

# INTEGRATIVE EXERCISE SCIENCE

**Program Website:** Integrative Exercise Science – Hiram College (<https://www.hiram.edu/academics/undergraduate-studies/undergraduate-programs/integrative-exercise-science/>)

## Introduction

The Integrative Exercise Science Program emphasizes a combination of a strong science education, hands on experiential learning in laboratory and clinical settings, and a foundation in biomedical humanities designed to develop ethically grounded and humanistic healthcare professionals.

Students majoring in integrative exercise science complete a strong core of exercise science coursework integrated with biology and biomedical humanities courses. The major is accompanied by a requirement that students concurrently complete a minor in a second discipline aligned to their individual learning or professional goals and/or a sports health concentration to further prepare those wanting to pursue graduate opportunities in the medical and allied health professions. An internship or research project as a culminating experience provides the opportunity for the student to apply the theoretical knowledge of coursework and laboratory experiences into a practical or research environment.

**Students electing the integrative exercise science major will complete their chosen minor and/or a sports health concentration. Students will work closely with the integrative exercise science faculty to determine the best academic minor and/or sports health concentration to meet their individual goals and objectives.**

- **The sports health track** is designed for students who are interested in physical therapy, athletic training, occupational therapy, physician's assistant, chiropractic medicine, and clinical exercise physiology. Recommended complementary minors include **biology, biomedical humanities, chemistry, or neuroscience.**

Students interested in the sports health track may elect to complete a **sports health concentration** instead of one of the recommended minors listed above, which can facilitate completion of prerequisite courses required by medical and allied health graduate programs. Students seeking this option must obtain permission from the IES program director.

Prerequisite courses associated with the sports health concentration include but are not limited to:

Code	Title	Hours
BIOL 15100 & BIOL 15200	INTRO BIOL I W/LAB: SM and INTRO BIO II W/LAB:SM	8
CHEM 12000 & CHEM 12100	GEN I:STRUCTURE/BOND-W/LAB:SM and GEN II:INTR CHEM ANLS-W/LAB:SM	8
MATH 10800	STATISTICS:MM	4
PHYS 11300 & PHYS 11400	PRINCIPLES PHYSICS I-W/LAB:SM and PRINCIPLES PHYSICS II-W/LAB:SM	8
PSYC 25000	DEVELOP ACROSS THE LIFE SPAN <sup>1</sup>	3
PSYC 35500	ABNORMAL PSYCHOLOGY <sup>2</sup>	4

<sup>1</sup>

Prerequisite: PSYC 10100 GENERAL PSYCHOLOGY

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Prerequisite: PSYC 10100 GENERAL PSYCHOLOGY and PSYC 21000 RESEARCH DESIGN & ANALYSIS:SM OR BIOL 21000 RESEARCH DESIGN & ANALYSIS:SM

- **The human performance track** prepares students who are interested in interscholastic, intercollegiate, or professional sports strength and conditioning, wellness & health promotion or corporate fitness, coaching, and personal training. Recommended complementary minors include **management, educational studies, psychology, sociology, or biomedical humanities.**

## Faculty

**James W Johnston, (1989) Assistant Director of Athletics; Head Athletic Trainer; Adjunct Faculty in Integrative Exercise Science**

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**Mallory Kobak, (2019) Assistant Professor of Integrative Exercise Science**

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**Michael Rebold, (2016) Associate Professor of Integrative Exercise Science; Chair; Integrative Exercise Science Program Coordinator**

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## Course Descriptions

### Integrated Exercise Science

**IES 10100: FOUNDATIONS EXERCISE SCIENCE: 3 Hour(s)**

FOUNDATIONS EXERCISE SCIENCE ~ This course will provide an overview of Exercise Science professions including: exercise physiology, clinical exercise physiology, athletic training, sports nutrition, sports psychology, and biomechanics. Major concepts and principles associated with each area of study will be introduced which include, but are not limited to, hemodynamic responses to exercise, adaptations to acute and chronic bouts of exercise, rehabilitation and treatment protocols for sports injuries, the cross-over effect, methods of energy expenditure, the inverted U hypothesis, the social cognitive theory, and physics-related principles such as buoyancy, acceleration, force, and Newton's three laws of motion. This course will also cover the professional activities (i.e., professional organizations and certifications) that are related to these professional applications with a specific focus on the American College of Sports Medicine and National Strength and Conditioning Association.

**IES 10500: MEDICAL TERMINOLOGY HEALTH PRO: 3 Hour(s)**

MEDICAL TERMINOLOGY FOR HEALTH PROFESSIONALS ~ This course introduces students to the language of medicine. Students will gain an understanding of the rules of building and analyzing medical words, and medical terms associated with the body. Utilizing a systems-approach, students will define, interpret, and pronounce medical terms relating to structure and function, pathology, diagnosis, clinical procedures, oncology, and pharmacology. In addition to medical terms, common abbreviations applicable to each system will be interpreted.

