EXERCISE SCIENCE

The exercise science (EX) major is designed for those students who are seeking a broad background in exercise and fitness. It can also serve as a foundation for graduate study in athletic training, physical therapy, exercise physiology, biomechanics, cardiac rehabilitation, wellness, strength & conditioning, and nutrition. The didactic and clinical components allow students the opportunity to explore related areas of study, including exercise physiology, strength & conditioning, exercise prescription, and fitness assessment. Graduates from the EX major are prepared to pursue either employment opportunities in health and fitness settings, or graduate school in those health professions noted above. Two accelerated pathways culminating in either a graduate professional degree in Physical Therapy or in Exercise Science and Nutrition are available as an EX major. Students interested in pursuing either accelerated program should contact the EX program for additional information.

The EX program has a competitive admissions process. Interested students should complete a Declaration of Major form and submit to the EX program. Students will be admitted to the EX program following completion of their second semester if they meet the following requirements:

- Complete the required first year prerequisites and meet or exceed a minimum GPA of 2.5, with no grade lower than a C in all science course prerequisites and EX 100 (Introduction to Exercise Science).

Transfer students should inquire with the EX Program Director regarding their potential admission status before applying.

Majors are required to take all EX required courses as well as five EX elective courses.

Differential Tuition

Sacred Heart University has implemented a differential tuition for the EX program. The cost of EX education is increased relative to other majors due to intensive clinical laboratory courses and clinical supervision required to maintain the professional standards of exercise science education in addition to the associated expenses of clinical education. This charge will be reflected as a program fee each semester in addition to undergraduate tuition and fees. The fee will be initiated for EX upon admission to the major.

All EX students must maintain a minimum grade point average (GPA) of 2.5 and receive a C or better in all prerequisite and required courses. This undergraduate program leads to a Bachelor of Science (BS) degree in EX.

Additional Requirements

All students are required to maintain current CPR for the Professional Rescuer certification (or its equivalent), annual PPD verification, Criminal Background Check, sexual harassment training. The EX program offers both CPR certification and sexual harassment training annually and PPD testing can be obtained from University Health Services. Students will not be permitted to participate in any clinical experience (EX 366, EX 367) without completing the above criteria. Students are responsible for providing transportation to off-campus sites.

Faculty

WENDY BJERKE, PH.D.
Clinical Associate Professor

BEAU GREER, PH.D., C.S.C.S.
Graduate Program Director Associate Professor
MATTHEW MORAN, PH.D.
Undergraduate Program Director
Assistant Professor

ANNA PRICE, PH.D., C.H.E.S., H.F.S.
Assistant Professor

PETER RONAI, M.S., R.C.E.P., C.S.C.S.-D,
F.A.C.S.M.
Clinical Associate Professor

ERIC SCIBEK, M.S., A.T.C., C.S.C.S.
Clinical Assistant Professor

VALERIE WHERLEY, PH.D.
Clinical Assistant Professor

Exercise Science Required Courses

EX 100 Introduction to Exercise Science
EX 230 Research and Evaluation for Health Professionals
EX 250 Exercise Physiology, with Lab
EX 260 Kinesiology, with Lab
EX 362 Exercise Testing and Prescription, with Lab
EX 363 Developing Strength and Conditioning Programs, with Lab
EX 366 Clinical Rotation
EX 399 Seminars in Exercise Science

Exercise Science Electives

EX 253 Pathophysiology and Pharmacology
EX 255 Nutritional Aspects of Human Health and Performance
EX 270 Neural Control of Human Movement
EX 290 Behavioral Aspects of Exercise Science
EX 299 Special Topics in Exercise Science

EX 320 Pediatric Exercise Science
EX 358 Exercise and Aging
EX 361 Functional Gait Analysis
EX 365 Clinical Exercise Science
EX 367 Internships in Exercise Science
EX 390 Planning & Evaluation for Physical Activity and Nutrition Programs
EX 398 Independent Research in Exercise Science

Required supporting courses

BI 111/113 Concepts of Biology I, with Lab
BI 112/114 Concepts of Biology II, with Lab
BI 206/208 Human Anatomy and Physiology I, with Lab
BI 207/209 Human Anatomy and Physiology II, with Lab
CH 117/119 General Organic Biochemistry, an Overview, with Lab
or
CH 151/153 General Chemistry I, with Lab
MA 140 Precalculus
PS 110 Introduction to Psychology
PS 295 Health Psychology
PY 100 Elements of Physics
or
PY 111/113 General Physics I, with Lab

Exercise Science Course Descriptions

EX 100 Introduction to Exercise Science
3 CR
Aspects of a healthy lifestyle including epidemiology, basic cardiovascular and musculoskeletal fitness principles, energy systems, and an introduction to exercise prescription are presented in addition to strategies to promote wellness. This course
is intended for students pursuing a degree in exercise science.

**EX 101 Health, Fitness and Recreation**  
1 CR  
This course includes baseline and subsequent individualized physical fitness assessments, exercise programming, and recreational activities at the William H. Pitt Center, Human Performance laboratory, and within Fairfield County. Be prepared to exercise on campus and participate in optional hiking, cycling, and other recreational sports and activities in the area. All fitness levels welcome to enroll.

