

# KINESIOLOGY

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Kinesiology 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 kinesiology 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 kinesiology (such as physical therapy and rehabilitation, biomechanics, occupational therapy, nutrition, exercise physiology, sports medicine, and cardiac rehabilitation).

## Intended Learning Outcomes for the Major

### Distinction

See Academic Honors

## Related Program Neuroscience Concentration

See Neuroscience

## Requirements

### Requirements for the Major

Code	Title	Credits
<b>Core courses</b>		
BIO 143	Human Anatomy and Physiology: Cells and Tissues	1.00
BIO 243	Human Anatomy and Physiology: Organs and Organ Systems	1.00
KINES 195	Introduction to Kinesiology	1.00
KINES 231	Principles of Strength and Fitness Training	1.00
KINES 250	Performance Nutrition	1.00
KINES 374	Biomechanics	1.00
KINES 375	Physiology of Exercise	1.00
KINES 390	Kinesiology Seminar	1.00
<b>Electives</b>		
Select two of the following:		2.00
BIO 247	Animal Physiology	
KINES 196	Introduction to Therapeutic Practices	

KINES 199	Technology, Health, and Wellness
KINES 295	Internship and Reflection Seminar
KINES 376	Fitness Assessment and Exercise Prescription
NEURO 239	Cellular and Molecular Neuroscience
PSYCH 241	Developmental Psychology
PSYCH 247	Psychopathology
STAT 110 or STAT 212	Principles of Statistics Statistics for the Sciences

**Total Credits** 10

*\*By completing this major, the student also satisfies the OLE Core Writing in the Major requirement.*

### The department also recommends:

BIO 150 Evolutionary Foundations of Biodiversity

BIO 290 Medical Terminology (0.25 credit)

CHEM 122 Introductory Chemistry

KINES 394 Academic Internship

KINES 398 Independent Research

PHYS 124 Principles of Physics I

PSYCH 125 Principles of Psychology

## Courses

### Professional Program

#### **KINES 195: Introduction to Kinesiology**

This course introduces students to the study of physiological and functional adaptations to human movement. The field is richly interdisciplinary, involving such disciplines as anatomy, chemistry, biology, physics, physiology, biomechanics, motor control, psychology, nutrition, neuroscience, rehabilitative therapy, and exercise prescription. Rigorous and systematic study of these sub-fields enables students to understand how and why people move and the factors which limit and enhance the capacity to move. Offered annually.

#### **KINES 196: Introduction to Therapeutic Practices**

This course is designed for students interested in learning more about a variety of therapeutic practices such as physical, occupational, speech, art, dance, yoga, aquatic, stroke, massage, and animal. Students will explore whether therapeutic service might be their vocational calling. The class includes lectures, discussions, case studies, speakers, and field visits. Open only to first-years and sophomores. Does not count toward Kinesiology major.

#### **KINES 199: Technology, Health, and Wellness**

Technology is constantly pushing the boundaries of what is possible in the healthcare world today. This course will critically analyze the relationship between science and technology on the healthcare industry, healthcare practitioners, and health and wellness while providing hands-on opportunities and field trips to put these principles into practice. We will explore the origins of many medical/wellness devices, their core strategies, what problems they solve, and what makes them controversial or exciting technologies.

**KINES 231: 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.

**Prerequisites:** kinesiology major, BIO 143, and BIO 243.

**KINES 250: Performance Nutrition**

The course begins with a review of cellular physiology and the digestive system, which are the basic components necessary for metabolic processes. Students examine the roles nutrient selection, metabolism, and timing play in supporting physical performance. The integration and regulation of metabolism, energy expenditure, and body composition will be discussed. An advanced overview of the functions of carbohydrates, fats, proteins, fluids, vitamins, and minerals that are determinants of health and diseases will be conducted. Offered annually.

**Prerequisite:** BIO 143 and BIO 243, declared kinesiology major.

**KINES 294: Academic Internship****KINES 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. Offered during Interim.

**KINES 298: Independent Study****KINES 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. Students attend lectures plus one three-hour laboratory per week. Offered annually. Also counts toward neuroscience concentration.

