

EXERCISE SCIENCE

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wp.stolaf.edu/exercise-science (<http://wp.stolaf.edu/exercise-science>)

Exercise Science is the study of physiological and functional adaptations to movement. The field is richly interdisciplinary, involving such disciplines as anatomy, chemistry, biology, physiology, biomechanics, motor control, psychology, nutrition, and injury prevention and management. Rigorous and systematic study of these disciplines enables students to understand how and why people move and the factors which limit and enhance our capacity to move.

Overview of the Major

The Exercise Science major at St. Olaf is designed for students interested in the advanced and specialized study of the biophysical aspects of exercise. The major supports academic linkages across disciplines and provides excellent preparation in a wide variety of fields. It also prepares students for advanced study in one of the disciplines related to exercise science (such as physical therapy and rehabilitation, biomechanics, occupational therapy, nutrition, exercise physiology, sports medicine, and cardiac rehabilitation).

Intended Learning Outcomes for the Major (<http://wp.stolaf.edu/curriculum-committee/exercise-science-major-ilos>)

Distinction

See Academic Honors (<http://catalog.stolaf.edu/academic-regulations-procedures/academic-honors/#distinction>)

Related Program

Neuroscience Concentration

See Neuroscience (<http://catalog.stolaf.edu/academic-programs/neuroscience>)

Requirements

Students majoring in exercise science complete eight core courses and two electives. The courses include:

Code	Title	Credits
Core courses		
BIO 143	Human Anatomy and Physiology: Cells and Tissues	1.00
BIO 243	Human Anatomy and Physiology: Organs and Organ Systems	1.00
NURS 110	Nutrition and Wellness	1.00
ESTH 374	Biomechanics	1.00
ESTH 255	Prevention and Care of Athletic Injuries	1.00
ESTH 375	Physiology of Exercise	1.00
ESTH 390	Exercise Science Seminar	1.00
PSYCH 125	Principles of Psychology	1.00
Electives		

Select two of the following: 2.00

ESTH 295	Internship and Reflection Seminar
ESTH 373	Motor Control and Learning
ESTH 376	Fitness Assessment and Exercise Prescription
PSYCH 230	Research Methods in Psychology
NEURO 239	Cellular and Molecular Neuroscience
PSYCH 241	Developmental Psychology
PSYCH 247	Psychopathology
STAT 110	Principles of Statistics
or STAT 212	Statistics for the Sciences
or STAT 214	Honors Statistics for the Sciences

Total Credits 10

The department also recommends:

ESTH 394 Academic Internship

ESTH 398 Independent Research

CHEM 121 General Chemistry

Courses

Physical Activities

- SPM (<http://wp.stolaf.edu/curriculum-committee/files/2013/12/SPM.pdf>)

The following courses fulfill Studies in Physical Movement (SPM) (<http://wp.stolaf.edu/curriculum-committee/files/2013/12/SPM.pdf>) general education requirement. See also Dance (<http://catalog.stolaf.edu/academic-programs/dance>) Department. All .25 credit activities courses are repeatable; up to a total of four registrations are allowed. Students may only repeat an activity after the SPM requirement has been completed with two courses that differ from each other.

ESAC 103: Golf (0.25)

This course presents an introduction/review of beginning golf skills, rules, and strategies. The course is not intended for the experienced golfer. Equipment available. Course fee.

ESAC 106: Rock Climbing (0.25)

Students learn basic rock climbing skills, techniques, and safety procedures.

ESAC 108: In-Line Skating (0.25)

Students learn basic skills and techniques of in-line skating. Equipment is required for participation.

ESAC 110: Triathlon Training (0.25)

Students learn and practice the skills and techniques involved in completing a triathlon. Triathlon training is designed to introduce fitness-oriented swimming, cycling, and running as a means of acquiring cardio respiratory endurance, muscle strength, and proper weight and body maintenance. Along with training, class sessions include race strategy discussion, transitioning techniques, training plan formation, event planning, and an in-class or community triathlon event. Before enrolling, students should be able to swim at least 100 yards, cycle for at least 3 miles, and run at least 1 mile without stopping to rest. Students must provide their own equipment, including a bicycle. Offered annually in the spring semester.