**IES 20300: INTRO TO HEALTH COMMUNICATION: 4 Hour(s)**

INTRODUCTION TO HEALTH COMMUNICATION ~ This course provides an introduction to the various roles of communication in health. Students will examine the multidimensional and interdisciplinary aspects of the field through the analysis of interpersonal, cultural, social, and organizational issues related to health communication. Course readings and assignments will allow students to explore health communication through the eyes of patients, health care providers, health care leaders, health campaign designers, etc. and to learn how factors like culture, media, personal identity, technology, and social networks can contribute to health, illness, risk behavior, health care, and health promotion. Also listed as COMM 20300.

**IES 21000: FITNESS & HEALTH PROMO/MGMT: 3 Hour(s)**

FITNESS & HEALTH PROMOTION & MANAGEMENT ~ This course is designed to equip students with a series of promotion, management, and other administrative tools necessary to operate fitness and/or health related programs. Students will become familiar with the assessment of certifications, proper group exercise instruction, and exercise leadership skills. In addition, students will also become familiar with current standards to organize fitness facilities and exercise programs in a variety of settings such as public and private sport facilities, recreation complexes, corporate fitness centers, and hospital wellness programs.

**IES 22000: FIRST AID AND CPR: 1 Hour(s)**

FIRST AID AND CPR ~

**IES 23500: SPORT/EXERCISE/PERFORM PSYC: 4 Hour(s)**

SPORT, EXERCISE, AND PERFORMANCE PSYCHOLOGY ~ Sport, exercise, and performance psychology encompasses the thoughts, feelings, and behaviors of people in performance contexts such as competitive sport, fitness, injury rehabilitation, theater, music, surgery, public speaking, and more. This course adopts a foundations approach to theory and research, while still addressing the practical application of mental skills training to performers. Course content will be relevant to professional practice among coaches, medical professionals, athletes, business professionals, musicians, politicians, and many others.

**IES 24400: ATHLETIC TRAINING: 3 Hour(s)**

ATHLETIC TRAINING ~ Prevention and care of injuries; skills in bandaging, taping and first aid methods; instruction in the application and use of therapeutic equipment. Successful completion of this course also constitutes completion of both the Red Cross Standard Course in First Aid and the Red Cross CPR course.

**IES 28000: SEM:: 4 Hour(s)**

SEMINAR ~

**IES 28100: INDEPENDENT STUDY: 4 Hour(s)**

INDEPENDENT STUDY ~

**IES 29700: FITNESS ADMIN/ORGANIZATION: 3 Hour(s)**

FITNESS ADMINISTRATION AND ORGANIZATION ~ This course investigates the concepts and strategies required to successfully manage health, fitness, and sport organizations. Students will be exposed to topics involving operational analysis, human resource management, affirmative action policies, as well as effective hiring practices.

**IES 30900: SPORTS PSYCHOLOGY: 3 Hour(s)**

SPORTS PSYCHOLOGY ~ A systematic analysis of the psychological and social-psychological phenomena influencing human performance behavior in the sporting situation. Major emphasis includes an assessment of psychological concepts such as social motivation, personality development and behavior modification in sport; the social-psychological basis influencing the interrelationships between athletes, coaches and spectators in the highly competitive sport context; and the development of the somata-psychic theory of human performance behavior.

**IES 31000: CARDIAC REHABILITATION: 4 Hour(s)**

CARDIAC REHABILITATION ~ This course is designed to familiarize students with the diagnostic and rehabilitation tools to assist individuals with cardiovascular disease towards optimal health. More specifically, students will become familiar with the practices of phase I-IV cardiac rehabilitation programs, ECG interpretation, and the importance of ECG monitoring. Students will be required to recognize normal ECGs as well as abnormal dysrhythmias such as atrial flutter, atrial fibrillation, primary, secondary, and tertiary atrioventricular blocks, ventricular tachycardia, ventricular fibrillation, asystole, and right and left bundle branch blocks. Prerequisite: BIOL 13100 and BIOL 13300 and IES 31200

**IES 31100: NUTRITION AND FITNESS: 3 Hour(s)**

NUTRITION AND FITNESS ~ This course studies how the body utilizes food and nutrients and how nutrition affects performance. Major areas to be explored include: proper nutritional habits, aerobic and anaerobic metabolism, food exchange system, body composition assessment, ergogenic aids and myths, sound and effective weight control, and nutritional counseling. The course is designed for students pursuing sports medicine or athletic training as a career.

**IES 31200: PHYSIOLOGY: MUSC ACT & EXER: 4 Hour(s)**

PHYSIOLOGY OF MUSCULAR ACTIVITY AND EXERCISE ~ This course presents an analysis of the physiological effects of muscular activity and exercise upon the human body during various levels of stress. The primary focus assesses changes in the physiological system of the body relative to neuromuscular, cardiorespiratory, metabolic control and adaptation, and heat and fluid regulation during physical activity. Prerequisite: BIOL 13100

**IES 31300: PHYSIOLOGY OF AGING: 4 Hour(s)**

PHYSIOLOGY OF AGING ~ This course examines the physiological changes associated with aging and how it affects physical activity. Emphasis will be given to biological theories of aging, maintenance of homeostasis, age-related changes in each body system, interactions among these systems, diseases that commonly affect older adults, and exercise prescription and programming. Prerequisite: BIOL 13100 and BIOL 13300

