

# HES-HEALTH AND EXERCISE SCIENCE

- HES 1011 Indoor Cycling 1 Credit Hour**  
Designed to teach specific skills of indoor cycling and form. Indoor cycling is a form of exercise with classes focusing on cardiovascular endurance, strength, intervals, sprints, hills, lifts and recovery, and involves using a special stationary exercise bicycle. Individuals will learn the fundamentals of indoor cycling, skills and techniques, as well as accurate terms and etiquette. (F, Sp)
- HES 1041 Yoga 1 Credit Hour**  
Yoga. Beginning Level Yoga Class Focusing On Basic Asanas (Poses), Breathing, Relaxation And Meditation. Students Will Improve Their Flexibility And Body Awareness. (F,Sp,Su).
- HES 1121 Beginning Weight Training 1 Credit Hour**  
To learn basic skills of weight training, i.e., warm-up, lifting techniques, training programs, etc.; to condition and strengthen the body through a continuous weight training program; to learn and appreciate the ability of correct weight training to enhance personal fitness and the carry-over value into other sports and activities. (F, Sp, Su)
- HES 1221 Individual Fitness 1 Credit Hour**  
May be repeated; maximum credit eight hours. Exercise designed to condition the body for maximum health and fitness; special emphasis on cardiovascular fitness. (F, Sp, Su)
- HES 1321 Wall Climbing 1 Credit Hour**  
The purpose of this class is to learn and practice the basic techniques and safety concerns for rock climbing and bouldering. (F, Sp, Su)
- HES 1331 Roller Skating 1 Credit Hour**  
The course is designed to develop a working knowledge of roller skating fundamentals and their application. Promotes knowledge and awareness of popular sports involving roller skating, and students will increase strength, stamina, balance and coordination. (F, Sp)
- HES 1351 Recreational Activities 1 Credit Hour**  
May be repeated with change of subject matter; maximum credit three hours. (F, Sp, Su)
- HES 1823 Scientific Principles of Health and Disease 3 Credit Hours**  
Students will be exposed to the basic science-based principles needed to develop an interdisciplinary understanding of human health. The course is designed to assist students in the development of a basic understanding of the anatomical structures and physiological process that are critical to understanding the development of various diseased/disorders. (F, Sp, Su) [II-NS].
- HES 1921 Basketball 1 Credit Hour**  
Teach a basic understanding of the game of basketball; skills and analysis of skills, nature and rules of the game, and strategies for game situations. (F, Sp, Su)
- HES 1941 Soccer 1 Credit Hour**  
Teach a basic understanding of the game of soccer; skills and analysis of skills, nature and rules of the game, and strategies in game situations. (F, Sp)
- HES 1981 Volleyball 1 Credit Hour**  
Basic understanding of the game of volleyball; skills and analysis of skills, nature and rules of the game, and strategies for game situations. (F, Sp, Su)
- HES 2131 Introduction to Health and Exercise Science 1 Credit Hour**  
Designed to introduce major students to the fundamentals of HES, including curricular disciplines, basic terminology, career opportunities, and professional associations. Students will also learn basic library research skills and a working knowledge of the support services and technologies available at the University. (F, Sp)
- HES 2212 First Aid 2 Credit Hours**  
Includes the theory related to causes and prevention of accidents, as well as development of sufficient knowledge to determine the nature and extent of injuries. Training focuses on taking proper procedural steps at the proper times. Upon successful completion of the course and its specific requirements, students are awarded the American Red Cross Community First Aid and CPR Certificates. Lecture and laboratory combined. May include online components. (F, Sp, Su)
- HES 2823 Introductory Nutrition 3 Credit Hours**  
(Crosslisted with CLINICAL DIETETICS - AN HSC COURSE 2823)  
Evaluation of basic composition of nutrients and accessory factors required for adequate human nutrition. Application of nutritional principles to the planning of normal and special dietary regimen. [II-NS].
- HES 2913 Personal Health 3 Credit Hours**  
Emphasizes the health knowledge and practices needed for effective living. The course has a holistic focus on personal health and provides both an informational and behavioral basis for health promotion and disease prevention. Topics include: mental health, stress management; fitness; nutrition; alcohol, tobacco, and other drug education; sexuality; and chronic/infectious disease. (F, Sp)
- HES 2970 Special Topics/Seminar 1-3 Credit Hours**  
1 to 3 hours. Prerequisite: May be repeated; Maximum credit nine hours. Special topics course for content not currently offered in regularly scheduled courses. May include library and/or laboratory research, and field projects. (Irreg.)
- HES 3000 Special Topics in Health and Exercise Science 1-3 Credit Hours**  
1 to 3 hours. Prerequisite: junior standing or permission of instructor. May be repeated with change of content; maximum credit nine hours. Topics in health and exercise science not accommodated by the existing curriculum. Example: psychological factors in exercise adherence, i.e., personality traits of select exercise individuals, reinforcement procedures, personal goals as related to exercise needs, etc. (Irreg.)
- HES 3021 Sports Officiating: Football and Volleyball 1 Credit Hour**  
Prerequisite: ENGL 1213 or EXPO 1213. Standards and principles involved in the art of officiating with emphasis on football and volleyball. Laboratory experience required. (F)
- HES 3031 Sports Officiating: Basketball, Softball, and Baseball 1 Credit Hour**  
Prerequisite: English 1213 or Expository Writing 1213. Standards and principles involved in the art of officiating with emphasis on basketball, softball, baseball, and track and field. (Sp)
- HES 3213 Principles and Practice of Sport Management for Non-HES Majors 3 Credit Hours**  
Prerequisite: Non-HES major and junior standing. Survey course covering fundamental management functions, structural components of sport organizations, management and leadership techniques commonly employed in effective sport organizations, human resource management strategies, and current trends in sport management. (F, Sp, Su)

