovascular, and respiratory systems; bioenergetics of exercise; endocrine response to exercise; biomechanics of resistance exercise; adaptations to anaerobic and aerobic training programs; age and sex related considerations on training; nutrition and ergogenic aids. Prerequisites: HHP:2400.

HHP:4197 Therapeutic Recreation: Experiences in Adaptive and Inclusive Sports 3 s.h.
In-depth exploration of adaptive and inclusive sports from the perspectives of disability studies, therapeutic recreation, and sport and recreation management; examines the intersectionality of these three crucial components to create meaningful, accessible, and inclusive sporting experiences for individuals with diverse abilities; integrates theoretical knowledge with practical application, including hands-on experience in adaptive sports programming. Students will emerge with the skills and understanding needed to facilitate adaptive sports activities. Same as DST:4198, TR:4197.

HHP:4200 Metabolic Exercise Testing and Prescription 4 s.h.
Learn how to assess an individual's health, fitness, and readiness for exercise. Apply this information to formulate a tailored program for an individual to address their needs and goals. Prerequisites: HHP:3400 and (HHP:2350 or HHP:3550). Requirements: health promotion, exercise science, or human physiology major.

HHP:4210 Musculoskeletal Exercise Testing and Prescription 4 s.h.
Educational and practical experience for designing resistance training and flexibility programs; competencies for certification with National Strength and Conditioning Association. Prerequisites: HHP:3400 or HHP:3550. Requirements: health promotion, exercise science, or human physiology major.

HHP:4220 Biomechanics of Human Motion 3 s.h.
Application of the principles of mechanics to investigation of human motion in two dimensions; system modeling, force system and equilibrium analysis, particle and rigid body kinematics, Newton's and Euler's equations of motion, work-energy and impulse-momentum integral principles. Prerequisites: (HHP:2100 or HHP:3105 or HHP:3115) and (PHYS:1400 or PHYS:1511 or PHYS:1611 or HHP:2350).

HHP:4230 Motor Control Theory 3 s.h.
Behavioral aspects of motor performance, emphasizing behavioral motor control theories, motor adaptation, and skill learning; fundamental theoretical aspects of motor control. Prerequisites: HHP:3550. Recommendations: familiarity with basic neuroscience (neurons, synaptic transmission, basic anatomical organization of sensory and motor systems).

HHP:4240 Exercise Testing and Prescription With Lab 4 s.h.
Basic techniques in cardiovascular and musculoskeletal physical fitness assessment, prescription of exercise for healthy adults and children, and individuals with chronic health conditions. Prerequisites: (HHP:2350 and HHP:3410) or HHP:4150 or HHP:4410.

HHP:4250 Human Pathophysiology 3 s.h.
In-depth study of human pathological processes and their effects on homeostasis; etiology, symptoms, and risk factors of various diseases; emphasis on major diseases impacting worldwide disability and death; how pathological processes are manifested and progress in the body. Prerequisites: HHP:2400 or HHP:3550.

HHP:4260 Respiratory Pathophysiology 3 s.h.
Structure and function of human respiratory system; focus on didactic and case study-based learning; control of breathing, gas exchange, lung mechanics, regulation of pulmonary blood flow, respiratory responses to stress; application of these physiological concepts to case studies of human disease. Prerequisites: HHP:2400 or HHP:3550. Recommendations: PHYS:1511, and MATH:1460 or MATH:1850.

HHP:4280 Applied Cultural Safety and Healthcare 3 s.h.
Introduction to philosophy and practice of cultural safety in healthcare; examination of how culture and cultural differences influence clinical interactions, healthcare services, and outcomes.

HHP:4290 Exercise Oncology 3 s.h.
Comprehensive understanding of how exercise can influence cancer development, treatment, and survivorship. Explore the latest research and practical applications in this emerging field. Prerequisites: (HHP:2100 or HHP:3115) and (HHP:2400 or HHP:3550). Recommendations: HHP:3400 or HHP:4410.

HHP:4300 Neurophysiology 3 s.h.
Exploring the fundamental physiological systems of the brain in detail with an emphasis on connecting these systems to neurological disorders. Prerequisites: HHP:3550. Requirements: anatomy or human physiology course.

