EXERCISE SCIENCE (EXSC)

EXSC 507 - Exercise, Sport, and Nutrition (3 Credits)
The relationship between exercise, sport performance, and nutrient metabolism.
Prerequisites: EXSC 223, EXSC 224, EXSC 530, EXSC 530L.

EXSC 531 - Clinical Exercise Physiology (3 Credits)
Scientific bases of clinical exercise programming. The fitness instructor's role in encouraging changes in exercise behavior.
Prerequisites: EXSC 223, EXSC 224, EXSC 530, EXSC 530L.
Corequisite: EXSC 531L.

EXSC 531L - Clinical Exercise Physiology Lab (0 Credits)
Prerequisites: EXSC 223, EXSC 224, EXSC 530, EXSC 530L.

EXSC 541 - Physiological Basis for Strength and Conditioning (3 Credits)
Investigation on the physiological basis for strength and conditioning. Principles of strength and conditioning through lecture based learning, demonstrations, and through laboratory activities.
Prerequisites: C or better in EXSC 530.

EXSC 555 - Current Topics in Exercise Science (1-3 Credits)
Content varies by title. Course may be repeated for a total of 6 credit hours.

EXSC 562 - Impairments of the Human Motor System (3 Credits)
Role of motor development in the growth and development of individuals exhibiting impaired motor control.
Prerequisites: biology, anatomy, physiology, or the equivalent.

EXSC 563 - Physical Activity and the Physical Dimensions of Aging (3 Credits)
The effects of age and physical activity on physical and motor functions of elderly individuals.
Prerequisites: EXSC 223, EXSC 224, EXSC 351, EXSC 530, EXSC 530L.

EXSC 585 - Women's Health and Physical Activity (3 Credits)
Sex differences in diseases, physiological function of sex hormones, hormonal changes in a woman's life, specific women's health issues, and role of physical activity and exercise in prevention and treatment of conditions and diseases specific to women or related to sex hormones. Restricted to 30 students, Special Permission by Instructor.

EXSC 608 - Apps, Wearables and Technology for Lifestyle Behavior Change and Weight Loss (3 Credits)
The course will increase students’ understanding of the theoretical foundations, scientific evidence and practical application of technology-assisted lifestyle interventions, with an emphasis on behavioral weight control for adults.
Prerequisites: C or better in EXSC 410.

EXSC 620 - Nutrition and Immunology (3 Credits)
Examination of the interrelationships that link human nutrition to the immune system in health and disease. Topics will include basic immunology, overview of nutritional sources, deficiencies and excesses, and the impact on public health issues such as exercise, disease and aging.
Prerequisites: EXSC 530.

EXSC 626 - Cardiorespiratory Exercise Physiology (3 Credits)
Examination of the anatomy and function of the cardiovascular and respiratory systems of the exercising human organism, including acute adjustments and chronic adaptations to the systems.
Prerequisites: EXSC 530

EXSC 666 - Cardiorespiratory Exercise Physiology (3 Credits)
Examination of the anatomy and function of the cardiovascular and respiratory systems of the exercising human organism, including acute adjustments and chronic adaptations to the systems.
Prerequisites: EXSC 530.

EXSC 669 - Skeletal Muscle Physiology: Form and Function (3 Credits)
Skeletal muscle physiology and exercise through select laboratory experiences and discussion of related research literature.
Prerequisites: C or better in both EXSC 530 and EXSC 530L.

EXSC 695 - Writing and Presenting in Research (3 Credits)
The research process in Exercise Science through participation, presentation, and discussion of current research.
Prerequisites: EXSC 224.

EXSC 700 - Physical Activity and Health: Epidemiology, Research and Practice (3 Credits)
An introduction to exercise science with emphasis on the relationships between exercise and health for promotion of physical activity in clinical and public health settings.

EXSC 706 - Assessment of Motor Behavior (3 Credits)
Assessment of infant, child, adolescent, and adult motor behavior.

