EXERCISE SCIENCE AND ATHLETIC TRAINING

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Exercise Science Pre-Athletic Training B.S./M.S.

MISSION

Produce highly professional, evidence-informed athletic trainers who are dedicated to utilizing a biopsychosocial approach to restore the health for physically active individuals.

VISION

A nationally recognized leader in athletic training education, preparing clinicians who innovate, advocate, and lead in an evolving healthcare system.

VALUES

Commitment to scholarly, clinical, and professional excellence in athletic training

Athletic training is a healthcare profession. An individual may choose to become an athletic trainer because they have a passion for sports and helping others, combined with an interest in medicine, injury prevention, and rehabilitation. Athletic trainers play a vital role in supporting athletes by diagnosing, treating, and reducing the risk of injuries. Our students learn to utilize a whole-person health approach while collaborating with physicians and other healthcare professionals to ensure the best possible care and outcomes for the people we serve.

As part of their educational path, our students work closely with athletic trainers and many other healthcare providers making a real impact on athletes' health and performance. Through intensive classroom, laboratory, and clinical education, our students are thoroughly prepared to sit for the national Board of Certification Exam for the Athletic Trainer exam and are workforce-ready to meet the evolving demands and challenges of sports healthcare.

The athletic training profession offers a dynamic, hands-on career with opportunities to work in various healthcare settings, including colleges and schools, with professional sports teams, and many others while fostering a strong sense of teamwork and community involvement.

Ithaca College offers an accelerated, five-year, **Bachelor of Science in Exercise Science – Pre-Athletic Training and Master of Science in Athletic Training** Dual-Degree program. This 3+2 combined curriculum results in students earning the B.S. in Exercise Science – Pre-Athletic Training and the M.S. in Athletic Training.

The Master of Science in Athletic Training Program is accredited by the Commission on Accreditation of Athletic Training Education (CAATE) (https://caate.net/).

The 3+2 Pre-Athletic Training / Athletic Training Program is divided into two phases:

1) Pre-Professional Program: EXERCISE SCIENCE, PRE-ATHLETIC TRAINING (undergraduate phase, years 1- 3)

- Students in the Pre-Professional Phase will have the major of Exercise Science – Pre-Athletic Training.
- These students will enter the Professional Phase upon successful completion of Year 3 and upon meeting all requirements for entry into the Professional Phase.
- Please note, students cannot graduate with a degree in Exercise Science, Pre-Athletic Training. Students who choose to exit the Pre-Athletic Training curriculum after their 3rd year or who do not meet admission requirements for the Athletic Training program will be moved into the Exercise Science, Sports Sciences major.

2) Professional Program: ATHLETIC TRAINING (graduate phase, years 4 & 5)

- These students will earn a Bachelor of Science in Exercise Science degree upon successful completion of Year 4.
- These students will earn a Master of Science in Athletic Training degree upon successful completion of Year 5.

Students who complete all 5 years of the dual-degree program are eligible to sit for the national Board of Certification (BOC) for the Athletic Trainer (https://bocatc.org/) exam and to apply for professional licensure. Passing the BOC exam awards the student with the ATC ® (Certified Athletic Trainer) credential and professional title "Athletic Trainer".

Completion of B.S. in Pre-Athletic Training ***does not*** provide eligibility to sit for the national BOC exam. Only students who complete the entire master's phase of the Athletic Training degree are eligible to sit for the national exam.

PROGRAM OUTCOMES

We prepare our graduating athletic training students to:

1. Communicate using correct terminology, abbreviations, and verbiage associated with healthcare professions
2. Be proficient with foundational content relative to healthcare professions (e.g., anatomy, physiology, mechanics, psychology, sociology)
3. Assess and manage the physical factors that influence normal & abnormal human movement, injury patterns, and the impact on patients
4. Assess and manage psychosocial factors of health & movement and their impact on patients
5. Utilize tenets of evidence-based practice and research literacy in theory and in practice
6. Understand the history, governance, ethics, and scope of practice of the athletic training
7. Act in a respectful, thoughtful, and professional manner in all academic and clinical settings

ADMISSIONS REQUIREMENTS

Five-year dual degree program in Exercise Science – Pre-Athletic Training / Athletic Training (B.S./M.S.)