**HES 3430 Field Experiences in Health and Exercise Science****1-4 Credit Hours**

1 to 4 hours. Prerequisite: junior standing or permission of department. May be repeated with change of activity or advanced position; maximum credit four hours. Field study related to student's area of interest (athletic coaching, athletic training, exercise science, health promotion, sport management) as approved by the department's field supervisor of adviser. A contract is required prior to beginning the field experience. The contract will address: statement of purpose, process of submitting reports, on-site evaluations, and written evaluations by student and site supervisor. (F, Sp, Su)

**HES 3440 Mentored Research Experience****3 Credit Hours**

0 to 3 hours. Prerequisites: ENGL 1113 or equivalent, and permission of instructor. May be repeated; maximum credit 12 hours. For the inquisitive student to apply the scholarly processes of the discipline to a research or creative project under the mentorship of a faculty member. Student and instructor should complete an Undergraduate Research & Creative Projects (URCP) Mentoring Agreement and file it with the URCP office. Not for honors credit. (F, Sp, Su)

**HES 3502 Care and Prevention of Athletic Injuries****2 Credit Hours**

Prerequisite: HES 2212 or equivalent CPR/AED/First Aid certification; three hours of biological science and three credit hours of social science. Recognition, cause, prevention, treatment, rehabilitation of athletic injuries; taping methods, protective equipment, and doctor's recommendations; equipping the training room, conditioning the athlete, practice routines and the athlete's diet. Laboratory (F, Sp)

**HES 3513 Health Promotion Program Planning****3 Credit Hours**

Prerequisite: HES major or permission of instructor. Discussion of health promotion programming in disease prevention, risk reduction, and wellness. Understanding the theoretical issues related to the development and evaluation of health promotion programs and the behavioral dimensions of health promotion. (F, Sp)

**HES 3523 Human Sexuality****3 Credit Hours**

Prerequisite: 2913, Psychology 1113. An introduction to biological, psychological, and sociological concepts which form the interdisciplinary foundation for studying human sexuality. Current research findings in all areas will be emphasized. Areas of emphasis will include: personal, social, sexual, and gender identity development across the lifespan, interaction and communication within social and intimate relationships, and reproductive and other health-related sexuality issues. (F, Sp)

**HES 3543 Health and Wellness Coaching****3 Credit Hours**

Prerequisite: junior standing and HES 2913. Encourages participants to successfully adopt healthier lifestyle behavior. Explores the development and efficacy of health and wellness coaching and develops the ability to implement basic coaching skills when working with patients and wellness clients. (Sp)

**HES 3553 Wellness in Native Communities****3 Credit Hours**

Prerequisite: junior standing and HES 1823 or HES 2913. Designed to explore and understand the principles of individual and community wellness from the perspective of both mainstream society and from within the cultural frame of native beliefs and values. (F)

**HES 3563 Lifestyle Intervention****3 Credit Hours**

Prerequisite: HES major or permission. Examines the relationship between individual behavior and the health status of a community. Current lifestyle intervention literature will be the focus. Application of intervention strategies will be presented for school, worksite, and community settings. (Irreg.)