EXSC 710 - Behavioral Aspects of Physical Activity (3 Credits)
Psychosocial and behavioral factors in physical activity. Topics include mental health effects of exercise, behavior change theories applied to mental health effects of exercise, behavior change theories applied to physical activity, and physical activity determinants and interventions. Cross-listed course: HPEB 713

EXSC 727 - Controlled Trials in Exercise Science (3 Credits)
This course covers planning, organizing and implementing randomized controlled trials of physical activity or exercise interventions. It is primarily aimed to meet the needs of graduate students in exercise science and others in related fields.

EXSC 731 - Mechanisms of Motor Skill Performance (3 Credits)
A study of theories and mechanisms involved in human movement. Focus is on analysis of principles and systems of gross motor control and learning.

EXSC 732 - Measurement of Body Composition and Associated Health Behaviors (3 Credits)
Overview of measurement theory and measures to assess body composition and associated health behaviors (i.e., physical activity, sedentary behavior, sleep, diet).
Prerequisites: BIOS 700, BIOS 701, or PUBH 725, for MPH-PAPH students, EXSC 700.

EXSC 742 - Clinical Exercise Testing (1 Credit)
Study of the procedures involved in screening and testing persons with varying levels of functional work capacity.

EXSC 743 - Laboratory Measurements for Exercise Testing (1 Credit)
Biological and physiological assessment of exercise responses and adaptation.
Prerequisites: EXSC 742.
EXSC 744 - Administration of Exercise Programs (1 Credit)
Study of the procedures necessary for proper administration of exercise testing, fitness, and rehabilitation programs.
Prerequisites: EXSC 531.

EXSC 754 - Community-Based Physical Activity Interventions (3 Credits)
Role of the physical activity specialist within the community health department. Development, initiation, and evaluation of campaigns, resources, community capacity building, and coalitions to promote physical activity.
Prerequisites: EXSC 700 or HPEB 700.

EXSC 755 - Special Topics in Exercise Science (3 Credits)
A study of selected issues in exercise science. Content varies by title.

EXSC 771 - Data Acquisition in Exercise Science (3 Credits)
Fundamental concepts of computerized data acquisition in the exercise science laboratory.

EXSC 777 - Endocrinology of Exercise and Health (3 Credits)
The course examines the endocrine system, its interaction with the nervous system, and how they affect human biology before, during, and after exercise. Special attention will be paid to this system's influence on the relationship between physical activity and health.
Prerequisites: At least one undergraduate or graduate course in statistics and molecular or cellular biology.

EXSC 778 - Exercise and Childhood Obesity (3 Credits)

EXSC 779 - Exercise Physiology of Children and Youth (3 Credits)
Principles of exercise physiology applied specifically to children and youth. Particular emphasis on physiological foundations of physical fitness and methods for teaching physical fitness concepts.

EXSC 780 - Physiology of Exercise (3 Credits)
Physiological responses to exercise: skeletal muscle structure and function, cardiorespiratory function, physiological determinants of exercise performance, and training adaptations. Didactic and laboratory included.

EXSC 781 - Physiology, Exercise, and Disease (3 Credits)
The input and response to exercise in diseased populations. Diseases to be examined include cardiovascular disease, age-related diseases, pulmonary, renal, and other conditions.
Prerequisites: EXSC 780.

EXSC 782 - Mechanical Analysis of Motor Skills (4 Credits)
Biomechanical principles underlying motor control and selected techniques used to quantify human movement.

EXSC 783 - Research Seminar in Exercise Physiology (1-3 Credits)
Presentation and discussion of current research topics in exercise physiology.

EXSC 784 - Cardiovascular/Pulmonary Testing and Programming (3 Credits)
Techniques used in exercise testing (including principles of electrocardiography) and in design and delivery of exercise programs for enhancing the health of normal and cardiopulmonary-diseased populations.
Prerequisites: EXSC 781.

EXSC 785 - Advanced Exercise Physiology Laboratory (3 Credits)
Laboratory procedures for measurement of physiological, biochemical, and molecular responses to exercise.
Prerequisites: EXSC 780.