HHP:4310 Sport and Exercise Nutrition 3 s.h.
The relationship between nutrition and sport and exercise performance; basic nutrition, physiology, chemistry, psychology, and food preparation as applied to sport and exercise training, competition, and recovery. Prerequisites: HHP:2100 and HHP:2200 and HHP:2310 and HHP:2400.

HHP:4320 Clinical Nutrition Interventions 3 s.h.
Combination of culinary arts and nutrition knowledge; exploration of evidence-based nutrition interventions, including dietary patterns and nutrition components relevant to the prevention and management of chronic diseases; hands-on, practical cooking skills; application of nutrition concepts through the preparation of healthy, whole food meals. Prerequisites: HHP:2310 and HHP:2400.

HHP:4330 Health Behavior Change 1,3 s.h.
Major determinants (barriers and facilitators) of physical activity and dietary behaviors; evidence-based behavior change techniques; application of behavior change techniques to improve physical activity and dietary behaviors at individual and organizational levels. Prerequisites: HHP:2200 and HHP:2310.

HHP:4365 Internship in Health Coaching 3 s.h.
Opportunity to develop and practice health coaching skills with clients engaged in community outreach programs; structured around coaching hours, project management, and training requiring a high level of professionalism. Prerequisites: HHP:4020 and HHP:3030.

HHP:4390 Understanding Human Disease 3 s.h.
Examination of human disease processes, including risk factors, changes occurring with disease, and their effect on homeostasis. Prerequisites: HHP:2400 or HHP:1400. Recommendations: junior or senior standing.

HHP:4400 Health Promotion Clinical Practicum 1 s.h.
Experience in planning and implementing clinical health promotion programs focusing on nutrition, physical fitness, cardiac rehabilitation, and respiratory rehabilitation. Prerequisites: HHP:3200 and (HHP:4200 or HHP:4010).

HHP:4410 Integrative Physiology of Exercise 3 s.h.
Evaluation of mechanisms underlying organ system responses and adaptations elicited by acute and chronic exercise, highlighting integrative nature of human physiological function, research methods, and classic and contemporary research findings in physiology of exercise. Prerequisites: HHP:3400 or HHP:3550.

HHP:4420 Planning and Evaluating Health Interventions 3 s.h.
Assessment, planning, implementation, and evaluation of health promotion programs. Prerequisites: HHP:3200 or TR:2160.

HHP:4440 Physiology of Nutrition 3 s.h.
Metabolic and biological aspects of human energy production, relationship to energy consumption; systems or integrative approach. Prerequisites: HHP:2400 or HHP:3550.

HHP:4450 Human Genetics and Disease 3-4 s.h.
Fundamental concepts of human genetics including genome organization, expression of genes, and pedigree analysis; emphasis on role of genetics in human health and disease. Prerequisites: HHP:2400 or HHP:3550.

HHP:4460 Cardiovascular Physiology 3 s.h.
Structure and function of cardiovascular system; heart, microcirculation, hemodynamics, regional circulation, reflex integration, regulation during physical stress. Prerequisites: HHP:3550. Recommendations: calculus and physics.

HHP:4470 Physiology of Aging 3 s.h.
Aging's effects on cells, tissues, and organs; how aging influences function of major body organ systems and the whole organism; physiological mechanisms that underlie age-related changes in body function and performance; integrative approach with focus on human aging. Prerequisites: HHP:3550. Same as ASP:4470.

HHP:4490 International Health: Experiential Learning 3 s.h.
Experiential learning in select health care settings and examining health outcomes outside of the United States.

HHP:4500 Undergraduate Independent Project arr.
Independent library or laboratory project related to a specific topic in health and human physiology, typically culminating with a written manuscript or conference/campus scientific presentation; provides an opportunity to apply learning as students develop and carry out a unique project while being mentored by a faculty member. Requirements: third- or fourth-year standing.