1. Cumulative GPA of 3.0 or higher
2. Earned degree of Bachelor of Science in Exercise Science – Pre-Athletic Training after completing those degree requirements at Ithaca College as specified in the Undergraduate Catalog (https://

catalog.ithaca.edu/undergrad/schools/school-health-sciences-human-performance/department-exercise-sport/exercise-science-pre-athletic-training-bs/).

3. Possession of a current Certification in Emergency Cardiac Care: Examples of certification that fulfills this requirement is CPR/AED for the Professional Rescuer (American Red Cross) or BLS Healthcare Provider (American Heart Association
   - Each student must have current certification BEFORE starting the professional phase of the dual degree program (year 4). Students without evidence of this requirement during the review (May of Year 3) must complete this requirement and demonstrate proof in-writing by August 1 of year 4 in order to be permitted to engage in their clinical education.
4. Meet the Ithaca College physical, mental, emotional, and communication Technical Standards for Athletic Training Students (https://www.ithaca.edu/academics/school-health-sciences-and-human-performance/exercise-science-and-athletic-training/athletic-training/technical-standards/)

SPECIAL ACADEMIC STATUS POLICY FOR EXERCISE SCIENCE – PRE-ATHLETIC TRAINING & MASTER OF ATHLETIC TRAINING MAJORS

Academic Performance for years 4 and 5

1. **Program Warning**: A student in the Exercise Science – Pre-Athletic Training /Athletic Training major may be placed on program warning for any of the following reasons:
   - earns a GPA lower than a 3.0
   - earns lower than a C grade in any course with the ATEG or ESSG prefix that utilizes standard grading
   - earns a 'fail' in any course with the ATEG prefix that utilizes pass/fail grading

2. **Program dismissal**: A student in the Exercise Science – Pre-Athletic Training /Athletic Training major may subject to dismissal for any of the following reasons:

- earns a GPA lower than a 3.0 for more than 1 semester
- earns lower than a C grade in more than 1 course with the ATEG or ESSG prefix that utilizes standard grading
- earns a 'fail' in any course with the ATEG prefix that utilizes pass/fail grading
- fails to obtain and maintain current Certification in Emergency Cardiac Care for the entirety of the professional phase of the program
- fails to meet the physical, mental, emotional, and communication Technical Standards for Ithaca College Athletic Training Students (https://www.ithaca.edu/academics/school-health-sciences-and-human-performance/exercise-science-and-athletic-training/athletic-training/technical-standards/) without obtaining appropriate and approved accommodations.
- fails to act in a respectful, thoughtful, and professional manner in all academic, clinical, and other settings in which the student is representing Ithaca College

GRADUATE ASSISTANTSHIPS

Athletic training students, who are in good standing, are eligible for teaching assistantships in their 5th year of the dual degree. Assistantships typically involve 3-5 hours of work per week for 1 or 2 semesters. Teaching assistants work under the direction of a faculty member in undergraduate exercise science or graduate athletic training lab courses.

Exercise and Sport Sciences, M.S.

The School of Health Sciences and Human Performance offers a master of science degree program in exercise and sport sciences with concentrations in human performance and mental performance. Thesis and non-thesis plans within these areas allow students to match their learning experiences to individual academic strengths and career plans. A small student body and knowledgeable, involved faculty enhance program individualization, as does the opportunity for internships.

HUMAN PERFORMANCE AND MENTAL PERFORMANCE CONCENTRATIONS

The Master of Science degree in Exercise and Sport Sciences with a concentration in Human Performance provides a multidisciplinary approach to the study of exercise and sport science. Foundational classes in biomechanics, exercise physiology, motor behavior, and sport psychology are integrated with experiences designed to develop students' ability to work with data and use evidence to make decisions and inform practice. Coursework in strength and conditioning and special populations allow students to enhance their applied knowledge across varied populations such as collegiate athletes and people with disabilities. The human performance concentration aims to develop a well-rounded exercise and sport scientist with knowledge, skills, and abilities to work in applied fields such as strength and conditioning, exercise prescription, and clinical research, or to pursue advanced study. The human performance concentration can be completed with a thesis or without a thesis.

The Master of Science degree in Exercise and Sport Sciences with a concentration in Mental Performance provides students the opportunity to learn about psychological factors influencing performance and gain applicable skill sets to help athletes overcome setbacks and enhance their existing capabilities. Your expertise will increase as your focus narrows to the topics reflecting your specific interests and career considerations. Any student with sport-related career aspirations will find this program valuable. This concentration is specifically designed for students interested in working with athletes as a mental performance coach or wanting to enrich their knowledge of mental training as a coach, athletic trainer, or strength & conditioning or health/fitness/wellness specialist. The mental performance concentration can be completed with a thesis or without a thesis.