ESAC 111: Basketball (0.25)

This course offers an introduction/review of fundamental skills, rules, and drills. Students focus on basic strategy in games playing.

ESAC 117: Ultimate Frisbee (0.25)

Students learn the fundamental skills, rules, techniques, and strategies associated with the sport of Ultimate Frisbee.

ESAC 118: Lifetime Sports and Games (0.25)

This course introduces students to a wide range of lifetime sports and games. Students learn the history and origin of these activities along with the basic rules, etiquette, and strategies.

ESAC 121: Beginning Swimming (0.25)

This course is for the non-swimming and the novice swimmer only.

ESAC 122: Lifeguard Training (0.25)

This course teaches the skills necessary for lifeguarding, first aid, AED, CPR, and waterfront guarding certification.

Prerequisite: must be able to swim 550 yards (22 lengths).

ESAC 128: Fly-Fishing/Fly-Tying (0.25)

This course introduces students to the lifetime sport of fly-fishing and fly-tying. Equipment available. Course fee.

ESAC 130: Swim Fitness (0.25)

This is an aerobic-based course utilizing swimming and water exercises.

Prerequisite: be able to swim 300 yards.

ESAC 131: Aerobics (0.25)

Students learn and apply the basic principles of fitness through a variety of aerobic activities.

ESAC 135: Jogging/Running (0.25)

This is an aerobic-based course utilizing instruction and participation in running and jogging to enhance personal fitness and training knowledge.

ESAC 136: Fitness Walking (0.25)

This is an aerobic-based course utilizing instruction and participation in walking to enhance personal fitness and training knowledge.

ESAC 140: Weight Training (co-ed) (0.50)

Students learn the principles, techniques and safety aspects of weight-training and implement a personal training plan. Students participate in a wide range of assessments (strength, power, endurance, nutrition, flexibility, body composition, stress).

ESAC 141: Weight Training Men (0.25)

Students learn the principles of training, basic techniques, and safety procedures. Students develop and implement a personal training plan during the course.

ESAC 142: Weight Training Women (0.25)

Students learn the principles of training, basic techniques, and safety procedures. Students develop and implement a personal training plan during the course.

ESAC 150: Racquet Sports (0.50)

This course offers instruction in basic strokes, history, rules, etiquette, and terminology of racquet sports (tennis, racquetball, badminton, pickleball, table tennis). Students participate in a wide range of assessments designed to enhance physical fitness (strength, endurance, nutrition, flexibility, body composition, stress).

ESAC 151: Badminton (0.25)

This course offers instruction/review of fundamental skills, rules, and etiquette of badminton. Students focus on basic strategy in games playing.

ESAC 157: Tennis (0.25)

This course offers instruction/review of basic strokes, history, rules, etiquette, and terminology of tennis. Students learn basic competition strategies in singles and doubles match play.

ESAC 158: Intermediate Tennis (0.25)

This course is for students who can already serve, score, play the net, and know basic singles and doubles strategy.

Prerequisite: ESAC 157, or permission of instructor.

ESAC 162: Classical Hatha Yoga (0.25)

Students learn and apply yoga principles of physical fitness and emotional wellness through a blend of yoga postures, movements, relaxation, breathing techniques, and mindfulness.

170-190 Intercollegiate Athletics (0.25)

Students competing in intercollegiate athletics may use the season of participation in a varsity sport for 0.25 course credit in exercise science activity. Only one 0.25 course can be applied toward the two 0.25 course Studies in Physical Movement (SPM) graduation requirement. It can only be used once as one-half of the two-course SPM requirement. Fall: varsity football, soccer, cross-country, women's volleyball; spring: remainder of intercollegiate sports. Participants in club sports are not eligible for academic credit. Students must register for the course during the competitive season, not afterward.

Professional Program

ESTH 133: Principles of Strength and Fitness Training

This course provides students with an opportunity to develop an in-depth understanding of the principles of strength training and conditioning, including anatomical and physiological considerations, lifting techniques, equipment selection, program development/evaluation, and weightlifting safety; thus enabling them to teach and train others. This course is for exercise science majors only.

