EXSC - Exercise Science

Courses numbered 500 to 799 = *undergraduate/graduate*. (Individual courses may be limited to undergraduate students only.) Courses numbered 800 to 999 = *graduate*.

EXSC 510. Coaching Principles (3).
Provides the skills and knowledge necessary for individuals to successfully coach and officiate both elementary and secondary school interscholastic and intramural athletics. Instruction for coaching and officiating techniques, coaching progression, skill analysis and skill development is provided. Management techniques for interscholastic and intramural athletics are included. A variety of coaching strategies as well as discipline and motivation techniques are discussed.

EXSC 541. Seminar in Strength and Conditioning (3).
Helps prepare students for the National Strength and Conditioning Association (NSCA) Certification Commission's Certified Strength and Conditioning Specialist (CSCS) examination and/or the NSCA-Certified Personal Trainer certification examination. Anatomy, biochemistry, biomechanics, endocrinology, nutrition, exercise physiology, psychology and the other sciences that relate to the principles of designing safe and effective training programs are covered. Prerequisite(s): EXSC 440 or EXSC 440H, junior standing, graduate standing or departmental consent.

EXSC 541H. Seminar in Strength and Conditioning Honors (3).
Helps prepare students for the National Strength and Conditioning Association (NSCA) Certification Commission's Certified Strength and Conditioning Specialist (CSCS) examination and/or the NSCA-Certified Personal Trainer certification examination. Anatomy, biochemistry, biomechanics, endocrinology, nutrition, exercise physiology, psychology and the other sciences that relate to the principles of designing safe and effective training programs are covered. Prerequisite(s): EXSC 440 or EXSC 440H, junior standing, graduate standing or departmental consent.

EXSC 542. Advanced Strength and Conditioning (3).
Helps prepare students for the NSCA Certified Strength and Conditioning Specialist (CSCS) examination. Covers advanced concepts and skills related to strength and conditioning including test selection and administration, program design, needs analysis, administration and nutrition. For undergraduate credit only. Prerequisite(s): EXSC 541/541H and admission in the BS in exercise science with a concentration in strength and conditioning program, or departmental consent.

EXSC 543. Professional Development in Strength and Conditioning (3).
Helps prepare students to study for and pass the NSCA Certified Strength and Conditioning Specialist (CSCS) examination. This course also helps students develop professional materials and skills to obtain employment upon graduation. For undergraduate credit only. Prerequisite(s): admission in the BS in exercise science with a concentration in strength and conditioning program, or departmental consent.

EXSC 590. Independent Study (1-3).
Arranged individual independent study in specialized content areas under the supervision of a faculty member. Prerequisite(s): departmental consent.

EXSC 591. Internship in Strength and Conditioning I (2).
Complements and enhances the student's academic program by providing an opportunity to apply and acquire knowledge in a workplace environment as an intern. For undergraduate credit only. Prerequisite(s): EXSC 440 and admission to the BS in exercise science with a concentration in strength and conditioning program, or departmental consent.

EXSC 592. Internship in Strength and Conditioning II (3).
Complements and enhances the student's academic program by providing an opportunity to apply and acquire knowledge in a workplace environment as an intern. For undergraduate credit only. Prerequisite(s): EXSC 591 and admission to the BS in exercise science with a concentration in strength and conditioning program, or departmental consent.

EXSC 593. Internship in Strength and Conditioning III (3).
Complements and enhances the student's academic program by providing an opportunity to apply and acquire knowledge in a workplace environment as an intern. For undergraduate credit only. Prerequisite(s): EXSC 542 and admission to the BS in exercise science with a concentration in strength and conditioning program, or departmental consent.

EXSC 595. Human Performance Research (3).
Experiential learning course provides opportunities to engage in research activities conducted in the Human Performance Laboratory. Repeatable for a total of 6 credit hours. Prerequisite(s): departmental consent.

EXSC 595H. Human Performance Research Honors (3).
Experiential learning course provides opportunities to engage in research activities conducted in the Human Performance Laboratory. Repeatable for a total of 6 credit hours. Prerequisite(s): departmental consent.

EXSC 715. Body Composition and Weight Management (3).
A comprehensive coverage of the theoretical and scientific aspects of body composition assessment and current strategies for effective weight management. The limitations and usefulness of reference and field methods for assessing body composition in research, clinical and health/fitness settings are addressed. The overall intent of this course is not only to provide classroom-based theory regarding body composition assessment, but also hands-on experience and training in applying the different assessment techniques.