EXSC 786 - Experimental Design for Translational Laboratory Science (3 Credits)
This course establishes the framework for experimental projects in molecular biology and physiology that impact human health: how to set up a molecular system, design experiments within that system, determine and use the correct set of controls, and ultimately how to interpret molecular data in light of human/public health.
Prerequisites: At least one undergraduate or graduate course in statistics and molecular or cellular biology.

EXSC 787 - Research Methods and Design for Exercise Science (3 Credits)
The major goal of this course is to provide an in-depth examination of: research concepts, terminology, experimental, non-experimental, and epidemiological designs, internal and external validity, methods for establishing causality investigating associations, and application of designs to test hypotheses in research of exercise science-related outcomes.

EXSC 790 - Independent Study (1-3 Credits)
Topics to be assigned and approved by advisor, graduate director, and department head.

EXSC 795 - Internship in Exercise Science (3 Credits)
Clinical practice in an applied area of exercise science. Requirements include at least 20 hours fieldwork per week with intensive supervision.

EXSC 796 - MPH Capstone Course (2 Credits)
This course is designed to provide students with a culminating seminar focused on the synthesis of foundational and MPH-PAPH competencies in preparing a high quality grant proposal to address a public health problem.
Prerequisites: PUBH 725, PUBH 726, PUBH 730, PUBH 735, B or better in EXSC 700, EXSC 710, EXSC 780.

EXSC 797 - Public Health Practice (1-5 Credits)
The focus of this course is the performance of a limited work or service project in an approved public need setting and the demonstration of at least 5 competencies related to previously identified aspects of the student's chosen role.
Prerequisites: PUBH 725, PUBH 726, PUBH 730, PUBH 735, B or better in EXSC 700, EXSC 710, EXSC 780.

EXSC 798 - Project in Exercise Science (3 Credits)
Independently executed project designed to expand the student's knowledge of exercise science.

EXSC 799 - Thesis Preparation (1-9 Credits)

EXSC 808 - Neuro Repair - Rehabilitation (3 Credits)
Examination of neural repair and rehabilitation from a clinical perspective.

EXSC 831 - Mechanisms of Motor Skill Performance II (3 Credits)
Advanced study of the theories and mechanisms of human movement and motor performance. Focus is on analysis of principles and systems regulating gross motor control and learning.

EXSC 832 - Research Practicum in Motor Learning/Motor Performance (3 Credits)
Scientific investigation of specific research problems in motor learning/motor performance.
EXSC 862 - Analysis of Motor Impairments (3 Credits)
The study of neuromuscular bases of movement and associated impairments of motor function. Current assessment and programming techniques designed to assist in remediating motor impairment will be emphasized.

EXSC 863 - Physical Activity and the Aging Process (3 Credits)
The study of the aging process and its effects upon the physical activity patterns of the adult. Emphasis is on the mechanisms of aging as they directly influence movement.

EXSC 871 - Data Acquisition in Exercise Science II (3 Credits)
Advanced techniques of interfacing data acquisition equipment to the laboratory computer.

EXSC 880 - Myology and Exercise (3 Credits)
Study of muscle contraction mechanics, energetics, and metabolism and the relationship of these processes to physical training, athletics, and rehabilitation.

EXSC 881 - Advanced Cardiorespiratory Exercise Physiology (3 Credits)
Study of mechanisms for cardiovascular and respiratory responses to acute exercise and adaptations to these systems with chronic physical activity.

EXSC 882 - Physical Activity and Health: Epidemiology and Research Methods (3 Credits)
An examination of physical activity/exercise habit patterns as they relate to health status. Emphasis on the chronic effects of exercise.

EXSC 883 - Chronic Disease Rehabilitation Through Exercise (3 Credits)
The study of the treatment of chronic diseases with special reference to exercise as a mode of therapy.
Prerequisites: EXSC 531 and EXSC 780 or the equivalent.

EXSC 899 - Dissertation Preparation (1-12 Credits)