

Exercise Science Pattern Descriptions

To provide the opportunity for students to explore and develop more specialized interests, the Exercise Science curriculum allows the selection of one career pattern ranging from 20-36 hours. Courses comprising the program patterns are based upon the recommendations of faculty members whose expertise is identified with these specialties. Individualized patterns may also be designed to meet personal goals. A list of specific courses required for each pattern may be obtained from the Health and Exercise Sciences program office or online at <http://hes.truman.edu>.

Biomechanics (20-24 Hours) The Biomechanics pattern is designed to prepare students for graduate school or an entry-level position in a biomechanics-related lab or personal training setting. Students in this pattern are interested in understanding anatomical and mechanical characteristics of human movement. Those completing this pattern will be prepared for analyzing the techniques of movement and have knowledge of how those processes relate to the movement product. Students within this pattern develop extensive knowledge of the muscular, kinematic, and kinetic nature of human movement, and use this information to analyze motion for the characteristics reflecting effective motion as well as those characteristics relating to injury risk. The pattern relies on a research-based approach to investigating biomechanical characteristics using commonly available tools including video-based motion analysis, electromyography, and force transduction. (Students must complete MATH 198 Analytic Geometry & Calculus I to fulfill the Mathematical Mode of Inquiry/Required Support. PHYS 195 Physics with Calculus I must be taken to fulfill the Physical Science Mode of Inquiry.)

Exercise Physiology (24-26 Hours) The Exercise Physiology pattern is designed to prepare students for graduate school or an entry-level position in clinical exercise physiology. The pattern develops extensive knowledge of the body under the adaptive stress of exercise including the study of body composition, energy metabolism, cardiovascular function, muscular strength and development, neuromuscular integration, and thermal regulation. An emphasis is placed on development of a research-based approach to investigating physiological phenomena. Students who wish to enter clinical exercise physiology (cardiac rehabilitation) have the option to specialize their exercise physiology studies with advanced studies in biomechanics, cardiac pathophysiology, pharmacology, and behavior modification. (Students must complete CHEM 120 Chemical Principles II to fulfill the Physical Science Mode of Inquiry requirement.)

Physical Education/Health/Coaching (34-35 Hours) Students who select this pattern are interested in teaching Physical Education, Health Education, and/or coaching within the public or private school system, grades K-12. By completing this pattern, students will fulfill all course requirements necessary to be eligible to apply for the Master of Arts in Education (M.A.E.) Program in Exercise Science leading to certification to teach Physical Education and/or Health Education in the public/private school system. Required coursework includes substance abuse prevention, human sexuality, mental and community health, school health programs, outdoor activities, gymnastics, physical activities/creative movement for children, adapted physical education, principles of coaching, and three foundational education courses. This pattern requires the student to complete specific coursework to fulfill LSP and certification requirements. (Because of the background required, it is strongly recommended that SOAN 190 Sociological Inquiry be taken for the Required Support/Intercultural Perspective requirement. Students must also take HIST 104 United States History I or HIST 105 United States History II to meet the Historical Mode of Inquiry, as well as POL 161 American National Government to meet the Missouri Statute requirement. Completion of ES 179 Outdoor Activities and ES 186 Outdoor Venture Activities to fulfill Exercise Science activity requirements in the major must also occur.) Please see the TEACHING CERTIFICATION section for more information on the M.A.E. Program.

Pre-Medicine (33-36 Hours) The pre-medicine pattern is designed to prepare a student to take the Medical College Admission Test (MCAT), which is required for admission to medical school. The pre-medicine pattern is viewed as a viable choice for those who are interested in the orthopedic/sports medicine aspect of physician care. The required courses in biomechanics, kinetics, exercise physiology, motor learning and exercise and sport psychology or sport sociology provide a solid foundation for the sports medicine/team physician. To be a viable candidate for admission to a graduate program in medicine, a student should maintain a cumulative GPA of 3.25 or higher. (Students following this pattern are not required to complete the ES232/ ES435 Exercise Science major requirement. MATH 198 Analytic Geometry & Calculus I must be taken to fulfill the Mathematical Mode of Inquiry/Required Support. CHEM 120 Chemical Principles II must be taken to fulfill the Physical Science Mode of Inquiry requirement. ES

