Department of Health and Exercise Science

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hes.chhs.colostate.edu (http://hes.chhs.colostate.edu)

Professor Barry Braun, Department Head

Undergraduate  
Majors  
• Major in Health and Exercise Science  
  • Health Promotion Concentration  
  • Sports Medicine Concentration

Graduate  
Graduate Programs in Health and Exercise Science

The department offers two graduate degrees: the Master of Science in Health and Exercise Science, and the Doctor of Philosophy in Human Bioenergetics. Students interested in a Master's degree in Public Health with a focus in Health and Exercise Science can refer to the School of Public Health (http://publichealth.colostate.edu/GPPH). Students interested in graduate work should refer to the Graduate and Professional Bulletin and the Department of Health and Exercise Science (http://hes.chhs.colostate.edu).

Master Programs

• Master of Science in Health and Exercise Science, Plan A  
• Master of Science in Health and Exercise Science, Plan B  
• Master of Science in Health and Exercise Science, Plan A, Exercise Science and Nutrition Specialization

Ph.D.

• Ph.D. in Bioenergetics

Courses

Health and Exercise Science (HES)

HES 100A  Beginning Physical Education: Aerobic Exercise  Credit: 1 (0-3-0)  
Course Description: Physical activities for the development of personal motor skills.  
Prerequisite: None.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: S/U Sat/Unsat Only.  
Special Course Fee: No.

HES 100C  Beginning Physical Education: Soccer  Credit: 1 (0-3-0)  
Course Description: Physical activities for the development of personal motor skills.  
Prerequisite: None.  
Terms Offered: Fall, Spring, Summer.  
Grade Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: No.

HES 100D  Beginning Physical Education-Self-Defense  Credit: 1 (0-3-0)  
Course Description: Physical activities for the development of personal motor skills.  
Prerequisite: None.  
Terms Offered: Fall, Spring, Summer.  
Grade Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: No.

HES 100E  Beginning Physical Education: Tennis  Credit: 1 (0-3-0)  
Course Description: Physical activities for the development of personal motor skills.  
Prerequisite: None.  
Terms Offered: Fall, Spring, Summer.  
Grade Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: No.

HES 100J  Beginning Physical Education: Volleyball  Credit: 1 (0-3-0)  
Course Description: Physical activities for the development of personal motor skills.  
Prerequisite: None.  
Terms Offered: Fall, Spring, Summer.  
Grade Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: No.

HES 100K  Beginning Physical Education: Swimming  Credit: 1 (0-3-0)  
Course Description: Physical activities for the development of personal motor skills.  
Prerequisite: None.  
Terms Offered: Fall, Spring, Summer.  
Grade Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: No.

HES 100L  Beginning Physical Education: Golf  Credit: 1 (0-3-0)  
Course Description: Physical activities for the development of personal motor skills.  
Prerequisite: None.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: S/U Sat/Unsat Only.  
Special Course Fee: No.
HES 100M Beginning Physical Education: Basketball Credit: 1 (0-3-0)
Course Description: Physical activities for the development of personal motor skills.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HES 100N Beginning Physical Education: Racquetball Credit: 1 (0-3-0)
Course Description: Physical activities for the development of personal motor skills.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HES 100O Beginning Physical Education: Weight Training Credit: 1 (0-3-0)
Course Description: Physical activities for the development of personal motor skills.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HES 100P Beginning Physical Education: Ice Skating Credit: 1 (0-3-0)
Course Description: Physical activities for the development of personal motor skills.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U Sat/Unsat Only.
Special Course Fee: No.