**HES 3573 Obesity and Weight Management****3 Credit Hours**

Prerequisite: junior standing and HES 2913 and either HES 1823 or BIOL 2124. Provides students with knowledge of the physiology and psychology of obesity and overweight. Designed to educate students not only on the scientific background of obesity but how to apply this knowledge to management of obesity in the general and specific populations they will be serving. (F)

**HES 3583 Sociocultural Aspects of Health****3 Credit Hours**

Prerequisite: junior standing. Designed to offer a comprehensive approach to understanding social injustice and its impact on health. Particular attention will be given to research emphasizing social determinants as the underlying causes of ill health in the American society. (F, Sp)

**HES 3813 Principles of Health and Fitness****3 Credit Hours**

Prerequisite: HES major or permission of instructor. Study of the underlying principles of life sciences that contribute to an understanding of the role of physical activity in health, fitness, and sports medicine. Specific reference to an overview of public health and disease, anatomy and biomechanics, exercise physiology, health appraisal and fitness testing and programming, human development and behavior, and program management. Laboratory (F, Sp, Su)

**HES 3823 Physiology of Exercise****3 Credit Hours**

Prerequisite: 3813 and Health and Exercise Science major or permission of instructor. Introductory study of principles and concepts of exercise physiology. Theoretical and scientifically established mechanisms are explored that explain the body's response, adaptation, and concomitant regulation during acute and chronic exercise. Applications presented in the clinical, sport, occupational, and normal exercise settings. Focus is on an understanding of the body's function from the cellular to systemic level during exercise. An understanding of assessment and physical training principles to explain health and performance is emphasized. Specific factors that affect the physiological bases of human performance are investigated. (Irreg.)

**HES 3843 Biomechanics****3 Credit Hours**

Prerequisite: MATH 1523 or MATH 1743 or PHYS 2414, and BIOL 2255 or BIOL 2234, and junior standing. The integrated study of anatomy, physiology, and mechanics with emphasis on understanding the anatomical and functional aspects of human movement in the area of health and exercise science, such as in clinical, daily living, and sport applications. (F, Sp)

**HES 3853 Exercise Testing and Prescription****3 Credit Hours**

Prerequisite: HES 3813 and Health and Exercise Science major or permission of instructor. Introduces the exercise science student to the theoretical and functional techniques of graded exercise testing for functional and/or diagnostic assessment. Equal time will be spent between lecture and lab as students will be provided the theoretical background for all testing methods commonly used in both a health and fitness scenario as well as an introduction to how these methods can be used clinically. This course is designed to prepare exercise science students for the American College of Sports Medicine's Health/Fitness Instruction Certification. Laboratory (F, Sp)

**HES 3873 Principles of Personal Training****3 Credit Hours**

Prerequisite: junior standing. Designed to prepare individuals who are interested in becoming certified personal trainers (CPT) through the National Strength and Conditioning Association. Instruction is provided describing basic exercise physiology as well as the principles of developing a personal training regimen for a typical gym trainee. Course experiences will reinforce training principles and teach the basic skills necessary for certification. (F, Sp)

