

Health and Human Physiology Courses (HHP)

HHP Courses

This is a list of courses with the subject code HHP. For more information, see Health 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:1045 Diversity and Inclusion in Healthy Living 3 s.h.

Personal health strategies; information and empowerment; application-based work, including creating a family health pedigree or individual health portfolio; discussion of current health ethics topics; subjects may include nutrition, sleep, stress, physical fitness, relationships, injury prevention, prenatal health, vaccination, cancer, infectious diseases, global health, and more. GE: Diversity and Inclusion.

HHP:1050 Exploring Health and Human Physiology 1 s.h.

Introduction to different ways of thinking within the fields of physiology, health, exercise, and medicine; exploration of quantitative reasoning, evidence-based reasoning, the scientific method, analytical reasoning and data literacy, ethical reasoning, importance of diversity and inclusion, and creative applications.

HHP:1100 Human Anatomy 3 s.h.

General human anatomy covering most systems of the body. GE: Natural Sciences without Lab.

HHP:1110 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:1100 or HHP:3105 or HHP:1400, if not taken as a prerequisite. GE: Natural Sciences Lab only.

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:1300 Fundamentals of Human Physiology 3 s.h.

Introduction to function and regulation of the human body. Recommendations: high school chemistry and basic biology. GE: Natural Sciences without Lab.

HHP:1310 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. Recommendations: one semester of biology.

HHP:1400 Human Anatomy and Physiology 3 s.h.

General human anatomy and physiology covering most systems of the body. 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:2130 Human Development Through the Life Span 3 s.h.

Overview of human developmental theories across the life-span; aspects of cognitive, physical, and personality 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:1300 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. GE: Values and Culture.

HHP:2280 Cultural Competency and Health 3 s.h.

Examination of the importance of ethnic and cultural factors for community health practice; essential theories, models, and practices for working with race, ethnicity, gender, and social issues; topics may include demographics, disparities, complementary and alternative medicine, spiritually grounded approaches, multicultural populations, communication, workforce, aging, sexual orientation, and future challenges. GE: Diversity and Inclusion.

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.

Principles of biomechanics, kinesiology, and anatomy; quantitative aspects of sport and physical activity; emphasis on developing a qualitative grasp on mechanical principles of human movement within sports and physical activity; how to apply these principles in a sport/exercise environment. Prerequisites: HHP:1100.

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.

People's thoughts, feelings, and behaviors in physical activity contexts; psychological theory and research related to benefits and determinants of physical activity, models for involvement in physical activity, and theories of change; focus on cognitive and social psychological perspectives. Prerequisites: HHP:2200.

HHP:3050 Obesity 3 s.h.

In-depth overview of biological, behavioral, and societal causes and consequences of obesity epidemic; potential solutions from primary and secondary prevention standpoints; causes of obesity, available treatments, and global impact that obesity epidemic presents to society. 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.

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.

HHP:3115 Anatomy for Human Physiology with Lab 5 s.h.

Covers all major systems of the body in a combined lecture and laboratory anatomy course; focus on normal structure of the human body; laboratory includes gross anatomy of some human structures and dissection of other mammalian specimen; 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: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:3230 Psychopharmacology 3 s.h.

How drugs act to influence behavior; general principles of drug action on the nervous system; licit and illicit drugs, use/abuse, historical perspective on drug use. Prerequisites: PSY:2811 with a minimum grade of C- or (HHP:1300 with a minimum grade of C- or HHP:1350 with a minimum grade of C- or HHP:3500 with a minimum grade of C- or HHP:3550 with a minimum grade of C-). Same as PSY:3230.

HHP:3300 Human Growth and Motor Development 3 s.h.

Human growth and biological maturation; focus on motor development from birth through puberty. Recommendations: prior course in anatomy, human physiology, or biology.

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:1300 or HHP:3500.

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 and HHP:1100 and HHP:1300.

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:3500 or HHP:3550.

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:1300 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; experiential laboratory activities that incorporate fundamental measurements of human function and analysis, interpretation, and presentation of experimental findings. Prerequisites: (HHP:1300 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:3500. 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 skill development; students work with local worksites to deliver a wellness program, conduct a well-being assessment, develop and implement a behavior change intervention, deliver education, and evaluate outcomes in a professional context; utilization of skills in marketing, design, presentation, and cultivating connections. Prerequisites: HHP:2200 and HHP:2310 and HHP:1100 and HHP:1300.

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 communication specific to health sciences; planning, drafting, revising, and peer-editing materials (e.g., personal statements, professional communications, general articles of interest, scientific papers); practicum experience.

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.

Independent laboratory research in health, human physiology, or related science fields.