Program Time Frame

The time it takes to complete the program is dependent on whether the student chooses the thesis or non-thesis plan. The thesis curriculum is completed in two years. The non-thesis curriculum is designed to be completed in 1.5 years (16 months) with coursework over the summer. Some non-thesis students completing internships may elect to take two years; though, internships can be completed with the 1.5 year timeline.

Admission Requirements

Admission to the exercise and sport sciences program is granted on the basis of cumulative undergraduate grade point average (GPA) and letters of recommendation. The Graduate Record Exam (GRE) is optional. To be considered for admission, applicants must have an undergraduate degree from an accredited institution.

Undergraduate preparation is usually in a related field; though, applicants from diverse undergraduate degrees are encouraged to apply. All

applicants must have the prerequisite coursework. Prerequisites for the human performance and mental performance concentrations can be found on the prerequisite coursework (https://www.ithaca.edu/academics/school-health-sciences-and-human-performance/graduate-programs/exercise-and-sport-sciences/application-requirements/prerequisite-coursework/) webpage.

Applications are reviewed on an individual basis, taking into account such factors as previous academic achievements, successful professional experience, and special personal circumstances. Applicants who have questions regarding their eligibility for admission are encouraged to email the chair of the program (essg@ithaca.edu).

Tuition Expenses

Please visit the graduate admission webpage (http://www.ithaca.edu/gradadmission/finaid/) for information regarding current tuition expenses.

Academic Warning and Dismissal

The graduate program in exercise and sport sciences follows the Ithaca College Graduate policies regarding academic warning and academic dismissal. Students on academic warning are not permitted to enroll in thesis, independent research, or independent reading courses.

Academic Advising

The chair of the graduate program in exercise and sport sciences serves as the academic advisor for all students enrolled in the program. Other faculty may serve as advisors for students with special interests. Students writing a thesis select a thesis advisor and committee from among the graduate faculty in exercise and sport sciences.

Pass/Fail Option

All graduate courses, other than Thesis II and Seminar, must be taken for a letter grade. There is no pass/fail option for other graduate courses in exercise and sport sciences.

Graduate Assistantships

A limited number of assistantships are available for full- and half-time matriculated graduate students. The assistantships include a scholarship, which is applied to the tuition bill in the form of a tuition waiver, and a taxable salary for carrying out assigned duties. Application for a graduate assistantship is done when applying for admission. More information on the application process can be found on the graduate assistantships (https://www.ithaca.edu/academics/school-health-sciences-and-human-performance/graduate-programs/exercise-and-sport-sciences/graduate-assistantships/) webpage.

Students must have an undergraduate cumulative GPA of 3.00 or higher in order to be considered for assistantships. Assistantships are awarded for the first academic year and involve 10-20 hours per week of duties and responsibilities arranged and supervised by a faculty member.

Assistantships are typically available in the wellness clinic as fitness and research specialists; in the kinesiology, biomechanics, exercise physiology, sport psychology, and neuromuscular control laboratories as teaching assistants; and in athletics as certified athletic trainers and strength and conditioning specialists. Occasionally, a graduate assistantship in coaching may be available. Not all assistantships are open to all students. Most assistantships require specific undergraduate coursework and/or certifications. About 30 percent of the full-time matriculated graduate students in exercise and sport sciences hold assistantships.

Majors

- Athletic Training - B.S./M.S. (https://catalog.ithaca.edu/graduate/exercise-sport-sciences/athletic-training-ms/)
- Exercise and Sport Sciences, Human Performance - M.S. (https://catalog.ithaca.edu/graduate/exercise-sport-sciences/exercise-sport-sciences-human-performance-ms/)
- Exercise and Sport Sciences, Mental Performance - M.S. (https://catalog.ithaca.edu/graduate/exercise-sport-sciences/exercise-sport-sciences-mental-performance-ms/)

ATEG 50100 Connective Tissues (NLA)
Introduces the properties of all connective tissue as related to musculoskeletal injuries by examining the foundational anatomical, mechanical, and physiological principles essential to clinical practice and future expertise in risk reduction, diagnosis, and intervention for musculoskeletal injuries. Covers the pathoanatomy and pathomechanics of tissue injury, microdamage and macrodamage, pain and pain modulation, the healing response and tissue adaptation, and factors that influence the healing process, including magnitude & frequency of loading, force application, time, health status, age, overtraining, and other relevant determinants. (F,Y)
3 Credits