HES 100Q Beginning Physical Education: Water Polo Credit: 1 (0-3-0)
Course Description: Physical activities for the development of personal motor skills.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HES 100R Beginning Physical Education: Soccer Credit: 1 (0-3-0)
Course Description: Physical activities for the development of personal motor skills.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HES 100T Physical Education Activities: Special Activities Credit: 1 (0-3-0)
Course Description: Physical activities for the development of personal motor skills.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HES 100U Physical Education Activities: Advanced Swimming Credit: 1 (0-3-0)
Course Description: Physical activities for the development of personal motor skills.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HES 100V Physical Education Activities: Fatigue Credit: 1 (0-3-0)
Course Description: Physical activities for the development of personal motor skills.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HES 100W Physical Education Activities: Stress Credit: 1 (0-3-0)
Course Description: Physical activities for the development of personal motor skills.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HES 100X Physical Education Activities: Stress and Fatigue Credit: 1 (0-3-0)
Course Description: Physical activities for the development of personal motor skills.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HES 100Y Physical Education Activities: Stress and Fatigue Credit: 1 (0-3-0)
Course Description: Physical activities for the development of personal motor skills.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HES 100Z Physical Education Activities: Stress and Fatigue Credit: 1 (0-3-0)
Course Description: Physical activities for the development of personal motor skills.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HES 101 Beginning Physical Education: Basketball Credit: 1 (0-3-0)
Course Description: Physical activities for the development of personal motor skills.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HES 102A Techniques of Teaching Physical Activity: Weight Training Credit: 1 (0-2-0)
Course Description: Practical and theoretical aspects of teaching individual sports with special emphasis on materials, teaching techniques, and analyzing skills.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HES 102B Techniques of Teaching Physical Activity: Aerobics Credit: 1 (0-2-0)
Course Description: Practical and theoretical aspects of teaching individual sports with special emphasis on materials, teaching techniques, and analyzing skills.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HES 102C Techniques of Teaching Physical Activity: Special Activities Credit: 1 (0-3-0)
Course Description: Practical and theoretical aspects of teaching individual sports with special emphasis on materials, teaching techniques, and analyzing skills.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HES 102D Techniques of Teaching Physical Activity: Advanced Swimming Credit: 1 (0-3-0)
Course Description: Practical and theoretical aspects of teaching individual sports with special emphasis on materials, teaching techniques, and analyzing skills.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HES 102E Techniques of Teaching Physical Activity: Fatigue Credit: 1 (0-3-0)
Course Description: Practical and theoretical aspects of teaching individual sports with special emphasis on materials, teaching techniques, and analyzing skills.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HES 102F Techniques of Teaching Physical Activity: Conditioning and Fitness Credit: 1 (0-3-0)
Course Description: Practical and theoretical aspects of teaching individual sports with special emphasis on materials, teaching techniques, and analyzing skills.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HES 102G Techniques of Teaching Physical Activity: Stress Credit: 1 (0-3-0)
Course Description: Practical and theoretical aspects of teaching individual sports with special emphasis on materials, teaching techniques, and analyzing skills.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U Sat/Unsat Only.
Special Course Fee: No.

