Exercise Science

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Exercise Science is the study of human movement, from its analysis to application in educational and sport settings. Its aim is the improvement of human performance and the enhancement of human development through the medium of physical activity throughout the lifespan. St. Olaf offers an exercise science major, a variety of activity courses to meet the general education requirements for graduation, intramural and club sports, and twenty-seven varsity sports.

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 the disciplines and provides excellent preparation in a wide variety of fields (such as physical therapy and rehabilitation, biomechanics, nutrition, exercise physiology, sport medicine, chiropractics, cardiac rehabilitation).

It is recommended that this major be complemented by other majors or concentrations of interest to the student.

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

Distinction

See Academic Honors (http://catalog.stolaf.edu/archive/2015-2016/academic-regulations-procedures/academic-honors/#distinction)

Related Programs

Biomedical Studies Concentration

See Biomedical Studies (http://catalog.stolaf.edu/archive/2015-2016/academic-programs/biomedical-studies) (classes of 2016 and earlier only; not available to students of the class of 2017 and after)

Many experiential components that support the biomedical studies concentration (such as being a student athletic trainer or interning at a sports medicine clinic) exist within the Exercise Science Department.

Neuroscience Concentration

See Neuroscience (http://catalog.stolaf.edu/archive/2015-2016/academic-programs/neuroscience)

Coaching Sequence

It is highly recommended that students in all teaching tracks who wish to be employed as a head varsity coach of an interscholastic sport in a senior high school successfully complete the following sequence of courses: ESTH 238, ESTH 255, ESTH 335, ESTH 374, and ESTH 375. Students not working toward teaching certification are encouraged to enter the program if they are interested in becoming an assistant or head coach. A coaching sequence candidate must make application for acceptance to the program with the Exercise Science Department (coaching sequence advisor).

Requirements

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

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
ESTH 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 290	Sport Ethics in Society	
ESTH 373	Motor 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

and completion of the biomedical studies (http://catalog.stolaf.edu/archive/2015-2016/academic-programs/biomedical-studies) concentration (available to students through class of 2016) or neuroscience (http://catalog.stolaf.edu/archive/2015-2016/academic-programs/neuroscience) concentration.

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/archive/2015-2016/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 101: ***Archery (0.25)***
Beginning level archers learn shooting skills. Students have opportunities for shooting both recurve and compound bows.

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 104: ***Bowling (0.25)***
This course introduces students to the basic skills, techniques, and etiquette of the lifetime sport of bowling. 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 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 125: ***Canoeing (0.25)***
This course offers instruction in and practice of the basic techniques of canoeing; safety in handling the canoe. Course fee.
Prerequisite: ability to swim.

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 excersises.
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 133: ***Individual Fitness (0.5)***
Students personally apply the basic principles of exercise through conditioning, strength development, endurance training, and aerobic activities. Students participate in a wide range of assessments designed to enhance physical fitness.

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 153: ***Racquetball (0.25)***
This course offers instruction/review of fundamental skills and rules of racquetball. 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 161: ***Self-Defense (0.25)***
Students learn a variety of practical measures to repel a physical attack, basic throws, kicks, falls, submission holds, and choke releases.

ESAC 162: ***Clasical Hatha Yoga (0.25)***
Students learn and apply yoga principles of physical fitness and emotional wellness through ablend 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 110: *Nutrition and Wellness*
This course explores the sources, chemical composition, and metabolic behavior of nutrients. Nutritional requirements for a balanced diet are examined as well as the consequences of excesses and deficiencies. Students use nutrition tools and guidelines to make sound food choices, learn how to read food labels, and consider factors affecting food consumption. Class activities increase students' awareness of a healthy diet, help students evaluate nutrition behaviors, and facilitate a nutritionally sound lifestyle. Offered annually. Counts toward biomedical studies concentration (for students through class of 2016).

ESTH 238: *Introduction to Coaching (0.50)*
This course introduces students to the areas of sport psychology, sport administration, sport physiology, and sport pedagogy and serves as a foundation to the series of courses required for coaching certification. Successful completion of the course may include certification in the American Sport Education Program (ASEP). Offered in alternate years. Counts toward educational studies and management studies concentrations.

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. Counts toward biomedical studies concentration (for students through class of 2016).

ESTH 290: *Sport Ethics in Society*
Students examine the conceptual framework for ethical decision-making using sports as a prism to examine normative perspectives. Varied ethical perspectives are analyzed through the conflicts presented in sports-related questions. Course readings and lectures examine the theoretical constructs of ethical decision-making from Christian and non-Christian positions. Offered annually. Counts toward biomedical studies concentration (for students through class of 2016) and management studies and media studies concentrations.
Prerequisite: completion of BTS-T or permission of instructor.

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 335: *Coaching Practicum (0.25)*
This course involves practice and game observation and a practicum in coaching a sport. Students are involved in practice planning and drill work, game preparation, and administration, as well as game rules and coaching strategies. This course applies toward the coaching sequence only. Offered annually. Counts toward management studies concentration.
Prerequisite: ESTH 238 and permission of instructor.

ESTH 373: *Motor 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 in 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 biomedical studies (for students through class of 2016) and neuroscience concentrations. 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 adaptions 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 and biomedical studies concnetration (for students through class of 2016).
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 formof 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, 2015-2016 (Spring)
Cynthia Book (on leave fall and Interim)
Associate Professor of Exercise Science, Head Volleyball Coach
exercise science; volleyball

Chair, 2015-2016 (Fall and Interim)
William Sean Goldsworthy
Instructor in Exercise Science; Head Men's Hockey Coach
biomechanics; hockey

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

Dennis R. Bengtson
Instructor in Exercise Science
yoga

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

Jeremy B. Driver
Instructor in Exercise Science, Head Women's Soccer Coach
women's soccer

Daniel Hagen
Instructor in Exercise Science; Head Athletic Trainer
certified athletic trainer

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

Daniel P. Kosmoski
Instructor in Exercise Science; Head Men's Basketball Coach
administration; men’s basketball

Justin P. Lerfald
Instructor in Exercise Science, Assistant Football Coach
football; strength and conditioning

Kathleen Luckcraft
Head Women's Golf Coach

Philip N. Lundin
Instructor in Exercise Science; Head Men's Cross Country Coach; Head Track and Field Coach
cross country; track and field

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

Ruth B. Neuger
Instructor in Exercise Science, Head Softball Coach
softball

Glen W. Peterson
Instructor in Exercise Science, Head Men's Golf Coach
golf

Craig D. Stern
Instructor in Exercise Science; Head Football Coach
football; strength and conditioning

Judith Stromayer
Instructor in Exercise Science; Director of recreation
recreation; wellness

David A. Stromme
Instructor in Exercise Science, Head Women's Basketball Coach
basketball

Walter D. Weaver
Interim Head Volleyball Coach

Eric C. Yuen
Instructor in Exercise Science; Football Offensive Coordinator
football; strength and conditioning