- HES 3883 Principles of Endurance Training 3 Credit Hours**  
Prerequisite: BIOL 2124 and BIOL 2255 or 2234 with a grade of C or better, and junior standing. Emphasis will be placed on understanding physiology related to endurance performance and principles of endurance training. Performance testing procedures for predicting endurance performance will be conducted throughout the semester. In addition, it will be required that an endurance training program utilizing the information covered in class will be designed. (F, Sp)
- HES 3893 Facts and Fallacies of Exercise and Nutrition 3 Credit Hours**  
Prerequisite: Non-majors only and English 1213 or Expository Writing 1213. Provides meaningful and practical guidelines on how to recognize and dispel many of today's popular myths regarding exercise and nutrition. Course concepts will emphasize the proper use of scientific evidence to either dispel current topics as fallacy or confirm as fact. Sample current topics may include fads, infomercial products, weight loss, aerobic exercise, resistance exercise, dietary supplements, and exercise/sport nutrition, along with the effect of media and advertising and marketing plays on these topics. (Irreg.)
- HES 3960 Honors Reading 1-3 Credit Hours**  
1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Study of current research developments in health and sport sciences. An opportunity for the Honors' candidate to work with a faculty mentor on a research project of special interest to the student in the health and sport sciences. (F, Sp, Su)
- HES 3970 Honors Seminar 1-3 Credit Hours**  
1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. An opportunity for the Honors' candidate to work with a faculty mentor on a research project of special interest to the student. (F, Sp, Su)
- HES 3980 Honors Research 1-3 Credit Hours**  
1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Will provide an opportunity for the gifted Honors candidate to work at a special project in the student's field. (F, Sp, Su)
- HES 3990 Independent Study 1-3 Credit Hours**  
1 to 3 hours. Prerequisite: one course in general area to be studied; permission of instructor and department. May be repeated; maximum credit six hours. Contracted independent study for topic not currently offered in regularly scheduled courses. Independent study may include library and/or laboratory research and field projects. (F, Sp, Su)
- HES 4213 Management in Health and Exercise Science 3 Credit Hours**  
Prerequisite: junior standing. Concentration on the following course topics: defining facility types, management and employees, facility systems, equipment and maintenance, programming and targeting audience, for profit – not for profit, marketing and sales, finance, budgeting and funding sources, legal responsibilities, safety and quality control. Class will regularly visit a wide range of health clubs, sports facilities, fitness, golf and recreational environments. (Irreg.)
- HES 4273 Sport Finance 3 Credit Hours**  
Prerequisite: HES 3213 or ACCT 2113 or permission of instructor. Discussion and study of methods and techniques for funding sport programs, professional and amateur sports. Topics include financial challenges faced by sport organizations and the garnering of resources from the public sector, external sources, and enterprise activity. Emphasis will be placed on present valuations, financial risk management, the capital budgeting process, and exercising sound financial decision-making. (Sp)
- HES 4283 Sports Economics and Policy 3 Credit Hours**  
Prerequisite: HES 3213 or ECON 1123. Analyzes the unique features of the sport industry relative to the principles of economics. Sport is one of the top twenty industries in the United States, with over eighty billion consumer dollars being spent on an annual basis. Students will review the basics of economic theory and apply these principles to the management decisions of modern and global sport organizations. Emphasis will also be placed on the economic aspects of public finance for sport facility construction and other forms of subsidization within the sports industry. In addition, important current economic issues will be discussed as they relate to the governance of professional sports leagues and intercollegiate athletics. (F, Sp)
- HES 4430 Internship in Health and Exercise Science 1-4 Credit Hours**  
1 to 4 hours. Prerequisite: HES major and nine credit hours of HES major core, and departmental permission. May be repeated; maximum credit 4 hours. Practical experience in administration, techniques, organizational structure and appropriate materials used with health, fitness or sport-related occupations. (F, Sp, Su)
- HES 4503 Principles of Community Health 3 Credit Hours**  
Prerequisite: Health and Exercise Science major or permission of instructor. Examines the importance of maintaining, protecting, and improving the health of people through organized community efforts. Basic concepts in community health and a review of the historical foundations of community health will be presented. (F, Sp)
- HES 4513 Public Policy Impact on Health Promotion 3 Credit Hours**  
Prerequisite: junior standing and HES 1823 or HES 2913. As health promotion becomes more popular in the workplace, many organizations are struggling with existing and new regulations that help guide and ensure that compliant programs are being created. Examines existing policies and new policies that will have an impact on the delivery of health promotion programs. Topics include, but are not limited to, Healthy People 2020, CDC, State of Oklahoma Health Department, and Economic Theories on Wellness, Health Care Reform Impact and Tobacco Free Policies. (F, Sp, Su)
- HES 4523 Human Sexuality II 3 Credit Hours**  
Prerequisite: 3523 or permission. In-depth study of human sexuality from a biopsychosocial perspective which emphasizes the roles of biology, psychological factors, and social learning. Area studies will include sexual and gender development across the life span; interaction and communication within intimate relationships; reproductive and health-related sexuality topics; and a historical look at the evolution of mating and love relationships. In addition, students will examine the integration of human sexuality issues and education in health-related occupations. (Irreg.)
- HES 4543 Comprehensive Stress Management 3 Credit Hours**  
Prerequisite: BIOL 2234 or BIOL 2255 and BIOL 2124 and a course in Psychology. Helps students gain an awareness of stress and its effects, practice management techniques to reduce personal stress, and implement those techniques in their daily lives as well as the lives of others (school, community, corporation, etc.). Topics include: psychophysiology of stress, stress and disease, nutrition, personal planning and time management, cognitive restructuring, relaxation, and biofeedback. (Irreg.)
- HES 4573 Chronic Disease Intervention 3 Credit Hours**  
Prerequisite: Health and Exercise Science major or permission of instructor. Provides a basic understanding of disease process in selected chronic diseases and intervention strategies for risk reduction and chronic disease prevention. Basic principles of epidemiology and chronic disease surveillance will also be covered. (Irreg.)