HES 120 Introduction to Health and Exercise Science Credit: 1 (0-0-0)
Course Description: Personal health behaviors and personal choice in response to wellness.
Prerequisite: None.
Registration Information: Credit not allowed for both HES 145 and HES 143. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HES 143 Health and Wellness Credits: 3 (3-0-0)
Course Description: Personal health behaviors and personal choice in response to wellness.
Prerequisite: None.
Registration Information: Credit not allowed for both HES 145 and HES 143. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HES 144 Health and Wellness Credits: 3 (3-0-0)
Course Description: Personal health behaviors and personal choice in response to wellness.
Prerequisite: None.
Registration Information: Credit not allowed for both HES 145 and HES 143. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HES 145 Health and Wellness Credits: 3 (3-0-0)
Course Description: Personal health behaviors and personal choice in response to wellness.
Prerequisite: None.
Registration Information: Credit not allowed for both HES 145 and HES 143. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HES 146 Health and Wellness Credits: 3 (3-0-0)
Course Description: Personal health behaviors and personal choice in response to wellness.
Prerequisite: None.
Registration Information: Credit not allowed for both HES 145 and HES 143. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HES 207 Anatomical Kinesiology Credits: 3 (2-2-0)
Course Description: Anatomical, physiological, and mechanical fundamentals of human movement.
Prerequisite: MATH 125, may be taken concurrently.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HES 208 Anatomical Kinesiology Credits: 3 (2-2-0)
Course Description: Anatomical, physiological, and mechanical fundamentals of human movement.
Prerequisite: MATH 125, may be taken concurrently.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HES 232A Techniques of Teaching Physical Activity: Weight Training Credit: 1 (0-2-0)
Course Description: Practical and theoretical aspects of teaching individual sports with special emphasis on materials, teaching techniques, and analyzing skills.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HES 232B Techniques of Teaching Physical Activity: Aerobics Credit: 1 (0-2-0)
Course Description: Practical and theoretical aspects of teaching individual sports with special emphasis on materials, teaching techniques, and analyzing skills.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
HES 240 First Aid and Emergency Care  Credits: 2 (1-2-0)
Course Description: Principles, applied techniques emphasizing emergency rescue and care. Meets requirements for Red Cross Advanced First Aid and Emergency Care Credential.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 307 Biomechanical Principles of Human Movement  Credits: 3 (3-0-0)
Course Description: Identify with and utilize biomechanical principles pertinent to human movement.
Prerequisites: (HES 207 or BMS 301) and (PH 121 or PH 141).
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HES 309 Methods of Coaching  Credits: 2 (2-0-0)
Course Description: Preparation to coach in an interscholastic athletic situation.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HES 319 Neuromuscular Aspects of Human Movement  Credits: 3 (3-0-0)
Course Description: Neuromuscular anatomy and physiology of human movement. Applied/integrated topics: aging, muscle fatigue, training, and neuromuscular disease.
Prerequisites: (BMS 300 or BMS 360) and (BMS 301).
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HES 332F Techniques of Teaching Individual Sports: Weight Training  Credit: 1 (0-2-0)
Course Description: Practical and theoretical aspects of teaching weight training with special emphasis on materials, teaching techniques, and analyzing skills.
Prerequisite: None.
Registration Information: Corresponding laboratory or competency in area.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 332H Techniques of Teaching Individual Sports: Aerobics  Credit: 1 (0-2-0)
Course Description: Practical and theoretical aspects of teaching aerobics with special emphasis on materials, teaching techniques, and analyzing skills.
Prerequisite: None.
Registration Information: Corresponding laboratory or competency in area.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 340 Exercise Prescription  Credit: 1 (1-0-0)
Course Description: Theory and practice of exercise prescription for healthy individuals, cardiac patients, and other special populations.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HES 345 Population Health and Disease Prevention  Credits: 3 (3-0-0)
Course Description: Causes of disease throughout the lifespan and interventions designed to prevent disease.
Prerequisite: HES 145.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HES 356 Wellness Programming  Credits: 3 (3-0-0)
Course Description: Assessment of wellness concerns and organizational problems, selection and implementation of program design.
Prerequisite: HES 386A.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 379 Psychology and Sport  Credits: 3 (3-0-0)
Course Description: Psychological and social implications involved in teaching physical education and coaching athletics.
Prerequisites: PSY 100 and HES 145 with a minimum grade of C and HES 207 with a minimum grade of C and BMS 300 with a minimum grade of C.
Registration Information: Must have taken the following courses and maintained a minimum GPA of 2.500 in them: HES 145; HES 207; BMS 300.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 380 Exercise Prescription  Credit: 1 (1-0-0)
Course Description: Theory and practice of exercise prescription for healthy individuals, cardiac patients, and other special populations.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HES 386A Practicum: Adult Fitness  Credits: 2 (1-3-0)
Course Description: Adult fitness.
Prerequisites: HES 145 with a minimum grade of C and HES 240 and HES 332F and HES 332H and FSHN 150 with a minimum grade of C and HES 207 with a minimum grade of C and BMS 300 with a minimum grade of C.
Registration Information: Must have taken the following courses and earned a 2.75 GPA in them: BMS 300, FSHN 150, HES 145, and HES 207; HES 240; HES 332F; HES 332H. Must register for lecture and laboratory.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HES 386B Practicum: Wellness Program Management  Credits: 3 (1-6-0)
Course Description:
Prerequisite: HES 386A.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
HES 403  Physiology of Exercise  Credits: 4 (3-2-0)
Course Description: Effects of exercise on tissues, organs, and systems of the body.
Prerequisites: (BMS 300 or BMS 360) and (LIFE 102).
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HES 405  Exercise Testing Instrumentation  Credits: 2 (1-2-0)
Course Description: Theory and operation of devices commonly employed in quantifying factors related to exercise.
Prerequisite: HES 403.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