ATEG 50200 Acute Care and Emergency Management (NLA)
Describes the appropriate assessment and intervention for acute care and emergency situations in the athletic setting, such as cardiac arrest, concussion, spinal injury, heat illness, and other athletic-related trauma. Presents methods of risk reduction for emergent injuries and illnesses. Examines the epidemiology and etiology of emergent injuries and illnesses. (S,Y)
4 Credits

ATEG 50300 Clinical Anatomy (NLA)
Examines human anatomy with an emphasis on neuromusculoskeletal system structure and function. Introduces common injuries associated with physical activity though a combined examination of normal and abnormal anatomy and mechanics. (F,Y)
3 Credits

ATEG 50400 Professional Practice in Athletic Training (NLA)
Introduces the athletic training professional practice, including athletic training policies and procedures. Demonstrates standard documentation procedures, including use of electronic medical records. Instructs on effective communication in health care. Provides skill practice and application of injury treatment, such as taping and wrapping. (F,Y)
3 Credits

ATEG 50500 Athletic Training Practicum I (NLA)
Practical experience in a clinical setting under the supervision of an approved preceptor. Apply clinical skills acquired in didactic courses to a patient population. Introduces the Core Competencies and Practice Domains of athletic training. Enhance professionalization through direct interaction with various clinical professionals. The 1st of 4 athletic training practical courses. (F,Y)
3 Credits

ATEG 50600 Assessment of Musculoskeletal Conditions (NLA)
Examines the etiology, pathology, process, diagnosis, and treatment of neuromusculoskeletal conditions and injuries. Emphasizes conditions that affect the physically active patient population. Prerequisites: ATEG 50100. (F,Y)
4 Credits

ATEG 50700 Assessment of General Medical Conditions (NLA)
Examines the etiology, pathology, process, diagnosis and treatment of diseases of the human body. Emphasizes disorders and conditions of the immune, cardiovascular, pulmonary, gastrointestinal, endocrine, renal, urogenital, and dermatological systems. Discusses the application of pharmacological interventions. Prerequisites: ATEG 50100. (S)
4 Credits

ATEG 50800 Therapeutic Interventions in Athletic Training I (NLA)
Through integrated didactic and laboratory instruction and practice, students will acquire evidence-based theories and techniques for therapeutic interventions commonly utilized during the "Preparation for Healing" phase in the management of acute and chronic injuries and conditions in active populations and sport. Prerequisites: ATEG 50100. (S)
4 Credits

ATEG 51000 Athletic Training Practicum II (NLA)
Practical experience in a clinical setting under the supervision of an approved preceptor. Apply clinical skills acquired in didactic courses to a patient population. Reinforce the Core Competencies and Practice Domains of athletic training. Enhance professionalization through direct interaction with various clinical professionals. The 2nd of 4 athletic training practical courses. Prerequisites: ATEG 50500. (S,Y)
3 Credits

ATEG 51100 Clinical Research in Athletic Training I (NLA)
Prepares athletic training students to be clinician-scientists by addressing key elements of clinical research in athletic training. Introduces clinical research and the initial steps to conducting a clinical research project. Builds on foundational content from Evidence-Based Practice, Research Methods, and Statistics. Focuses on didactic instruction of clinical research and initiating a clinical research project (case report or critically appraised topic), including 1) developing a focused & answerable clinical question OR describing a clinical case, 2) conducting a systematic search of the scientific literature to answer the clinical question OR to develop the foundation background knowledge to describe the anatomical, mechanical, and physiological considerations that lead to a unique diagnosis or intervention. Part 1 of a 2-course Clinical Research in Athletic Training series. Prerequisites: ATEG 50100. (U)
2 Credits

ATEG 51500 Clinical Capabilities in Athletic Training (NLA)
Examine various aspects of clinical practice common in active and athletic populations including pharmacology, dermatology, and diagnostic imaging. Identify commonly used medications and differentiate various categories of pharmaceuticals used in athletic training. Explore and gain an understanding of diagnostic imagining techniques and laboratory testing. Describe and identify common dermatological conditions and treatment paradigms. Prerequisites: ATEG 51000. (U)
2 Credits