EXSC 716. Psychosocial Aspects of Sports Injury, Illness and Rehabilitation (3).
Cross-listed as CLES 750AF. Explores the psychosocial factors related to sport injury and illness and their effects on the rehabilitation process, mostly connected to sports and physical culture. Offers an opportunity to develop critical thinking and applicable skills as students consider the place of injury, illness and pain within the social and psychological worlds of sport. Explores the mechanisms through which psychosocial factors influence sports injury, illness, understanding, prevention, treatment and rehabilitation outcomes.

EXSC 732. Pathophysiology of Cardiovascular Disease (3).
Introduces the pathophysiology of multiple cardiovascular conditions and the developing industry of cardiac rehabilitation. Introduces assessment techniques in electrocardiography (ECG) to assist in the diagnosis of cardiovascular disease. Includes an introduction to ECG leads, rate and rhythm, ECG complexes and intervals, conduction disturbances, arrhythmia, ECG identification of myocardial infarction location and drug effects on an ECG. Pre- or corequisite(s): EXSC 490 or EXSC 490H.

EXSC 750L. Motivation (3).
This course is designed to provide the skills and knowledge necessary to properly motivate individuals, groups and teams in a leadership role. Focus is placed on enhancing, creating or maintaining intrinsic motivation through the comprehension of motivation theory, primarily Self-Determination Theory, Achievement Goal Theory and The

Progressive Motivation Cycle. In addition, techniques will be developed to apply concepts learned from theory and research to real situations. The knowledge and skills gained from this course will help students excel as leaders in sport, education, business or any chosen career.

EXSC 750Q. ACE Personal Training Course (1-2).
Gives students the knowledge and understanding necessary to prepare for the ACE personal training certification exam. Students learn a comprehensive system for designing individualized programs based on the unique health and fitness goals of clients. Students can take the exam for an additional $249.

EXSC 762. Statistical Concepts in Human Performance Studies (3).
Covers descriptive statistics, elementary probability, distributional properties, one- and two-population mean and variance comparisons, ANOVA, linear regression and correlations. In addition, more advanced principles in parametric and nonparametric statistics are emphasized. Prerequisite(s): junior classification or graduate student status.

EXSC 780. Physical Dimensions of Aging (3).
Cross-listed as PHS 780. Develops an understanding of the complex physiological changes that accompany advancing age and the effects of physical activity on these factors. Also develops an appreciation for how functional consequences affect mental and social dimensions of life. Attention is given to sensory, motor, cognitive and psychological changes. Emphasizes factors associated with the preparation, implementation and evaluation of research projects involving older adult populations.

EXSC 781. Cooperative Education (1-3).
Academic program that expands a student's learning experiences through paid employment in a supervised educational work setting related to the student's major field of study or career focus. Repeatable for credit. A maximum of 3 credit hours (for nonthesis option) or 6 credit hours (for thesis option) may count toward the graduate degree.

EXSC 790. Applied Exercise Physiology (3).
Focuses on the applied aspect of exercise physiology. Includes the areas of environmental influences on performance; optimizing performance through training, nutrition and ergogenic aids; training and performance of the adolescent athlete and the differences in performance and training between genders. Pre- or corequisite(s): EXSC 490 or EXSC 490H or EXSC 830.

EXSC 795. Physiology of Athletic Performance (3).
Explores the physiological responses involved with various athletic performances, including sports requiring endurance, speed and power. Includes such areas of physiological study as metabolic energy systems, cardiovascular and skeletal muscle adaptation, muscle fiber type differentiation and responses to extreme environmental conditions. Discovers parameters for performance and establishes guidelines for training at high levels of performance.

EXSC 797. Exercise in Health and Disease (3).
Introduction to the physiology of disease and the effects of short- and long-term exercise on specific conditions. Understanding the guidelines for exercise testing and prescription in high risk populations. Pre- or corequisite(s): EXSC 490 or EXSC 490H or departmental consent.

EXSC 800. Recent Literature in the Profession (3).
Survey and critical analysis of research and other pertinent materials in the field.