HHP:4510 Energetics in Health and Disease 3 s.h.
Comprehensive and molecular-driven approach to impairments in energetics (energy metabolism) leading to obesity, type 2 diabetes, and associated chronic diseases (e.g., cardiovascular diseases, cancer). In addition, mechanisms by which exercise and calorie restriction regimes may prevent and/or reverse those impairments in skeletal muscle, adipose tissue, liver, and heart will be discussed. Discussions of recent published and/or seminal, state-of-the-art papers on energetics related to obesity and diabetics as well as on the effects of exercise and diet interventions to prevent or treat those conditions. Prerequisites: HHP:3550. Recommendations: HHP:4410 and BIOL:2723.

HHP:4520 Clinical Pharmacology 3 s.h.
Basic understanding of drug use to modulate mechanisms underlying disease-related alterations in physiological functions; goal of improving health and/or minimizing the impact of diseases. Prerequisites: HHP:3550.

HHP:4700 Health and Human Physiology Teaching Internship 0-3 s.h.
Opportunity to serve as an undergraduate learning assistant in selected health and human physiology courses; learning assistants are generally expected to attend class or lab sessions for a specific course, engage with students in an intentional manner that supports their learning, and serve as a positive role model for their undergraduate peers; learning assistants receive training for development of interpersonal skills and facilitating collaborative learning environments, along with content-specific mentoring provided by course supervisor.

HHP:4800 Research Methods 3 s.h.
Introduction to concepts, principles, and methods of research; topics include research design, data collection, data analysis, and reporting research; students identify and formulate research questions, design appropriate research, collect data using different methods, conduct data analysis, present research findings, and critique research literature.

HHP:4900 Honors Research 3 s.h.
Introduction to concepts, principles, and methods of research; topics include research design, data collection, data analysis, reporting research, and critical critique of research literature. Prerequisites: HHP:3994 with a minimum grade of B or HHP:4500 with a minimum grade of B. Requirements: honors standing.

HHP:4910 Honors Research II 3 s.h.
Completion of honors research begun in HHP:4900; analysis of data; writing and oral presentation of honors thesis; work with a faculty member pursuing research in a laboratory and/or classroom outside of scheduled class time; second of a two-semester sequence. Prerequisites: HHP:4900 with a minimum grade of B.

HHP:4930 Health and Human Physiology Internship arr.
Experience in planning and implementing programs in areas of research, fitness, strength and conditioning, nutrition, clinical rehabilitation, health promotion, health education, community outreach, or medical training; students explore, experience, prepare, network, and build skills for academic or professional development.

HHP:5200 Physical Activity Epidemiology 3 s.h.
Overview of epidemiological evidence on how physical activity, sedentary behavior, and sleep affect health outcomes including cardiovascular disease, diabetes, cancer, and obesity; emphasis on research design, interpretation of studies, selection of appropriate measurement tools, and translating scientific findings to recommendations/policies for health promotion and disease prevention. Same as EPID:5250.

HHP:5935 Clinical Exercise Physiology Internship 1-6 s.h.
Directed practical field experience; program planning, implementation, evaluation, and administrative procedures.

HHP:6000 Research arr.

HHP:6020 Advanced Research Methods 1-3 s.h.
Introduction to concepts, principles, and methods of research; topics include research design, data collection, data analysis, and reporting research; students identify and formulate research questions, design appropriate research, collect data using different methods, conduct data analysis, present research findings, and critically critique research literature. Recommendations: concurrent enrollment in BIOS:5120 or STAT:6513.

HHP:6030 Advanced Health Behavior Change 3 s.h.
Major determinants (barriers and facilitators) of physical activity and dietary behaviors; evidence-based behavior change techniques; application of behavior change techniques to improve physical activity and dietary behaviors at the individual and organizational levels.

HHP:6130 Advanced Skeletal Muscle Physiology 1,3 s.h.
Investigation of the role of skeletal muscle in health and disease. Content includes skeletal muscle structure, contractile mechanisms, production of movement, energetics, adaptation to increased use and exercise, disuse, injury, pathologies, and therapeutic strategies. Prerequisites: HHP:3550.

HHP:6150 Advanced Clinical Exercise Physiology 1,3 s.h.
Recent advances in exercise physiology for clinical populations; emphasis on acute and chronic responses to exercise in healthy aged adults and in patients with cardiac, vascular, pulmonary, and metabolic diseases; basic and intermediate electrocardiography (ECG), pathophysiology of disease process, clinical assessment of disease severity, diagnostic testing, acute exercise responses, and exercise rehabilitation. Prerequisites: HHP:3400 or HHP:3550. Recommendations: HHP:4460.