- HES 4823 Sport and Exercise Nutrition 3 Credit Hours**  
Prerequisite: junior standing, HES 2823 and CHEM 1315. Provides a basic understanding of the influence of nutrition on sport and exercise performance. Requires students to integrate their knowledge of nutritional physiology, biochemistry and intermediary metabolism with that of exercise physiology and to apply this knowledge to develop a critical understanding of the nutritional and practical dietary needs of individuals participating in sport and exercise. (F, Sp)
- HES 4833 Physiology of Exercise Laboratory 3 Credit Hours**  
Prerequisite: HES Major and HES 3813 or permission of instructor. Laboratory experiments emphasizing the understanding of fundamental physiological mechanisms, regulating responses, and adaptation to exercise. Basic analytical methodologies pertaining to the energy, muscular and cardiorespiratory systems. Includes factors affecting physiological performance capacities and experimental basis of exercise assessment and training. Laboratory (F, Sp)
- HES 4863 Physical Activity and Aging 3 Credit Hours**  
Prerequisite: permission of instructor. Discussion of general concepts of aging and the issues related to dying, the expected changes related to aging in the various physiological systems, i.e., body composition, cardiovascular, bone, and skeletal muscle. In addition, exercise programming concerns for the aged as well as the possible benefits of exercise during aging will be discussed. (Irreg.)
- HES 4883 Advanced Strength and Conditioning 3 Credit Hours**  
Prerequisite: BIOL 2124, and BIOL 2255 or 2234 with a grade of C or better, and junior standing. Advances knowledge of strength and conditioning concepts in an applied setting. Prepares students to confidently and specifically design strength and conditioning programs for all populations including athletes, elderly and children, as well as to successfully demonstrate and teach all lifts and conditioning drills. (F, Sp)
- HES 4933 Drug Education 3 Credit Hours**  
Prerequisite: 2913. Beneficial and harmful uses and effects of drugs. Motivations behind drug abuse, especially among youth, and implications of this problem on the individual, school and society. Consideration given to legislative and educational efforts. Investigation of interpersonal skills and communication interaction techniques. The use of values-clarification techniques. (Irreg.)
- HES 4953 Senior Capstone 3 Credit Hours**  
Prerequisite: Health and Exercise Science major, senior standing and permission of instructor. An integration and synthesis of the major disciplines of study in the health and exercise science. Readings, discussions and research methods will focus on applications and problem solving approaches related to contemporary policy, economic, social and ethical issues. (F, Sp) [V].
- HES 4960 Directed Readings 1-4 Credit Hours**  
1 to 4 hours. Prerequisite: good standing in University; permission of instructor and dean. May be repeated; maximum credit four hours. Designed for upper-division students who need opportunity to study a specific problem in greater depth than formal course content permits. (Irreg.)
- HES 4970 Special Topics/Seminar 1-3 Credit Hours**  
1 to 3 hours. Prerequisite: Senior standing or permission of instructor. May be repeated; maximum credit nine hours. Special topics or seminar course for content not currently offered in regularly scheduled courses. May include library and/or laboratory research and field projects. (Irreg.)
- HES 4973 Mediterranean Diet & Culture 3 Credit Hours**  