ATEG 55000 Immersive Fieldwork in Athletic Training (NLA)
Supervised immersive clinical experience. Provides opportunities to participate in the day-to-day and week-to-week role of an athletic trainer for a period of time identified by the preceptor. Permission of instructor required. (IRR,U,W)
1-3 Credits

ATEG 60400 Health Care Delivery and Administration in Athletic Training (NLA)
Addresses the organization and administration of health care delivery systems specific to athletic training. Emphasizes continual quality improvement, patient and clinical outcomes, payor systems and reimbursement, legal aspects, and operational management. Prerequisites: ATEG 50400. (F,Y)
3 Credits

ATEG 60500 Athletic Training Practicum III (NLA)
Practical experience in a clinical setting under the supervision of an approved preceptor. Apply clinical skills acquired in didactic courses to a patient population. Reinforces the Core Competencies and Practice Domains of athletic training. Enhance professionalization through direct interaction with various clinical professionals. The 3rd of 4 athletic training practical courses. Prerequisites: ATEG 51000. (F,Y)
3 Credits

ATEG 60800 Therapeutic Interventions in Athletic Training II (NLA)
Acquistion and application of essential theories, skills, and practices for the restoration of function and return to participation will be presented. Evidence-based theories, principles and techniques will be utilized to develop, maintain and/or improve components of functional performance. Emphasis will be placed upon therapeutic reasoning related to the dynamics of skill acquisition and rehabilitation of athletic injuries and conditions. Skill instruction and lab-based practice will be included to develop essential practical skills germane to therapeutic interventions for restoring functional performance and participation in physical activity. Prerequisites: ATEG 50800. (F)
4 Credits

ATEG 61000 Athletic Training Practicum IV (NLA)
Engage in practical experience in a clinical setting under the supervision of an approved preceptor. Apply clinical skills acquired in didactic courses to a patient population. Reinforces the Core Competencies and Practice Domains of athletic training. Enhance professionalization through direct interaction with various clinical professionals. Includes 5-week, full time clinical immersion rotation either on, or off campus. The 4th of 4 athletic training practical courses. Prerequisites: ATEG 60500. (S,Y)
6 Credits

ATEG 61100 Clinical Research in Athletic Training II (NLA)
Prepares athletic training students to be clinician-scientists by addressing key elements of clinical research in athletic training. Continues with the conduct of a clinical research project that was initiated in ATEG 51100: Clinical Research in Athletic Training I. Focuses on 1) critical appraisal of clinical research studies identified in systematic search, 2) extracting and synthesizing relevant data from the included studies, 3) interpreting and generating clinical recommendations from the results, and 4) generating products to disseminate results and interpretations. Part 2 of a 2-course Clinical Research in Athletic Training series. Prerequisites: ATEG 51100. (F,Y)
2 Credits

ATEG 61500 Advanced Topics in Athletic Training (NLA)
Emphasizes advanced evidence-based theory and techniques for injury mitigation and intervention in the physically active population. Addresses emerging trends in the profession. Prerequisites: ATEG 60500. (S,Y)
4 Credits

ESSG 51200 Theoretical Perspectives of Mental Performance in Sport and Exercise (NLA)
Explains theories, skills, and techniques that impact the description, understanding, and enhancement of mental performance in sport and exercise. Utilizes lecture and cooperative learning strategies to better understand the theoretical perspectives and strategies that influence the mental performances of individual and team sport athletes and coaches. (F,Y)
3 Credits

ESSG 51300 Applications of Mental Performance in Sport and Exercise (NLA)
Design, create, and deliver educational workshops and performance enhancement programs implementing multiple techniques and strategies. Differentiate and explain specific mental performance perspectives. Apply (in a small group setting) practical skills and strategies for enhancing sport and exercise performances in a cooperative learning and workshop environment. (S,Y)
3 Credits

ESSG 51400 Concepts and Theory of Supportive Relationships in Sport (NLA)
Achieve awareness of diverse student-athletes experiences within sport settings. Contrast student-athlete development models and theories related to effective helping from a coaching perspective. Demonstrate helping concepts such as rapport building, basic listening and communication skills. (F,Y)
3 Credits

ESSG 51500 Effective Team Building
Focuses on an understanding of people and the interpersonal communication and leadership skills necessary for effective and cohesive team development. Stages of group development, barriers to change, and conflict resolution are discussed. (SU)
1 Credit

ESSG 51600 Motivation for Superior Performance
Focuses on an understanding of motivation and its importance to performance. Various motivational approaches are discussed, with emphasis on influencing others toward goal adherence and attainment. 2 credits. (SU)
2 Credits