HHP:6200 Advanced Metabolic Exercise Testing and Prescription 1,4 s.h.
Basic techniques in physical fitness assessment; prescription of exercise for healthy and unhealthy adults; promotion of physical activity within communities; knowledge and skill competencies required for certification as American College of Sports Medicine health fitness instructor. Prerequisites: HHP:2200 and HHP:2400.

HHP:6260 Advanced Respiratory Pathophysiology 1,3 s.h.
Complements HHP:4260; structure and function of human respiratory system; focus on didactic and case study based learning; control of breathing, gas exchange, lung mechanics, regulation of pulmonary blood flow, and respiratory responses to stress; application of these physiological concepts to case studies of human disease. Prerequisites: HHP:3550. Corequisites: HHP:4260.

HHP:6300 Motor Control Seminar 1 s.h.
Current topics in neural control of movement, biomechanics, and rehabilitation sciences.

HHP:6310 Advanced Sport and Exercise Nutrition 3 s.h.
Relationship between nutrition and dietetics and sport and exercise performance; application of nutrition, dietetics, physiology, chemistry, psychology, and food preparation to sport and exercise training and performance. Requirements: MCN graduate standing.

HHP:6400 Integrative Physiology Seminar 1 s.h.
Current topics in cardiovascular physiology, vascular biology, free radical biology.

HHP:6410 Advanced Integrative Physiology of Exercise 1,3 s.h.
Evaluation of mechanisms underlying organ system responses and adaptations elicited by acute and chronic exercise; integrative nature of human physiological function, research methods, and classic and contemporary research findings in physiology of exercise. Prerequisites: (HHP:3400 or HHP:3550) and HHP:4410.

HHP:6460 Advanced Cardiovascular Physiology 1,3 s.h.
Structure and function of cardiovascular system; heart, microcirculation, hemodynamics, regional circulation, reflex integration, and regulation during physical stress. Prerequisites: HHP:3550. Recommendations: calculus and physics.

HHP:6470 Advanced Physiology of Aging 1,3 s.h.
Effects of aging on cells, tissues, and organs; how aging influences function of major body organ systems and the whole organism; physiological mechanisms that underlie age-related changes in body function and performance; integrative approach with focus on human aging. Prerequisites: HHP:2100 and (HHP:2400 or HHP:3550).

HHP:6500 Seminar in Health Promotion 1 s.h.
Peer and faculty response to graduate student work addressing health promotion, physical activity and health outcomes, clinical exercise physiology; review and critique current literature; presentation of published work or in-process projects; critical thinking, scientific writing, and oral communication skill development pertaining to health promotion.

HHP:6510 Advanced Energetics in Health and Disease 1,3 s.h.
Comprehensive and molecular-drive approach to impairments in energetics (energy metabolism) leading to obesity, type 2 diabetes, and associated chronic diseases (e.g., cardiovascular diseases, cancer). In addition, mechanisms by which exercise and calorie restriction regimes may prevent and/or reverse those impairments in skeletal muscle, adipose tissue, liver, and heart will be discussed. Discussions of recent published and/or seminal, state-of-the-art papers on energetics related to obesity and diabetes, and the effects of exercise and diet interventions to prevent or treat those conditions. Prerequisites: HHP:3550. Recommendations: HHP:4410 and BIOL:2723.

HHP:6600 Professional Skills for Graduate Students Seminar 1 s.h.
Preparation for careers in academic biomedical research, scientific positions in industry, teaching, or other scientific careers.

HHP:7000 Practicum in College Teaching arr.

HHP:7300 Advanced Sensorimotor Neurophysiology **1,3 s.h.**
Neuroanatomical and neurophysiological bases of human motor control; mechanisms for locomotion and posture, control of arm and hand movements, role of sensory information. Prerequisites: HHP:3550. Requirements: anatomy or human physiology course.

HHP:7500 Thesis: MS **0-4 s.h.**

HHP:7900 Thesis: PhD **arr.**