HHP:4010 Behavioral and Clinical Health Assessment Laboratory 4 s.h.

Expected assessment skill set for health promotion professionals, including 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 report, interview, and web-based trackers to assess diet, physical activity, and sleep; general measurement and research concepts will be introduced and students will have laboratory practice in sphygmomanometry, spirometry, anthropometry, accelerometry, sleep tracking, computerized dietary assessments, and graded exercise testing. Prerequisites: HHP:2200 and HHP:2310 and HHP:1100 and HHP:1300.

HHP:4020 Health Coaching 3 s.h.

Health coaches use coaching skills to help patients better manage a variety of chronic medical conditions (e.g., metabolic syndrome, diabetes, chronic pain); exploration of the science of health coaching, including evidence-based strategies and approaches to facilitate behavior change; students explore multiple modalities of coaching and build skills in motivational interviewing, goal setting, and active listening; knowledge and skills needed to perform tasks required of a competent coach. Prerequisites: HHP:2200 and HHP:2310.

HHP:4030 Social Determinants of Health 3 s.h.

How health is determined by access to social and economic opportunities (e.g., quality of our schools, safety of neighborhoods, and quality of our social interactions); policy, environmental, and social factors that influence health; how collaboration among federal, state, and local-level partners can improve health; goals and objectives of Healthy People 2020 (U.S. Federal Health Promotion Planning Guide) will be used to frame course material. 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.

HHP:4130 Skeletal Muscle Physiology 3 s.h.

Skeletal muscle structure, contractile mechanisms, production of movement, biomechanical properties; adaptation to increased use, disuse, injury. Prerequisites: HHP:3500 or 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:3500 or HHP:3550 or HHP:3400. 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:3500 or HHP:1300.

HHP:4200 Metabolic Exercise Testing and Prescription 4 s.h.

Basic techniques in physical fitness assessment, prescription of exercise for healthy and unhealthy adults, promotion of physical activity within communities; provides knowledge and skill competencies required for certification as American College of Sports Medicine health fitness instructor. Prerequisites: HHP:2200 and (HHP:3400 or HHP:3500 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:2200 and (HHP:3400 or HHP:3500 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:1100 or HHP:3105 or HHP:3115) and (PHYS:1400 or PHYS:1511 or PHYS:1611 or HHP:2350).

HHP:4230 Motor Learning: Theory and Application 3 s.h.

How skilled motor behavior is acquired; behavioral changes that occur during skill acquisition; structural and physiological changes that occur in central nervous system; principles of training and practice that yield efficient and effective motor learning; how this information is helpful to health professionals involved in motor rehabilitation, physical educators and coaches, music instructors and musicians, strength and conditioning professionals, fitness professionals, and athletes, among others. Prerequisites: HHP:1300. Recommendations: familiarity with basic neuroscience (neurons, synaptic transmission, basic anatomical organization of sensory and motor systems).

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:3500 or HHP:3550 or HHP:1300.

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:1300 or HHP:3500 or HHP:3550. Recommendations: PHYS:1511, and MATH:1460 or MATH:1850.

HHP:4300 Sensorimotor Neurophysiology 3 s.h.

Neuroanatomical and neurophysiological bases of human motor control; role of sensory and motor structures in control of posture, locomotion, and upper limb movements. Prerequisites: HHP:3500 or HHP:3550. Requirements: anatomy or human physiology course.

HHP:4310 Sport and Exercise Nutrition 3 s.h.

Relationship between nutrition, fitness and sport performance; basic nutrition, physiology, chemistry, psychology, food preparation. Prerequisites: HHP:2200 and HHP:2310.

HHP:4320 Nutrition Interventions 3 s.h.

Strategies that assist in assessment and evaluation of nutrition behaviors of individuals and groups; interventions to meet nutritional needs of individuals and groups with a variety of health issues. Prerequisites: HHP:2200 and HHP:2310.

HHP:4330 Physical Activity and Dietary 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:3050.

HHP:4350 Health and Human Physiology Practicum 1-3 s.h.

Experience in planning and implementing programs in the areas of fitness, strength and conditioning, nutrition, clinical rehabilitation, or health promotion. Prerequisites: HHP:1100 and HHP:2200 and HHP:2310 and (HHP:1300 or HHP:3500).

HHP:4365 Internship in Health Coaching 3 s.h.

Opportunity to develop and practice health coaching skills with community outreach programs, may include community health collaborative clinical health coaching, community behavioral health programs, and research studies engaging health coaches in intervention; students complete up to 45 hours of coaching in addition to project management, training, and internship development requiring a high level of professionalism. Prerequisites: HHP:4020.

HHP:4390 Understanding Human Disease 3 s.h.