ESSG 51800 Exercise Behavior Promotion and Adherence (NLA)
Focuses on personal factors and theoretical perspectives important to understanding exercise behavior. Topics include the mental health aspects of exercise, the biopsychology of stress and disease, the factors that influence exercise participation and adherence, theories of behavior change, interventions to change physical activity behavior, and the psychological factors related to perceived exertion. (F, Y)
3 Credits

ESSG 51900 Group Dynamics in Sport and Exercise (NLA)
Examines the social and group factors that influence team and individual functioning within sport and exercise contexts. Explores current research and theory that affect the social interactions by those involved in sport and exercise. Includes topics such as motivational climate, the coach-athlete relationship, coach effectiveness in youth sport and physical activity, team cohesion, group dynamics, leadership, and moral behavior in group settings. (F)
3 Credits

ESSG 52000 Human Movement Biomechanics of Sport and Exercise (NLA)
Explore kinematic, kinetic, and musculoskeletal concepts at the core of human movement biomechanics. Examine biomechanics of select human movement skills focusing on current topics in running, lifting, jumping, landing and throwing. Experiment with laboratory based equipment to perform and interpret biomechanical analyses of human movements using anthropometry, motion analysis / video, force plates, and electromyography. Apply evidence based decision making to solve case studies and examples. This course requires the skills, knowledge, and experience gained in undergraduate biomechanics. (F,Y)
3 Credits

ESSG 52100 Advanced Study in Exercise Physiology (NLA)
The physiological mechanisms that regulate the body's responses and adaptations to exercise. Special physiological considerations of gender, development and aging, obesity, pregnancy, and environmental stress (e.g., altitude, pollution, extreme temperature) are emphasized. Popular pharmaceutical and dietary manipulations used to enhance exercise performance are discussed. Experimental research in exercise physiology is introduced, and limited laboratory experiences are scheduled during class time. Students may not get credit for both ESSG 52100 and EXSS 42100. Graduate students have additional workload and responsibilities. Prerequisites: One course in exercise physiology. (S,F,Y)
3 Credits

ESSG 53500 Special Populations and Exercise (NLA)
Examines the physiological mechanisms that may be altered in clinical populations, and the impact of these alterations on exercise. An emphasis will be placed on understanding the etiology behind populations who have special considerations, such as people with chronic diseases, pregnant women, and people with physical and mental disabilities, as well as the implications for exercise training. Exploration of these clinical populations will occur through lecture and laboratory activities. Basic physiology and the typical response to exercise is reviewed. This course requires the skills, knowledge, and experience gained in an undergraduate exercise physiology course (or equivalent). (S,Y)
3 Credits

ESSG 53800 Strength and Conditioning: Current Concepts and Applications (NLA)
Examine theoretical underpinnings of recent developments in areas of performance testing and athlete monitoring including technological advancements. Evaluate athlete's slow- and fast-moving strength characteristics using various technologies using objective measures. Create sophisticated program designs incorporating basic and advanced periodization models. Prerequisites: ESSG 52000 and ESSG 54000. (S,Y)
3 Credits

ESSG 54000 Physiological Mechanisms of Exercise (NLA)
Explore the metabolic, muscular, cardiovascular, and pulmonary responses and adaptions to exercise in various environmental conditions and how they are coordinated intrinsically and extrinsically by the body. Measure maximum aerobic and anaerobic power, and body composition. Check the reliability and validity of the measures with basic statistical analyses, including co-efficients of variation, correlations, and inferential statistics. Link various lab measures to lecture topics such as substrate selection and the cardiovascular and pulmonary responses to exercise. This course requires the skills, knowledge, and experience gained in undergraduate exercise physiology course. (F,Y)
3 Credits

ESSG 54200 Physiological Mechanisms of Exercise: Systemic Aspects
Focuses on cardiovascular, pulmonary, thermoregulatory, immunological, and renal aspects of exercise, primarily addressing the physiological responses and adaptations these systems undergo with exercise. Data collection using key pieces of laboratory equipment is integrated into the course. Prerequisites: Undergraduate exercise physiology course. (S, Y)
3 Credits