HES 410  Bioethics: Concepts and Controversies  Credits: 3 (2-0-1)
Course Description: Origins of bioethics and analysis of cases/controversies in contemporary bioethics.
Prerequisite: PHIL 205.
Registration Information: PHIL 205 or 7 credits of AUCC-science category 3A.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 420  Electrocardiography and Exercise Management  Credits: 3 (2-2-0)
Course Description: Interpretation of 12-lead ECG tracings, administering exercise tests, and prescribing exercise program for healthy individuals and special populations.
Prerequisite: BMS 300.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

HES 434  Physical Activity Throughout the Lifespan  Credits: 3 (3-0-0)
Course Description: Impact of physical activity on biology and physiology of human development and aging processes.
Prerequisite: BMS 300.
Registration Information: Credit not allowed for both HES 434 and HES 444.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HES 444  Successful Aging: Role of Physical Activity  Credits: 2 (2-0-0)
Course Description: Biology and physiology of healthy aging and impact of disease and physical activity on aging processes.
Prerequisite: LIFE 102 or BZ 110.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HES 447  Exercise and Chronic Disease  Credits: 3 (3-0-0)
Course Description: Interaction of physical activity with pathophysiology and treatment of chronic diseases and conditions.
Prerequisites: BC 351 and FSHN 350 and HES 403.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HES 456  Advanced Wellness Programming  Credits: 3 (3-0-0)
Course Description: Investigation of established wellness programs with special emphasis on design, implementation, and evaluation of programming models.
Prerequisites: HES 356, may be taken concurrently and HES 403.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 484  Supervised College Teaching  Credits: Var[1-5]
Course Description: Practical application of knowledge and skills in a professional situation.
Prerequisites: HES 386B and BMS 300 with a minimum grade of C and HES 145 with a minimum grade of C and HES 207 with a minimum grade of C and FSHN 150 with a minimum grade of C.
Registration Information: Maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 486  Practicum: wellness Program Management  Credits: Var[1-3]
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 486A  Practicum: Adaptive Correctives  Credits: Var[1-3]
Course Description: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 486B  Practicum: Wellness Program Management  Credits: Var[1-3]
Course Description: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 487  Internship  Credits: 15 (0-0-40)
Course Description: Practical application of knowledge and skills in a professional situation.
Prerequisites: HES 486B and BMS 300 with a minimum grade of C and HES 145 with a minimum grade of C and HES 207 with a minimum grade of C and FSHN 150 with a minimum grade of C.
Registration Information: 2.5 GPA.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
HES 492  Health and Exercise Science Seminar  Credits: 2 (0-0-2)
Course Description: Integration and reflection on health and exercise science disciplinary knowledge.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 495A Independent Study: Health  Credits: Var[1-18]
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 495B Independent Study: Biomechanics  Credits: Var[1-18]
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 495C Independent Study: Exercise Science  Credits: Var[1-18]
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 495D Independent Study: Neuromuscular Physiology  Credits: Var[1-18]
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 495E Independent Study: Honors  Credits: Var[1-18]
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 496A Group Study: Health  Credits: Var[1-18]
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 496B Group Study: Athletics  Credits: Var[1-18]
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 496C Group Study: Biomechanics  Credits: Var[1-18]
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 496D Group Study: Exercise Science  Credits: Var[1-18]
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 496E Group Study: Neuromuscular Physiology  Credits: Var[1-18]
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 520 Advanced Exercise Testing and Prescription  Credits: 3 (2-2-0)
Course Description: Theory and practice of exercise testing and prescription in apparently healthy and diseseed populations.
Prerequisite: HES 403.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