EXSC 815. Fitness Assessment/Exercise Recommendations (3).
Introduces techniques appropriate for screening, health appraisal and fitness assessment as required for prescribing exercise programs for individuals without disease or with controlled disease. Requires out-of-class laboratory experiences. Prerequisite(s): EXSC 490 or EXSC 490H or equivalent and graduate standing.

EXSC 830. Advanced Physiology and Anatomy of Exercise (3).
In-depth study of the physiological and anatomical basis of exercise and training. Includes respiratory dynamics, cardiovascular function, energy metabolism, regulation during rest, steady state and exhaustive physical activity, identification of joint movements, and the recognition of muscles and nerves that are involved in movement. Emphasizes immediate and long-term adaptation to exercise and training. Prerequisite(s): EXSC 490 or EXSC 490H with grade of C or departmental consent.

EXSC 857. Internship in Exercise Science/Wellness (6).
Internship in selected area of specialization within the exercise science program. Students spend the equivalent of full-time employment in an appropriate agency for one full semester. Prerequisite(s): departmental consent.

EXSC 860. Research Methods in the Profession (3).
Examination of research methodology as related to topics in health, PE, sports studies and exercise science/wellness. Includes review and critical evaluation of the literature, research design and statistical processes, methodology, data collection techniques, computer-based analysis of data and thesis/report writing. Fulfills the university's professional and scholarly integrity training requirement covering research misconduct, publication practices and responsible authorship, conflict of interest and commitment, ethical issues in data acquisition, management, sharing and ownership. Students design and complete a mini research project.

EXSC 875. Thesis Research (1-2).
Development of a research problem and proposal with the direction of a graduate faculty member. Repeatable for credit. Prerequisite(s): admission to graduate school in good standing, EXSC 860, departmental consent.

EXSC 876. Thesis (1-2).
Student-driven research experience to address a specific research question. Potential topics should be formulated by the student and discussed with their advisor. Students must be enrolled in this course during the semester in which all requirements for the thesis are met. Repeatable for credit. Prerequisite(s): EXSC 875 and consent of the student's committee chair.

EXSC 890. Special Topics (1-4).
An umbrella course created to explore a variety of subtopics differentiated by letter (e.g., 890A, 890B). Not all subtopics are offered each semester – see the course schedule for availability. Students enroll in the lettered courses with specific topics in the titles rather than in this root course. Prerequisite(s): departmental consent.

EXSC 890A. Advanced Technologies in Human Performance (1-3).
Serves as a broad introduction to recent advancements in exercise science technology with an emphasis in augmented/virtual reality and wearable/portable technology. Additionally, this course provides students opportunities to work with exercise science data to answer questions pertinent to personal and/or professional interests. The goals of the course are to learn the basics about how technologies can be used to assess human performance. Repeatable for up to 3 credit hours. Prerequisite(s): departmental consent.

EXSC 890B. Biomechanics (1-3).
Develops students' knowledge and appreciation of the instrumentation used to evaluate human movement and function. Students learn data collection techniques in biomechanics, electrophysiology of muscle and

functional imaging. Repeatable for up to 3 credit hours. Prerequisite(s): departmental consent.

EXSC 890C. Certification and Licensure in Human Performance (1-3).
Prepares students to take a professional certification or licensure exam offered by the ACSM, NSCA, FSBPT or another nationally accredited organization. Repeatable for up to 3 credit hours. Prerequisite(s): departmental consent.

EXSC 890D. Development in the Profession (1-3).
Provides students with opportunities to apply their knowledge in teaching, research and/or service settings within the profession. Students also gain an understanding of the various ways they can engage in the profession and continue to develop as a professional throughout their career. Repeatable for up to 3 credit hours. Prerequisite(s): departmental consent.

EXSC 890E. Exercise Physiology (3).
Explores the physiological adaptations of various systems (muscular, neural, metabolic, endocrine, cardiovascular, respiratory, etc.) during exercise and training, and examines how these systems respond to both acute and chronic physical stress. Prerequisite(s): departmental consent.

EXSC 890F. Fitness Instruction (1-3).
Covers the components of becoming a group fitness instructor including motivation techniques, rapport building, cuing, proper form, demonstration and fitness class design. Students gain experience teaching strength and cardio classes in a variety of settings. Repeatable for up to 3 credit hours. Prerequisite(s): departmental consent.

EXSC 895. Applied Research (1-4).
Provides opportunity for the student to develop, in collaboration with a departmental faculty member, objectives and protocol for independent work.