ESSG 54300 Tests and Measurement and Analytics in Sport and Exercise (NLA)
Perform and explore assessments of physical performance and function including tests and measurements of aerobic capacity, anaerobic power, fatigue, speed / agility, body composition and anthropometry, posture and balance, and physical activity. Evaluate reliability and validity of field / clinical assessments compared to gold standard laboratory based assessments. Analyze, manage, and interpret data to incorporate evidence based decision making in prescribing interventions. Prerequisites: ESSG 52000 and ESSG 54000. (S,Y)
3 Credits

ESSG 54400 Multidimensional Assessment of Physical Function
Team-taught survey of the physical functions that affect performance, physical abilities, and activities of daily living (ADL) in various populations. Musculoskeletal function, coordination and motor skills behavior, and body composition are examined as they influence performance decrements, physical dysfunction, pain, and the ability to perform ADLs. Also examined are evaluations of physical function and alternative approaches to movement training so as to enable appropriate recommendation or referral. Prerequisites: Undergraduate exercise physiology and biomechanics or kinesiology. (F, Y)
3 Credits

ESSG 54500 3D Motion Capture for Human Movement Analysis and Evaluation (NLA)
Utilize 3D Motion Capture system to analyze and evaluate human movement for purposes of improving performance or function. Explore reliability, validity, and limitations to technology as an aid to movement assessment for practitioners and scientists. Perform analyzes, evaluate data, and communicate outcomes in written and oral formats. Prerequisites: ESSG 52000. (IRR)
3 Credits

ESSG 54600 Cardiopulmonary Assessment for Exercise
Techniques for assessment of cardiovascular and pulmonary disease as well as functional capacity in these conditions. Emphasis is placed on electrocardiography and maximal grades exercise testing. Other diagnostic techniques (e.g., echocardiography, nuclear imaging) are also presented. Discussion of the impact of assessment information and medications on appropriate exercise prescriptions. Material will help in meeting requirements for certification by outside agencies (e.g., ACSM). Credit may not be received for both this course and EXSS 46400. Graduate students have additional workload and responsibilities. (F,Y)
3 Credits

ESSG 54800 Pathophysiology, Limited Capacity, and Exercise
Study of the pathophysiology of disease and disabling states, the assessment of exercise potential, and the special considerations for the prescription of exercise in these cases. Cardiac and pulmonary rehabilitation and diabetic and special considerations for aging are discussed. Renal disease, osteoporosis, arthritis, brain disorders (e.g., Parkinson's), low back pain, chronic fatigue, multiple sclerosis, and depression are also addressed. Material will help in meeting requirements for certification by outside agencies (e.g., ACSM). Credit may not be received for both this course and EXSS 44800. Graduate students have additional workload and responsibilities. (S, Y)
3 Credits

ESSG 60100 Evidence Based Sport and Exercise Psychology (NLA)
Prepares students for evidence based practice in sport and exercise psychology. The evaluative approach to appraising the research literature will prepare the students to judge evidence on: 1) accuracy and validity of measures for the evaluation of change; 2) monitoring effectiveness of sport psychology interventions; 3) reporting of effectiveness and evaluation of practice in performance planning. Based on case scenarios, students will be required to formulate the key question(s), rapidly search literature databases, perform a critical appraisal of the evidence, and describe application of the evidence in a sport and exercise psychology context to develop the skills necessary to implement evidence-based practice in their careers. Prerequisites: ESSG 51200; ESSG 51300. (U,Y)
3 Credits

ESSG 60200 Diversity in Sport and Exercise (NLA)
Develop the foundation and skills needed for engagement as competent and culturally alert persons entering sport and exercise related professions. Explore issues and trends related to culture, such as ethnicity, race, nationality, gender, sexual orientation abilities/disabilities, immigrant dynamics, and socioeconomic factors which influence working relationships and sport and exercise performances. Engage in self-exploration around your own cultural/race identity and your responses to issues of diversity including bias, oppression, discrimination and the role of privilege. Prerequisites: ESSG 51400. (U,Y)
3 Credits

ESSG 60500 The Development of Expertise in Sport and Exercise (NLA)
Explore the neuropsychology of the development of expertise in sports and motor skills. Explain factors influencing adaptations in central and peripheral neurophysiology, including mindset, training principles, and practice conditions. Contrast approaches to short- and long-term development for healthy and injured athletes from the perspective of athlete and coach. Prerequisites: Two ESSG 500-level courses. (F,Y)
3 Credits