Introduction to process of human disease at cell, organ, and whole body level throughout the lifespan; pathophysiological changes occurring with disease, including risk factors, disease development, and overall effects of disease on the body; cancer, diabetes, obesity, cardiovascular, neurodegenerative diseases, and aging. Prerequisites: HHP:1300 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:4405 Health Promotion Community and Worksite Practicum 1 s.h.

Planning and implementing community and worksite health promotion programs. 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:3500 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.

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:1300 or HHP:3500 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:3500 or HHP:3550 or HHP:1300.

- 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:3500 or HHP:3550. Recommendations: calculus and physics.
- HHP:4465 Environmental Exercise Physiology** 3 s.h.
Study of physiological responses of the human organism to various forms of environmental stress at rest and during exercise; how physical performance is affected by environmental stressors such as heat, cold, altitude, microgravity, and hyperbaria. Prerequisites: HHP:3400 or HHP:3500 or HHP:3550.
- 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:3500 or HHP:3550. Same as ASP:4470.
- HHP:4490 International Medicine: Experiential Learning** 3 s.h.
Experiential learning in select health care settings outside of the United States; for pre-health professional students.
- HHP:4500 Undergraduate Independent Study** arr.
Library or laboratory research related to a specific topic in human physiology, normally culminating with a written manuscript; work directed by a faculty member.
- HHP:4510 Energetics in Health and Disease** 3 s.h.
Comprehensive and molecular driven approach to: impairments in energy metabolism leading to obesity; type 2 diabetes and associated chronic diseases (e.g., cardiovascular diseases, cancer); and mechanisms by which exercise and calorie restriction regimens may prevent and/or reverse those impairments in skeletal muscle, adipose tissue, liver, and heart. Prerequisites: HHP:3500 or HHP:3550. Recommendations: HHP:4410 and BIOL:2723.
- HHP:4700 Health and Human Physiology Teaching Internship** 2-3 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 and Ethics** 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; main ethical issues and professional conduct in scientific research. Requirements: honors standing.
- HHP:4900 Honors Research** 3 s.h.
Completion of honors research begun in HHP:4800; analysis of data, writing and oral presentation of honors thesis, work with an active research tenure-track faculty member in a laboratory; second of a two-semester sequence. Prerequisites: HHP:4800 with a minimum grade of B. Requirements: honors standing.
- 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.
- HHP:5300 Advanced Human Physiology** 3 s.h.
Provides an advanced study of human physiology for students entering health related fields; mechanisms of body function will be presented at various levels ranging from cellular and molecular, to tissue and organ system levels, with emphasis on integration of the various systems. Offered spring semesters. Prerequisites: HHP:1100 and HHP:3500.
- 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:6010 Nonthesis Seminar** 2 s.h.
For candidates for the MS without thesis. Offered spring semesters.
- HHP:6020 Advanced Research Methods and Ethics** 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; main ethical issues and professional conduct in scientific research. Recommendations: concurrent enrollment in BIOS:5120 or STAT:6513.
- HHP:6030 Physical Activity and Dietary 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:6100 Health and Human Physiology Seminar** 0 s.h.
Biweekly forum for research presentations by health and human physiology faculty and graduate students, and by invited guest speakers; attended by health and human physiology faculty and students, and by faculty and guests from other departments and programs on campus.

HHP:6130 Advanced Skeletal Muscle Physiology 1,3 s.h.

Skeletal muscle structure, contractile mechanisms, production of movement, biomechanical properties; adaptation to increased use, disuse, injury. Prerequisites: HHP:3500.

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:3500. 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:1300 or HHP:3500).

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:3500. 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.

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:3500. 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:1100 and HHP:3500.

HHP:6480 Advanced Human Pharmacology**1,3 s.h.**

General pharmacology (administration, distribution, elimination of drugs, dose response curves, adverse effects, placebos, homeopathy); pharmacotherapy of selected human diseases, pathophysiologic aspects of disease, how different classes of drugs modify pathophysiologic effects to restore health or reduce impact of disease; focus on mechanisms of drug actions in humans; adverse effects, pharmacokinetic considerations, drug interactions; how to write prescriptions. Prerequisites: HHP:3500.

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.**

Discussions of recent published, and/or seminal, state-of-the-art papers on energy metabolism related to exercise and diet interventions in context of obesity, diabetes, cardiovascular diseases, and cancer. Prerequisites: HHP:3500. Recommendations: HHP:4410 and BIOL:2723.

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:3500 or HHP:3550. Requirements: anatomy or human physiology course.

HHP:7500 Thesis: MS**0-4 s.h.****HHP:7900 Thesis: PhD****arr.**