HES 530 Clinical Biomechanics  Credits: 3 (3-0-0)
Course Description: Effect of external loads on internal tissues; concern for injury, injury prevention, and rehabilitation.
Prerequisites: BMS 301 and HES 307.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 545 Evolutionary Basis for Health and Fitness  Credits: 3 (3-0-0)
Course Description: Evolutionary basis for human health and fitness based upon dietary and exercise patterns for pre-agricultural humans.
Prerequisites: HES 403 and FSHN 350.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 556 Wellness and Health Promotion Concepts  Credits: 3 (3-0-0)
Course Description: Discussion of theory and application of health promotion in various settings.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
HES 600 Research Design in Health/Exercise Science Credits: 3 (3-0-0)
Course Description: The research process including design, implementation, proposal synthesis and statistical considerations applied to health and exercise science.
Prerequisite: STAT 100 to 481 - at least 1 course.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HES 602 Advanced Physiology of Exercise Credits: 3 (3-0-0)
Course Description: Integrative exercise physiology covering metabolism, cardiovascular physiology, pulmonary physiology, and neuromuscular physiology in humans.
Prerequisite: HES 403.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HES 603 Advanced Topics in Exercise Physiology Credits: 3 (3-0-0)
Course Description: Advanced principles of theoretical and applied exercise physiology at molecular, cellular, and systemic levels.
Prerequisite: HES 403.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HES 610 Exercise Bioenergetics Credits: 3 (3-0-0)
Course Description: Biology of energy transfer reactions related to human locomotion and exercise performance in both healthy individuals and disease states.
Prerequisite: HES 403.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HES 619 Advanced Neural Control of Movement Credits: 3 (3-0-0)
Course Description: Neuroanatomical, neurophysiological, and applied topics on the control of force and human movement.
Prerequisites: BMS 300 and BMS 301 and HES 403.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HES 630 Integrative Exercise and Nutrition Metabolism Credits: 3 (3-0-0)
Also Offered As: FSHN 630.
Course Description: Advances in integrative human metabolism under conditions of changing energy flux.
Prerequisites: FSHN 551 and HES 610.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both FSHN 630 and HES 630.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 645 Epidemiology of Health and Physical Activity Credits: 3 (3-0-0)
Course Description: Foundation in chronic disease epidemiology that will enable students to evaluate the current epidemiologic literature.
Prerequisite: HES 600.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 650 Health Promotion Programming Credits: 3 (3-0-0)
Course Description: Development of skills in health promotion program design, implementation and evaluation.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 656 Comprehensive Stress Management Credits: 3 (3-0-0)
Course Description: Relationship between stress and illness emphasizing methods to impact its detrimental effects.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HES 684 Supervised College Teaching Credits: Var[1-18]
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 686A Practicum: Adult Fitness-Human Performance Clinical/Research Laboratory Credits: Var[1-3]
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Current CPR certification.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 686B Practicum: Wellness Management Credits: Var[1-3]
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Current CPR certification.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 686C Practicum: Youth Fitness and Skill Development Credits: Var[1-3]
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Current CPR certification.
Terms Offered: Fall, Spring, Summer.
Grade Modes: Instructor Option, Traditional.
Special Course Fee: No.
HES 686D  Practicum: Health and Exercise Science  
Course Description: 
Prerequisite: None. 
Restriction: Must be a: Graduate, Professional. 
Registration Information: None. 
Terms Offered: Fall, Spring, Summer. 
Grade Mode: Traditional. 
Special Course Fee: No. 

HES 686E  Practicum: Applied Health and Exercise Science  Credits: Var[1-3]  
Course Description: 
Prerequisite: None. 
Restriction: Must be a: Graduate, Professional. 
Registration Information: Current CPR certification. 
Terms Offered: Fall, Spring, Summer. 
Grade Mode: Instructor Option, Traditional. 
Special Course Fee: No. 