Prerequisite: Application and acceptance to this specific study abroad program through OU Education Abroad. Taught on the OU-Arezzo campus. Students will experience the culture of Tuscany, including the eating habits of people from the region. Students will tour farms and food production facilities for ham, cheese, olive oil, and wine. Cooking classes introduce students to making pasta and other traditional Tuscan foods. The culture is also experienced through visits to areas that surround Arezzo. (Su)
- HES 4990 Independent Study 1-3 Credit Hours**  
1 to 3 hours. Prerequisite: three courses in general area to be studied; permission of instructor and department. May be repeated; maximum credit six hours. Contracted independent study for topic not currently offered in regularly scheduled courses. Independent study may include library and/or laboratory research and field projects. (F, Sp, Su)
- HES 5000 Issues and Procedures in Health and Exercise Science 1-3 Credit Hours**  
1 to 3 hours. Prerequisite: graduate standing or permission of instructor. May be repeated with change of content; maximum credit six hours. Current topics such as the following: exercise prescription for the elderly; adherence to physical activity, exercise/sport. (Irreg.)
- HES 5283 Sports Financial and Market Analytics 3 Credit Hours**  
Prerequisite: graduate standing and one of the following: HES 5953, MIT 5742, EIPT 6023, ECON 4233, PSY 5013, MATH 5773; or permission of instructor. The objective of this course is to analyze the unique features of the sports industry relative to principles of financial management and economics. Students will employ basic financial and econometric modeling to the management of sports organizations. Emphasis will be placed on labor markets, sports consumer demand, public finance for facilities/events, and other forms of subsidization of the sports industry. (F)
- HES 5313 Athlete Tracking and Monitoring in Sports 3 Credit Hours**  
Prerequisite: graduate standing and permission of instructor. The objective of this course is to analyze methodologies used to track/monitor the loads imposed on athletes during training and competition. The validity, reliability, and efficacy of methodologies will be evaluated. Students will review performance testing, data acquisition, and data analysis and will develop data visualizations that relay the status of an athlete to the sports performance team. (F)
- HES 5430 Internship in Health and Exercise Science 1-3 Credit Hours**  
1 to 3 hours. Prerequisite: graduate standing and successful completion of course requirements in HES area of study; student must have completed a minimum of 12 course hours, including all core requirements, before enrolling in internship. May be repeated; maximum credit six hours. Internship hours will be counted as elective hours towards the normal course requirement (i.e., 30-32 hours). Field experience in area of study. Participation in on-the-job experiences in a wide range of hosting agencies, businesses and institutions. (F, Sp, Su)
- HES 5513 Perspectives in Global Health 3 Credit Hours**  
Prerequisite: graduate standing. Examines major global health challenges, programs and policies. Students will be introduced to the world's vast diversity of determinants of health and disease, and current and emerging global health priorities will be discussed, including: emerging infectious diseases, poverty, conflicts and emergencies, health inequity, health systems reforms, and major global initiatives for disease prevention and health promotion. (F, Sp)



