

# EXERCISE SCIENCE (EXSC)

## EXSC 3230 - Exercise Physiology

3 Credits

This course examines types of exercise, muscle physiology and training regimens to improve muscle strength, power and endurance. Cardiovascular and pulmonary responses to exercise and training regimens will be included. Concepts of obesity and its management also will be covered.

### Restrictions:

Enrollment limited to students in the Physical Therp/Athletic Train department.

## EXSC 4121 - Clinical Biomechanics

3 Credits

This course emphasizes the application of biomechanical principles to human movement. Kinematics, kinetics, mechanical properties of biological tissue, muscle actions, and joint structure and function are examined. The course helps prepare students to observe, describe, and discuss human movement and alignment using biomechanical terms.

**Prerequisite(s):** (PHYS 1220, PHYS 1310, PHYS 1330, or PHYS 1240)

## EXSC 4122 - Instrumentation in Human Biomechanics Research

3 Credits

This course focuses on developing foundational knowledge for collecting, analyzing, and interpreting data from equipment used in human biomechanics research. Data acquired from force plates, three-dimensional camera systems, and wearable sensors during different movement tasks (e.g., walking, running, jumping) will be the primary focus.

**Prerequisite(s):** PHYS 1220

## EXSC 4150 - Nutrition, Health, and Physical Performance

3 Credits

This course focuses on the impact of nutrition to health and physical performance. There is an emphasis on the function of macronutrients and micronutrients in physiology with emphasis on energy metabolism and dietary strategies to enhance performance. Application of principles is through discussion of case studies. (Offered fall semester)

**Prerequisite(s):** DIET 2080; (EXSC 3230 or DPT 3230)

### Restrictions:

Enrollment limited to students in the Doisy College Health Sciences college.

## EXSC 4170 - Exercise Testing and Prescription

3 Credits

This course focuses on exercise testing and prescription for healthy populations and special considerations such as children, older adults, pregnancy, and diseased populations. This course includes lab experiences for assessment methods for cardiovascular and muscular fitness, body composition and flexibility, and an examination of the principles for prescribing cardiovascular, strength, and flexibility exercise. Students will be prepared for and encouraged to take examinations by the American College of Sports Medicine (either that of the personal trainer or for clinical exercise physiologist).

**Prerequisite(s):** ((ANAT 1000, PPY 2540, and BIOL 4460) or DIET 5690)

## EXSC 4241 - Clinical Research and Design

2 Credits

This course will introduce students to several types of clinical research designs including designs for group studies, epidemiological studies, and qualitative studies. Interpretation of selected statistical methods also will be included.

**Prerequisite(s):** STAT 1100

### Restrictions:

Enrollment limited to students in the Physical Therp/Athletic Train department.

**Attributes:** IPE - Research

## EXSC 4260 - Enhancing Human Performance

3 Credits

This course exposes learners to practical applications of exercise program design for sport-specific client populations. Through participation in this course learners will be able to design cardiorespiratory, power, speed, agility, core, balance, and strength programs for clients who participate in individual or team sports. Learners will apply principles of reactive neuromuscular training (plyometric) and integrated speed training to help clients achieve their individual training goals.

## EXSC 4910 - Internship / Fieldwork in Exercise Science

1-3 Credits (Repeatable for credit)

Supervised experience or internship in a cooperative program with business, government, community, clinical, or related establishments in exercise science, health, or health promotion. This fieldwork experience provides an ideal opportunity for students to gain skill and knowledge in areas not possible through other course work and co-curricular activities. Reflection activities enable the student to process the experience and connect fieldwork with curricular concepts and themes. The student will experience and reflect on team-based care and /or dynamics within their supervised experience identifying interprofessional and / or patient/client/family communication. Academic credit is awarded in proportion to the number of hours a student-intern completes. A student must work 150 hours to earn 3 credits (50 hours equals 1 credit hour).

**Prerequisite(s):** (CORE 1000 or UUC Ignite Seminar Waiver with a minimum score of S); CORE 1500\*

\* Concurrent enrollment allowed.

**Attributes:** IPE - Clinical Immersion, UUC:Reflection-in-Action

## EXSC 5121 - Clinical Biomechanics

3 Credits

This course emphasizes the application of biomechanical principles to human movement. Kinematics, kinetics, mechanical properties of biological tissue, muscle actions, and joint structure and function are examined. The course helps prepare students to observe, describe, and discuss human movement and alignment using biomechanical terms.

**Prerequisite(s):** (PHYS 1220 or PHYS 1310); (ANAT 1000, HSCI 3300, or HSCI 3400)

## EXSC 5241 - Clinical Research and Design

2 Credits

This course will introduce students to several types of clinical research designs including designs for group studies, epidemiological studies, and qualitative studies. Interpretation of selected statistical methods also will be included. (Offered spring only)

**Prerequisite(s):** STAT 1100

**Attributes:** IPE - Research

**EXSC 6122 - Instrumentation in Human Biomechanics Research**

3 Credits

This course focuses on developing foundational knowledge for collecting, analyzing, and interpreting data from equipment used in human biomechanics research. Data acquired from force plates, three-dimensional camera systems, and wearable sensors during different movement tasks (e.g., walking, running, jumping) will be the primary focus.

**Prerequisite(s):** PHYS 1220