ESTH 255: Prevention and Care of Athletic Injuries

Students study principles pertinent to prevention of injuries in sports and physical education; treatment and care of minor injuries. The course utilizes both lecture and laboratory. Offered annually.

ESTH 294: Academic Internship**ESTH 295: Internship and Reflection Seminar**

This seminar integrates the liberal arts with the experience of work and the search for a vocation or career. Course content will include both an off-campus internship and on-campus class sessions that connect academic theories/analyses of work with their particular internship experience. Students will also consider and articulate the value of the liberal arts for their pursuit of a creative, productive, and satisfying professional life.

ESTH 298: Independent Study**ESTH 373: Motor Control and Learning**

This course offers a basic study in motor skill acquisition and motor control. Topics include methods of assessment, evaluation and research in the areas of motor learning and control, the learning environment, and discussion of factors that influence the acquisition and performance of motor skills. Offered alternate years.

Prerequisite: Psychology 125.

ESTH 374: Biomechanics

Students analyze mechanical principles in depth as they affect human motion. Topics include study of muscular and skeletal systems, skill analysis, and motion measurement techniques. The course includes a laboratory component. Counts toward neuroscience concentration. Offered annually.

Prerequisite: BIO 143 and junior standing.

ESTH 375: Physiology of Exercise

Students study in-depth the physiology of exercise, covering cardiovascular and muscular adaptations to exercise and factors affecting performance, including body composition, environmental influences, training implications across gender and age, and the assessment of fitness. The course includes a laboratory component. Offered annually. Counts toward neuroscience concentration.

Prerequisite: junior standing and BIO 143 and BIO 243 or permission of instructor.

ESTH 376: Fitness Assessment and Exercise Prescription

This course presents the fundamental principles of exercise testing and prescription for both healthy and special needs individuals. Students explore techniques for assessing fitness and prescribing exercise using a variety of ergometers for improvement of health fitness parameters. Students also utilize case studies and laboratory experiences. Topics include health/medical histories, submaximal graded exercise testing, and assessment of strength, flexibility, pulmonary functions, and body composition. Offered annually.

Prerequisites: BIO 143, BIO 243 and ESTH 375.

ESTH 390: Exercise Science Seminar

Students may be co-registered for the capstone course and their final core courses in the major. Students conduct semester-long research on a topic and present their findings in the form of a research paper. Offered annually.

Prerequisite: senior standing.

ESTH 394: Academic Internship**ESTH 396: Directed Undergraduate Research**

This course provides a comprehensive research opportunity, including an introduction to relevant background material, technical instruction, identification of a meaningful project, and data collection. The topic is determined by the faculty member in charge of the course and may relate to his/her research interests. Offered based on department decision. May be offered as a 1.00 credit course or .50 credit course.

Prerequisite: determined by individual instructor.

ESTH 398: Independent Research**Faculty****Chair, 2017-2018****Cynthia Book**

Associate Professor of Exercise Science
exercise science

Shahram S. Ahrar

Instructor in Exercise Science, Head Wrestling Coach
wrestling; strength and conditioning

Kurt Anderson

Instructor in Exercise Science, Head Men's Soccer Coach
coaching; men's soccer

John A. Bazzachini

Instructor in Exercise Science, Head Women's Hockey Coach
women's hockey

Christine Daymont (on leave spring)

Associate Professor of Exercise Science; Head Women's Cross Country Coach
physiology of exercise; women's cross country; track and field

Kayla Hatting

Instructor in Exercise Science; Head Softball Coach
weight training; aerobics

Robert Hauck

Instructor in Exercise Science; Head Men's and Women's Swim Coach
aquatics; men's and women's swimming

Jennifer Holbein

Instructor in Exercise Science
biomechanics; exercise physiology

Daniel P. Kosmoski

Instructor in Exercise Science; Head Men's Basketball Coach
administration; men's basketball

Matthew C. McDonald

Instructor in Exercise Science, Head Baseball Coach
athletics administration; baseball

Scott Nesbit

Instructor in Exercise Science; Head Men's and Women's Tennis Coach
tennis; fly fishing

David A. Stromme

Instructor in Exercise Science, Head Women's Basketball Coach
basketball

Judith Tegtmeier

Instructor in Exercise Science; Director of Recreation
recreation; wellness