**Prerequisites:** BIO 143, BIO 243, and junior standing.

**KINES 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. Students attend lectures plus one three-hour laboratory per week. Offered annually. Also counts toward neuroscience concentration.

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

**KINES 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. Also counts toward management studies concentration.

**Prerequisites:** senior kinesiology major; BIO 143, BIO 243 and KINES 375.

**KINES 390: Kinesiology 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.

**KINES 394: Academic Internship****KINES 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.

**KINES 398: Independent Research**

## Physical Activities

- The Active Body OLE Core requirement

**KINES 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.

**KINES 105: Inclusive Fitness (0.25)**

Students of all abilities will explore fitness activities and games designed to keep them healthy and active throughout their lives. Students will work at their own level and pace without pressure or competition. The course is designed to be accommodating and accessible to students with physical disabilities, but all students are welcome. Offered annually.

**KINES 106: Rock Climbing (0.25)**

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

**KINES 107: High-Intensity Interval Training (0.25)**

Students will learn the scientific principles behind how and why HIIT works, how to set up a HIIT workout, and the evidence-based rationale regarding the recommended ratios of rest and recovery. This HIIT course is designed for students with a higher level of physical fitness, as this type of training involves repeated bouts of high-intensity effort followed by varied recovery times.

**Prerequisite:** Students must be able to run a mile in under 8 minutes.

**KINES 108: In-Line Skating (0.25)**

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

**KINES 110: Triathlon Training (0.25)**

Students learn and practice the skills and techniques involved in completing a triathlon. 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.

**KINES 111: Basketball (0.25)**

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

**KINES 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.

**KINES 121: Beginning Swimming (0.25)**

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

**KINES 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).

**KINES 124: Intermediate Swimming**

This course builds on basic swimming skills, providing instruction in more advanced swimming strokes while focusing on physical conditioning and aquatic safety. Offered annually.

**Prerequisite:** KINES 121 or permission of instructor.

**KINES 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.

**KINES 130: Swim Fitness (0.25)**

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

**Prerequisite:** be able to swim 300 yards.

**KINES 131: Aerobics (0.25)**

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

**KINES 136: Fitness Walking (0.25)**

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

**KINES 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).

**KINES 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.

**KINES 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.

**KINES 151: Badminton (0.25)**

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

**KINES 152: 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).

**KINES 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.

**KINES 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:** KINES 157 or permission of instructor.

**KINES 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.

**170-193 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 kinesiology. This 0.25 course can satisfy the Active Body graduation requirement. Only one 0.25 intercollegiate athletics course credit can be applied toward the 35.00 credits required for graduation. 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.

## Faculty

**Chair, 2022-2023****Cynthia Book**

Associate Professor of Kinesiology  
senior seminar; internship reflection

**Whitney E. Frary**

Adjunct Instructor in Kinesiology; Head Women's Soccer Coach  
high intensity interval training (HIIT); aerobics

**Kayla Hatting**

Adjunct Instructor in Kinesiology; Head Softball Coach  
weight training; aerobics

**Robert Hauck**

Instructor in Kinesiology, Head Men's and Women's Swim Coach  
swimming; triathlon training

**Jennifer Holbein**

Assistant Professor of Kinesiology  
exercise physiology; strength fitness; nutrition

**Daniel P. Kosmoski**

Adjunct Instructor in Kinesiology; Head Men's Basketball Coach  
fitness walking; basketball

**Christopher Kuna**

Adjunct Instructor in Kinesiology

**Matthew C. McDonald**

Adjunct Instructor in Kinesiology, Head Baseball Coach  
weight training; badminton

**Scott Nesbit**

Instructor in Kinesiology, Head Women's Tennis Coach  
tennis; fly fishing; lifetime sports and games; racquet sports

**Matthew Neuger**

Visiting Assistant Professor of Kinesiology  
biomechanics; exercise prescription

**Judith Tegtmeyer**

Adjunct Instructor in Kinesiology; Director of Campus Recreation

rock climbing; badminton

**Travis J. Wall**

Adjunct Instructor in Kinesiology, Men's Head Soccer Coach  
fitness walking