HES 687  Internship  Credits: Var[3-9]  
Course Description: Practical application of knowledge and skills in a professional situation. 
Prerequisite: HES 686A to 686E - at least 1 course. 
Restriction: Must be a: Graduate, Professional. 
Terms Offered: Fall, Spring, Summer. 
Grade Mode: Traditional. 
Special Course Fee: No. 

HES 692  Seminar  Credit: 1 (0-0-1)  
Course Description: Consideration of graduate education in health and exercise science. 
Prerequisite: None. 
Restriction: Must be a: Graduate, Professional. 
Terms Offered: Spring, Summer. 
Grade Mode: Traditional. 
Special Course Fee: No. 

HES 693  Seminar  Credit: 1 (0-0-1)  
Course Description: Current topics and issues in health and exercise science. 
Prerequisite: None. 
Restriction: Must be a: Graduate, Professional. 
Terms Offered: Fall, Spring. 
Grade Mode: Traditional. 
Special Course Fee: No. 

HES 695A  Independent Study: Health  Credits: Var[1-18]  
Course Description: 
Prerequisite: None. 
Restriction: Must be a: Graduate, Graduate cooperative program, Undergraduate. 
Terms Offered: Fall, Spring, Summer. 
Grade Mode: Instructor Option. 
Special Course Fee: No. 

HES 695B  Independent Study: Exercise Science  Credits: Var[1-18]  
Course Description: 
Prerequisite: None. 
Restriction: Must be a: Graduate, Graduate cooperative program, Professional. 
Terms Offered: Fall, Spring, Summer. 
Grade Mode: Instructor Option. 
Special Course Fee: No. 

HES 695C  Independent Study: Biomechanics  Credits: Var[1-18]  
Course Description: 
Prerequisite: None. 
Restriction: Must be a: Graduate, Graduate cooperative program, Undergraduate. 
Terms Offered: Fall, Spring, Summer. 
Grade Mode: Instructor Option. 
Special Course Fee: No. 

HES 695D  Independent Study: Neuromuscular Physiology  Credits: Var[1-18]  
Course Description: 
Prerequisite: None. 
Restriction: Must be a: Graduate, Graduate cooperative program, Professional, Undergraduate. 
Terms Offered: Fall, Spring, Summer. 
Grade Mode: Instructor Option. 
Special Course Fee: No. 

HES 696A  Group Study: Health  Credits: Var[1-18]  
Course Description: 
Prerequisite: None. 
Restriction: Must be a: Graduate, Professional. 
Terms Offered: Fall, Spring, Summer. 
Grade Mode: Instructor Option. 
Special Course Fee: No. 

HES 696B  Group Study: Exercise and Nutrition  Credits: Var[1-18]  
Course Description: 
Prerequisite: None. 
Restriction: Must be a: Graduate, Professional. 
Terms Offered: Fall, Spring, Summer. 
Grade Mode: Instructor Option. 
Special Course Fee: No. 

HES 696C  Group Study: Exercise Science  Credits: Var[1-18]  
Course Description: 
Prerequisite: None. 
Restriction: Must be a: Graduate, Professional. 
Terms Offered: Fall, Spring, Summer. 
Grade Mode: Instructor Option. 
Special Course Fee: No. 

HES 696D  Group Study: Biomechanics  Credits: Var[1-18]  
Course Description: 
Prerequisite: None. 
Restriction: Must be a: Graduate, Professional. 
Terms Offered: Fall, Spring, Summer. 
Grade Mode: Instructor Option. 
Special Course Fee: No. 

HES 696E  Group Study: Neuromuscular Physiology  Credits: Var[1-18]  
Course Description: 
Prerequisite: None. 
Restriction: Must be a: Graduate, Professional. 
Terms Offered: Fall, Spring, Summer. 
Grade Mode: Instructor Option. 
Special Course Fee: No.
HES 698 Research Credits: Var[1-18]  
Course Description: Non-thesis research in health and exercise science.  
Prerequisite: None.  
Restriction: Must be a: Graduate, Professional.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Instructor Option.  
Special Course Fee: No.