505 Advanced Biomechanical Analyses is strongly recommended for students interested in Orthopedics, but not required.)

Pre-Physical Therapy (32-33 Hours) This pattern is designed to prepare the student for admission into a graduate-level program in physical therapy. Physical therapy is a health profession that applies scientific principles to correct and prevent problems in human movement. Physical therapists work to restore function and movement through direct treatment, education, consultation, and management of rehabilitation resources. They examine, diagnose, and treat immediate problems, then teach clients how to take care of themselves by demonstrating exercises and how to use their bodies properly to gain strength and mobility and prevent recurring injury. Course work includes human anatomy, therapeutic modalities, as well as physics and psychology. To be a viable candidate for admission to a graduate program in physical therapy, a student should maintain a cumulative GPA of 3.25 or higher. Students following this pattern are specifically prepared for coursework necessary to fulfill the prerequisites of articulation/cooperative education agreements currently in place with several top Doctor of Physical Therapy (D.P.T.) programs. More information can be obtained on-line at <http://hes.truman.edu/articulation.asp>. (Students must complete CHEM 120 Chemical Principles II to fulfill the Physical Science Mode of Inquiry requirement. MATH 198 Analytic Geometry & Calculus I is strongly recommended to fulfill the Mathematical Mode of Inquiry/Required Support.)

Pre-Physician Assistant (26-29 Hours) The Pre-Physician Assistant pattern is designed to prepare students for entry into an advanced degree program that would lead to certification as a Physician Assistant. Physician Assistant (PA) programs prepare the student to operate as a mid-level practitioner in family practice, preventive medicine, or orthopedic settings (sports medicine) under the supervision of a physician. In addition to course work in biology, chemistry, physics, and psychology, the student must plan to gain experience in a medical-related setting throughout the college experience. Physician Assistant graduate programs often require 2000+ hours of experience in health settings prior to admission. It is strongly advised that the student start to develop a related work dossier upon entry to the university to be able to complete the required hours for admission into graduate schools. To be a viable candidate for admission to a physician's assistant graduate program, a student should maintain a cumulative GPA of 3.00 or higher. (Students must complete CHEM 120 Chemical Principles II to fulfill the Physical Science Mode of Inquiry requirement.)

Psycho-Social Aspect of Sport (28 Hours) The psycho-social aspect of sport pattern is designed to prepare students for entry into graduate training in sport and exercise psychology, sport sociology, or counseling. This pattern employs an interdisciplinary approach requiring courses from exercise science, psychology, and sociology based upon the Association for the Advancement of Applied Sport Psychology's (AAASP) certification model. Students will explore, through coursework, the basic content areas of social and psychological theory and specific content areas of applied sport psychology. This coursework will lead to a minor in psychology. This pattern prepares students to enter into graduate programs that emphasize teaching and conducting scholarly research in psychology/sociology of sport or counseling. (Students must complete both ES 502 Social Problems in Sport and ES 503 Exercise and Sport Psychology to fulfill specific Exercise Science major and pattern requirements. SOAN 190 Sociological Inquiry must be taken to fulfill Intercultural Perspective/Required Support.)

Sport & Recreation Management (25 Hours) This pattern is designed to prepare Exercise Science majors for leadership positions in the fields of sport and recreation. Individuals with careers in sport management maintain a variety of positions that help direct competitive sport organizations such as high school, intercollegiate, or professional athletic programs. Recreation is a broad field that encompasses diverse organizations (YMCA/YWCA, Parks & Recreation departments) and highly specialized settings (i.e. golf/ski resorts). Careers in recreation focus on the leadership of broad-based programs that seek to maximize participation. The curriculum, with a foundation in the sciences supplemented by business and specialized courses, will foster an interdisciplinary perspective on Exercise Science and enable students to pursue graduate degrees in sport and recreation management. Students must be accepted into the Business Administration minor before enrolling in any BSAD or ACCT course. A minor in Business Administration will be awarded to students who complete this pattern and satisfy all other requirements for the minor. Students must maintain a minimum GPA of 2.5 to remain in the pattern. (Students must complete ES 502 Social Problems in Sport to fulfill Exercise Science major requirements. ES 179 Outdoor Activities, ES 186 Outdoor Venture Activities, ES 200 Techniques of Aerobic Dance, and ES 236 Creative Dance for Children are strongly recommended to fulfill specific activity requirements in the major.)

Individualized The individualized pattern is designed to support the development of special support areas not available from the normal selection. This pattern must be relevant to the career goals of the student

and must be one that would logically follow from the courses included with the major. This pattern is not a "catch-all" for courses taken that do not fit the published degree requirements. Individualized patterns must be submitted to the Program Director by the academic advisor for approval. The individualized pattern should be agreed upon early to facilitate course sequence planning and must be equal or greater in credit hours than the Exercise Science pattern above with the lowest number of credits listed.