**EX 230 Research and Evaluation for Health Professional**  
3 CR  
An introduction to quantitative and qualitative research methods relevant to exercise science. Topics will include: conducting literature searches, scientific writing style, proper citation, study design, levels of measurement, parametric and non-parametric biostatistics, qualitative data analysis, and ethical considerations in exercise science research.  
Prerequisites: EX 100

**EX 250 Exercise Physiology with Lab**  
4 CR  
Presents a workable knowledge of the body’s response to physical activity, exercise metabolism, cardiopulmonary function, adaptations to training and environmental factors are addressed as well as exercise training guidelines. assessment, clinical skills, aerobic testing, strength and power testing, and flexibility testing are among lab activities.  
Prerequisites: BI 207/209, EX 230 (Pre- or Corequisite)

**EX 253 Pathophysiology and Pharmacology**  
3 CR  
A systematic study of the disease process and disorders commonly seen in an exercise setting. emphasis is on the effect of disease symptoms, management, and pharmacological agents on physical activity.  
Prerequisites: BI 207/209 and EX 230 (Pre- or Corequisite)

**EX 255 Nutritional Aspects of Human Health and Performance**  
3 CR  
Provides an examination of the six classes of nutrients with strong emphasis on chronic disease prevention and improving athletic performance. issues concerning dietary supplements, functional foods, and the ethics of food choices are also explored.  
Prerequisites: BI 207/209 and EX 230

**EX 260 Kinesiology with Lab**  
4 CR  
Investigates basic mechanical and kinesiological principles and their functions, interrelationships, and involvement with the mechanics of human motion.  
Prerequisites: EX 230 (Pre- or Corequisite); PY 100, BI 206/208

**EX 270 Neural Control of Human Movement**  
3 CR  
This course reviews the neural structure and function of human movement. Anatomical, developmental, and physiological foundations are covered during the first part of the course. Progressive concepts and theories of neuroplasticity, motor control, motor learning, and motor skills are presented as they relate to daily activities and sport. The course completes with an introduction to pathological movement conditions and therapeutic strategy.  
Prerequisites: EX 230, BI 206/208

**EX 290 Behavioral Aspects of Exercise**  
3 CR  
This course will examine psychosocial and behavioral factors that influence physical activity, exercise, and rehabilitation, as well
as individual, interpersonal, community, environmental, and policy approaches to promoting physical activity. Additional topics include mental health effects of exercise and sport psychology.
Prerequisites: EX 230 (Pre- or Corequisite)

**EX 299 Special Topics in Exercise Science**  
1-3 CR  
In-depth exploration of a specific, applied exercise science topic. Course can be repeated if topic varies.
Prerequisites: Consent of instructor.

**EX 320 Pediatric Exercise Science**  
3 CR  
This course will provide an introduction to the field of pediatric exercise science. Topic areas will include: growth and development in children and adolescents, puberty and endocrine influences on pediatric exercise responses, physical activity on the growing child, resistance training and muscular strength in youth, exercise training for aerobic endurance in children, and patterns of motor development. This course includes a service learning component in addition to a weekly seminar.
Prerequisite: EX 250

**EX 358 Exercise and Aging**  
3 CR  
Examines changes occurring in anatomical and physiological systems as adults mature, their effects on performance, and explores the theory and practice of selecting age-appropriate fitness-promoting activities and function enhancing activities. This course includes a service learning component including two weekly lecture sessions.
Prerequisites: EX 250, EX 260

**EX 361 Functional Gait analysis**  
3 CR  
This course is designed to provide a comprehensive investigation of normal and pathological human locomotion patterns from a biomechanical perspective. Upon completion of this course the student will be proficient in (1) practical gait analysis techniques, (2) analysis of gait patterns, (3) etiology of pathological gait, and (4) the efficacy of certain surgical, orthopedic or foot wear treatments.
Prerequisites: EX 260

**EX 362 Exercise Testing and Prescription with Lab**  
4 CR  
Reviews the scientific basis and practical concerns related to the assessment of health related physical fitness and the development of safe, effective and comprehensive physical fitness programs. Emphasis is on both proper exercise technique/instruction and the creation of programs utilizing physiological and biomechanical principles and numerous modalities. This course addresses content within the American College of Sports Medicine (ACSM) Health Fitness Specialist (HFS) certification examination.
Prerequisites: EX 250

**EX 363 Developing Strength and Conditioning Programs with Lab**  
4 CR  
Reviews the scientific basis and practical concerns related to the development of safe, effective strength, and conditioning programs. Emphasis is on both proper exercise technique/instruction and the creation of programs utilizing numerous systems and modalities. This course also addresses content within the National Strength and Conditioning Association (NSCA) Certified Strength and Conditioning Specialist (CSCS) certification examination.
Prerequisites: EX 250, EX 260

**EX 365 Clinical Exercise Science**  
3 CR  
Explores diagnostic testing, exercise prescription, and lifestyle modification in health and chronic disease rehabilitation.
Primary and secondary prevention and treatment of heart, lung, immune, and metabolic diseases are also addressed.
Prerequisites: EX 250, EX 260

**EX 366 Clinical Rotation**

2 CR

Off-campus clinical rotation surveys the scope of practice that characterizes exercise science. Specifically, students visit cardiopulmonary rehabilitation centers, corporate fitness centers, strength and conditioning facilities, and health and wellness programs for special populations including children and geriatric patient/clients.

Prerequisite: CPR/AED, proof of up-to-date vaccinations (PPD, measles, mumps, rubella, varicella, Hep B), EX 250

**EX 390 Planning & Evaluation for Physical Activity and Nutrition Programs**

3 CR

Skills and competencies required for promoting active living and healthy eating in communities will be examined. Specifically, students will examine health promotion program planning, program evaluation, cultural competency, health advocacy, and health communication. Successful active living and healthy eating programs will be drawn upon as examples.

Prerequisites: EX 290

**EX 399 Seminar in Exercise Science**

1 CR

In-depth exploration of a specific, applied exercise science topic.

Prerequisite: EX 250, EX 260 (Pre- or Corequisite)