**IES 32000: KINESIOLOGY&APP BIOMECHANICS: 4 Hour(s)**

KINESIOLOGY AND APPLIED BIOMECHANICS ~ A systematic approach to the analysis of human movements and experience in applying that knowledge to the evaluation of both the performer and the performance. Includes an analysis of the skeletal, muscular and nervous systems and their roles in determining movement efficiency; and an application of kinesiological principles relative to anatomical structures of the body as functional determinants of movement. Prerequisite: BIOL 13100

**IES 34600: STRENGTH TRNG AND CONDITIONING: 4 Hour(s)**  
**ESSENTIALS OF STRENGTH TRAINING AND CONDITIONING** ~ This course is designed for the student who has a serious interest in studying the physiological, psychological and practical aspects of strength training and conditioning. Students will be exposed to the concepts and applications, testing and evaluation, and exercise techniques of strength training and cardiovascular conditioning, and speed and agility training. Students will gain experience in program design, exercise prescription and organization and administration of the fitness facility.  
 Prerequisite: BIOL 13100

**IES 36000: HEALTH, FITNESS & SAFETY CHILD: ES: 3 Hour(s)**  
**HEALTH, FITNESS, AND MOVEMENT IN EARLY CHILDHOOD: ES** ~ This course will present knowledge and skills for Early Childhood teacher-candidates to promote young children's physical health and safety. Children's physical development with regard to individual variation will be studied. Candidates will understand the value of play to develop a wide range of skills and learn activities that promote healthy lifestyles in both young children and their families. Equal emphasis will be given to health issues of young children including nutrition, communicable diseases, immunizations, child abuse and the professional and ethical issues involved.  
 Core: Meaning/Ethics/Soc Responsibil

**IES 40000: EXERCISE TESTING/PRESCRIPTION: 4 Hour(s)**  
**EXERCISE TESTING AND PRESCRIPTION** ~ This course is designed to provide students with fundamentals and practice in formulating exercise testing and prescription for healthy populations. Classroom and laboratory techniques for risk stratification, exercise testing, interpretation, and exercise program prescription are major topics. Test protocols for exercise assessment screening, counseling skills, cardiorespiratory fitness, musculoskeletal endurance and strength, body composition, and flexibility are emphasized.  
 Prerequisite: BIOL 13100 and BIOL 13300 and IES 31200

**IES 40100: EXERCISE TEST/PRESCRIP/SPECIAL: 4 Hour(s)**  
**EXERCISE TESTING AND PRESCRIPTION FOR SPECIAL POPULATIONS** ~ This course is designed to provide students with fundamentals and practice in formulating modified exercise testing and prescription for special populations. Special populations include, but are not limited to, cardiovascular, cerebrovascular, and pulmonary diseases, cancer, diabetes mellitus, overweight and obesity, multiple sclerosis, and spinal cord injury. Classroom and laboratory techniques for modified exercise testing, interpretation, and exercise program prescription, as well as disease condition, medications, and limitations to exercise are all major topics. Modified test protocols for exercise assessment screening, counseling skills, cardiorespiratory fitness, musculoskeletal endurance and strength, body composition, flexibility, and how the disease condition affects the exercise prescription and exercise response are emphasized.  
 Prerequisite: BIOL 13100 and BIOL 13300 and IES 31200

**IES 48000: SENIOR SEMINAR/CAPSTONE: 1 Hour(s)**  
**SENIOR SEMINAR/CAPSTONE** ~ This course is the capstone experience for the Integrative Exercise Science major, and will provide students with the necessary information to integrate their specific area of concentration and internship or research experience into a portfolio and oral presentation as the culmination of the Integrative Exercise Science program. Successful completion of the portfolio and presentation are required in order to complete the program.  
 Prerequisite: IES 40000 and IES 48100 (may be taken concurrently) or IES 49800 (may be taken concurrently)

**IES 48100: INDEPENDENT RESEARCH: 3 Hour(s)**  
**INDEPENDENT RESEARCH** ~ Scholarly research and independent investigation in any phase of the discipline of exercise and sport science or related sub-disciplines. For students minoring in the discipline who excel in self-direction and intellectual curiosity. A student must submit an outline of the area of research for departmental faculty approval prior to registration. Prerequisites: Five upper division courses or permission. Acceptance into the exercise and sport science major curriculum.  
 Prerequisite: IES 40000

**IES 49800: INTERNSHIP: 3 Hour(s)**  
**INTERNSHIP** ~ Developed in consultation with the student's major faculty advisor(s), the internship will be tailored to the interests and needs of the student and can be served in a wide variety of private and public organizations. Hiram College's internship program permits students to bridge the distance between the theory they learn in the classroom and the application of their knowledge. The academic department establishes prerequisites for the application procedure. Students should check with individual departments for specific requirements and guidelines for the experience as they may vary by discipline. Prospective interns work with the faculty advisor who will monitor the experience and grade the academic component of the internship.  
 Prerequisite: IES 40000

## Academic Offerings

- Integrative Exercise Science Major (<https://catalog.hiram.edu/undergraduate/academic-programs/integrative-exercise-science/integrative-exercise-science-major/>)