- HES 5523 Health Promotion Strategies 3 Credit Hours**  
Prerequisite: graduate standing. Will provide students with a basic introduction to the principles of health promotion. Specific topics will include risk appraisal and risk reduction, behavior change theories, program planning and management, holistic health/wellness, and others. (F)
- HES 5553 Health Promotion Evaluation 3 Credit Hours**  
Prerequisite: graduate standing and permission of instructor. Examination of the processes used to evaluate health promotion and health education programs. Includes: needs assessment, quality assurance evaluation, summative evaluation, data analysis, and cost benefit analysis strategies. (Irreg.)
- HES 5563 Health Behavior I: Individual and Group Influences 3 Credit Hours**  
Prerequisite: Graduate standing or permission of instructor. Focuses on behavioral theories and research which are pertinent to understanding factors/conditions that influence the development of and change processes related to health behavior in individuals or small groups such as family units. It is designed to provide a knowledge and theoretical base for integration of behavioral principles into research design and health promotion programming. (Sp)
- HES 5823 Exercise Physiology 3 Credit Hours**  
(Crosslisted with I E 5823) Prerequisite: Industrial Engineering 4824; Zoology 3104 or 3133; Physiology 5016 or 5019; or permission. Advanced study of physiological responses, regulatory mechanisms and adaptations of human performance and health; factors affecting performance and health; and training and evaluative techniques. (F)
- HES 5833 Advanced Exercise Physiology Laboratory 3 Credit Hours**  
Prerequisite: 5823 or permission. Laboratory experiments of a theoretical and applied nature emphasizing advanced concepts of physiological mechanisms, regulating responses and adaptation to exercise. Analytical and prescriptive methodologies pertaining to the energy, muscular and cardiorespiratory systems, including body composition techniques. Laboratory (Sp)
- HES 5853 Health Fitness: Theory and Application 3 Credit Hours**  
Prerequisite: 3513 or 4513 and Zoology 3133, or equivalent; graduate standing. A multidisciplinary study of health-fitness theories and their applications in preventive health. Emphases are threefold: first, to understand the underlying theoretical framework of epidemiological, biological and behavioral concepts; second, to develop skills to implement programs emphasizing physical fitness assessment and prescription; third, to critically examine the role of physical activity and fitness strategies in preventive and therapeutic health settings.
- HES 5863 Physiology of Aging 3 Credit Hours**  
Prerequisite: Physiology 2124, 3104 or Zoology 3133, or permission of instructor. Discuss the various theories of aging as well as the age expected changes in the various physiological systems (cardiovascular, respiratory, muscle, bone, nerve and body composition). In addition, exercise programming concerns for the aged as well as the possible benefits of exercise during aging will be discussed. (F)
- HES 5883 Exercise Endocrinology 3 Credit Hours**  
Prerequisite: 5823 or permission of instructor. In-depth examination of the role of the endocrine system on regulating acute and chronic metabolic responses to exercise. Special endocrine issues related to exercise physiology (i.e., diabetes) will be studied. (Irreg.)
- HES 5903 Sports Performance Analytics 3 Credit Hours**  
Prerequisite: graduate standing, and one or more of the following: HES 5953, MIT 5742, EIPT 6023, ECON 4233, PSY 5013, or MATH 5773; or permission of instructor. Sports analytics refers to the use of data and quantitative methods to measure performance and make decisions within a sports business. This course builds on statistics courses and is designed to help students develop and apply analytical skills using various sports contexts. The primary objective is to help students understand what data can and cannot do for sport organizations. (Sp)
- HES 5940 Intensive Studies in Health and Exercise Science 1-6 Credit Hours**  
1 to 6 hours. Prerequisite: graduate standing or permission. Completion of research project under faculty supervision. Meets research requirement for non-thesis option. (F, Sp, Su)
- HES 5953 Research Methods in Health and Exercise Science 3 Credit Hours**  
Prerequisite: graduate standing. Methods and techniques used in the design and interpretation of health promotion and exercise science research. Emphasis on scientific writing and library use. (Sp)
- HES 5960 Directed Readings in Health and Exercise Science 1-6 Credit Hours**  
1 to 6 hours. Prerequisite: graduate standing, permission. Designed for graduate students to provide them with an opportunity to investigate selected problems in the field. Thirty hours library and research work for each credit hour. Consultations with instructor required. Written report. Required for all students in a nonthesis program. (F, Sp, Su)
- HES 5963 Statistical Applications in Health and Exercise Science 3 Credit Hours**  
Prerequisite: graduate standing or permission of instructor. The application of techniques used to organize, analyze, and interpret statistical data unique to health and exercise science. Topics include measures of central tendency, measures of variability, percentiles, sampling, correlation, regression, standard scores, and tests of significance through repeated measures ANOVA and including parametric, non-parametric tests. (Irreg.)
- HES 5970 Seminar in Health and Exercise Science 1-4 Credit Hours**  
1 to 4 hours. Prerequisite: graduate standing. May be repeated with change of subject matter; maximum credit six hours. Study of pertinent and current problems of research. Students may use seminars to identify and develop thesis projects. Required written paper and research. (Sp)
- HES 5980 Research for Master's Thesis 2-9 Credit Hours**  
Variable enrollment, two to nine hours; maximum credit applicable toward degree, four hours. Required of all students writing master's thesis. Consultations with major professor required as thesis progresses. (F, Sp, Su)
- HES 5990 Independent Study in Health and Exercise Science 1-6 Credit Hours**  
1 to 6 hours. Prerequisite: graduate standing or permission. A study of selected problems under guidance of instructor. At least twenty-five hours of library and research time required for each hour of credit carried. Final paper required. (F, Sp, Su)
- HES 6000 Variable Topics in Health and Exercise Science 1-3 Credit Hours**  
Prerequisite: graduate standing or permission of instructor. Course will consist of variable topics in health and exercise science. (Irreg.)