HES 699 Thesis Credits: Var[1-18]  
Course Description:  
Prerequisite: None.  
Restriction: Must be a: Graduate, Professional.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Instructor Option.  
Special Course Fee: No.

HES 700 Professional Skills in Bioenergetics Credits: 3 (2-0-1)  
Course Description: Grant writing, authorship, peer review process, responsible conduct of science, research ethics, professional conduct, career opportunities.  
Prerequisite: None.  
Restriction: Must be a: Graduate, Professional.  
Registration Information: Admission to doctoral program, or admission to M.S. program and written consent of instructor.  
Term Offered: Fall.  
Grade Mode: Traditional.  
Special Course Fee: No.

HES 704A Advanced Topics in Bioenergetics: Movement Credits: 3 (3-0-0)  
Course Description: Advanced topics in physiology, biochemistry, biomechanics, and neural control exploring pathogenesis and treatment of chronic disease.  
Prerequisite: None.  
Restriction: Must be a: Graduate, Professional.  
Registration Information: Graduate standing. Maximum of 6 credits allowed in course.  
Term Offered: Fall.  
Grade Mode: Traditional.  
Special Course Fee: No.

HES 704B Advanced Topics in Bioenergetics: Physiology Credits: 3 (3-0-0)  
Course Description: Advanced topics in physiology, biochemistry, biomechanics, and neural control exploring pathogenesis and treatment of chronic disease.  
Prerequisite: None.  
Restriction:  
Registration Information: Graduate standing. Maximum of 6 credits allowed in course.  
Term Offered: Fall.  
Grade Mode: Traditional.  
Special Course Fee: No.

HES 710 Exercise in Disease Prevention Credits: 3 (3-0-0)  
Course Description: Role of exercise/physical activity in the prevention, pathophysiology and treatment of chronic diseases.  
Prerequisites: HES 403 and HES 520.  
Restriction: Must be a: Graduate, Professional.  
Term Offered: Spring (odd years).  
Grade Mode: Traditional.  
Special Course Fee: No.

HES 730 Cardiovascular Pathophysiology Credits: 3 (3-0-0)  
Course Description: Cardiovascular physiology with emphasis on the development, progression, and treatment of diseases of the cardiovascular system.  
Prerequisites: HES 403 and HES 520.  
Restriction: Must be a: Graduate, Professional.  
Term Offered: Fall (odd years).  
Grade Mode: Traditional.  
Special Course Fee: No.

HES 735 Human Cardiovascular Control Credits: 3 (2-0-1)  
Course Description: Dynamics of cardiovascular control in human health and disease.  
Prerequisite: HES 403.  
Restriction: Must be a: Graduate, Professional.  
Registration Information: Must register for lecture and recitation.  
Term Offered: Fall (even years).  
Grade Mode: Traditional.  
Special Course Fee: No.

HES 784 Supervised College Teaching Credits: Var[1-3]  
Course Description:  
Prerequisite: None.  
Restriction: Must be a: Graduate, Professional.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Instructor Option.  
Special Course Fee: No.

HES 786 Practicum Credits: Var[1-3]  
Course Description:  
Prerequisite: None.  
Restriction: Must be a: Graduate, Professional.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Instructor Option.  
Special Course Fee: No.

HES 793 Bioenergetics Seminar Credit: 1 (0-0-1)  
Course Description:  
Prerequisite: None.  
Restriction: Must be a: Graduate, Professional.  
Term Offered: Fall, Spring.  
Grade Mode: S/U Sat/Unsat Only.  
Special Course Fee: No.

HES 795 Independent Study Credits: Var[1-3]  
Course Description:  
Prerequisite: None.  
Restriction: Must be a: Graduate, Professional.  
Terms Offered: Fall, Spring.  
Grade Mode: Instructor Option.  
Special Course Fee: No.

HES 796 Group Study Credits: Var[1-3]  
Course Description:  
Prerequisite: None.  
Restriction: Must be a: Graduate, Professional.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Instructor Option.  
Special Course Fee: No.
HES 798 Research Credits: Var[1-3]
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 799 Dissertation Credits: Var[1-18]
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.