**HES 6513 Qualitative Research Methods in Health****Promotion 3 Credit Hours**

Prerequisite: graduate standing. Designed to provide students with a theoretical and skill base to apply basic qualitative research methods (observation, interviewing and focus groups) to a wide range of health promotion areas and to critically evaluate the application of qualitative skills to a community setting. Over the semester, a community-based qualitative research project will be conducted. Heavily emphasizes application of concepts and student participation in the learning process. (Irreg.)

**HES 6523 Social Marketing in Health Promotion 3 Credit Hours**

Prerequisite: 5523 or permission of instructor. Focuses on the incorporation of basic marketing principles into strategies for behavioral and social change. Targeted outcomes include individual behaviors, group/population norms, environmental supports and policies pertinent to health promotion and/or public health issues. (Su)

**HES 6553 Advanced Measurement and Evaluation 3 Credit Hours**

Prerequisite: HES 5553 or permission of instructor. Issues related to measurement and evaluation in health promotion will be discussed. Different measurement techniques and instruments used in health promotion will be examined and critiqued, and principles of instrument development will be addressed. Issues related to the evaluation of health promotion program outcomes will serve as a context for the course. (Irreg.)

**HES 6563 Health Behavior II: Community, Organizational and Population Influences 3 Credit Hours**

Prerequisite: HES 5563 or permission of instructor and graduate standing. Focuses on examining new and emerging theories used in health promotion to conduct research in organizational/community/individual change, and to improve health and quality of life. Emphasis on exploring the conceptual and methodological issues associated with theory-based research. (Sp)

**HES 6583 Chronic Disease Assessment and Intervention 3 Credit Hours**

Prerequisite: graduate standing and permission of instructor. Provides basic understanding of selected chronic diseases including assessment, disease process, pharmacological and medical treatment and intervention strategies for reducing risk. (Irreg.)

**HES 6823 Cardiorespiratory Exercise Physiology 3 Credit Hours**

Prerequisite: 5823 or permission of instructor. This course covers a variety of topics in cardiorespiratory exercise physiology, including factors that regulate fatigue during endurance exercise, factors that limit maximal aerobic power, regulation of heart rate and blood flow during isometric and dynamic exercise, and cardiovascular adaptations to aerobic training programs. Assessment techniques for cardiorespiratory function will be discussed in depth. Laboratory (Irreg.)

**HES 6833 Human Body Composition 3 Credit Hours**

Prerequisite: 5823 or permission of instructor. Theoretical and applied aspects of body composition assessment. Topics include limitations and usefulness of laboratory and field methods for assessing body composition in research, clinical and health/fitness settings. Evaluation of body composition research and application to health and clinical populations. Laboratory (Irreg.)

**HES 6843 Neuromuscular Physiology 3 Credit Hours**

Prerequisite: 5823 or permission of instructor. This course examines the structure and function of the central and peripheral nervous systems and skeletal muscle. Emphasis will be placed on how the central nervous system and motor units respond to conditions such as fatigue, exercise training, vibration, stretching, injury and disease. Laboratory (Irreg.)

**HES 6883 Endocrinology and Metabolism of Exercise 3 Credit Hours**

Prerequisite: 5823 or permission of instructor. Provide in-depth examination of the energy metabolism during exercise and the role of endocrine system in regulating acute and chronic metabolic responses to exercise. Special endocrine issues related to physiology (i.e. diabetes) will be studied. Laboratory (Irreg.)

**HES 6960 Directed Readings in Health and Exercise Science 1-6 Credit Hours**

Prerequisite: graduate standing and permission of instructor. May be repeated; maximum credit six hours. Special reading programs are designed to enable graduate students (1) to extend their study to fields that are not covered in other courses and/or (2) to provide an opportunity for more intensive study of subjects covered in other courses. (F, Sp, Su)

**HES 6970 Seminar in Health and Exercise Science 1-4 Credit Hours**

1 to 4 hours. Prerequisite: graduate standing in HES or permission of instructor. May be repeated with change of subject matter; maximum credit four hours. Study of pertinent and current problems of research. Students may use seminars to identify and develop area of dissertation research. (Irreg.)

**HES 6980 Research for Doctoral Dissertation 2-12 Credit Hours**

2 to 12 hours. Prerequisite: Graduate standing and permission of instructor; may be repeated. Directed research culminating in the completion of the doctoral dissertation. (F, Sp, Su)

**HES 6990 Independent Study in Health and Exercise Science 1-3 Credit Hours**

1 to 3 hours. Prerequisite: master's degree and permission of instructor. May be repeated; maximum credit 12 hours. Supervised research for advanced graduate students on major projects with a faculty member. (F, Sp, Su)