ESSG 61000 Research and Statistics in Exercise and Sport Sciences I (NLA)
Engage in empirical thinking and inquiry in health, exercise and sport sciences. Expand existing knowledge in quantitative literacy and research methodology for graduate education. Develop advanced skills for understanding, conducting, evaluating, using, and communicating research and evidence-based decision making in exercise and sport sciences. (F,Y)
3 Credits

ESSG 61100 Research and Statistics in Exercise and Sport Sciences II (NLA)
Critique advanced research designs in exercise science and conduct advanced statistical analyses. Examine relationships between research questions, research designs and statistical techniques. Design an independent research project covering all stages of the research process (e.g., literature searches, finding a research questions, choosing a research design, data collection and interpretation, identifying limitations, and academic dissemination). This course prepares the student for thesis 1 and independent research. (S,Y)
3 Credits

ESSG 61200 Leadership in Exercise and Sport (NLA)
Examines the importance of developing effective individual, team, and corporate sport leadership. Emphasis is placed on assessing and enhancing leadership qualities, developing strategies for building influential and effective leadership personnel, mentoring (identifying, nurturing, and equipping) leaders, and understanding situational, transformational, charismatic, and servant leadership. Material is presented via small group, seminar, lecture, and student-taught workshop and student-based (cooperative learning) discussion formats. (F,Y)
3 Credits

ESSG 61400 Ethics & Professional Issues in Mental Performance and Coaching (NLA)
Identify and describe ethical concerns and professional issues in mental performance and coaching. Contrast different professional roles in mental performance and coaching. Evaluate competency and training/accreditation standards with specific emphasis on certification requirements (e.g. CMPC, CSCS). Appraise ethics code guidelines of professional organizations (e.g. AASP, SHAPE, ACSM) relevant to sport and exercise settings. Defend ethical responsibilities associated with testing, measurement, and research/evaluation practices. (S,Y)
3 Credits

ESSG 61600 Advanced Communication and Facilitation Skills in Sport and Exercise (NLA)
Appraise advanced communication and facilitation skills for use in sport and exercise settings. Analyze theory and research evidence behind effective communication and facilitative skills. Demonstrate advanced communication and facilitative skills through various structured course discussions of case studies and exercises. Prerequisite: ESSG 51400. (U,Y)
3 Credits

ESSG 61800 Theories and Issues in Performance Enhancement in Sport and Exercise (NLA)
Compare and contrast theories and research related to enhancing mental performance in sport and exercise. Develop programs grounded in theory and based on evidence for mental performance programming and defend programming plans. Observe and critique mental performance training and programming sessions in sport, exercise and performance-based settings. Prerequisites: ESSG 51200; ESSG 51400; ESSG 51300; ESSG 61400. (F,Y)
3 Credits

ESSG 61900 Mental Performance Practicum (NLA)
Provides and expands on the consulting experience of delivering mental training services in sport and exercise settings started in Theories and Practice of Performance Enhancement in Sport and Exercise. Emphasizes application of advanced theories and the practice of behavior change in sport and exercise, while simultaneously engaged in CMPC mentored independent work in real life sport, exercise and performance based settings. Provides mentored/supervised experiences for individual and group (team) interventions. May be repeated for a total of no more than six credits. Prerequisites: ESSG 61800. (S)
1-6 Credits

ESSG 62000 Thesis I
Open only to qualified and preapproved students who are preparing a proposal for an original scholarly thesis. Conducted on a conference basis with the thesis adviser, the course culminates in a thesis proposal. The thesis proposal must gain approval of the thesis adviser, thesis committee, and the graduate chair. Guidelines are available from the office of the graduate chair. The completed thesis must gain departmental and graduate office approval. Required for thesis plan.
3 Credits

ESSG 62100 Thesis II
Open only to qualified and preapproved students who are continuing to work on a scholarly thesis. Conducted on a conference basis with the thesis adviser. Guidelines are available from the office of the graduate chair. The completed thesis must gain approval of the thesis adviser, graduate chair, and the graduate dean. Pass/fail only. Required for thesis plan. Prerequisites: ESSG 62000 and approval of thesis adviser and graduate chair. This includes one to three credits repeated for a required total of three credits of ESSG 62100.
1-3 Credits

ESSG 62500 Applied Capstone in Exercise and Sport Science (NLA)
Integrate the Exercise Science (ES) support process into practice through the application of knowledge, skills and abilities developed throughout the Human Performance concentration completing a case study. Conduct a comprehensive needs analysis on a real-world client / athlete. Prepare and present an evidence-based training plan grounded in theory and addressing holistic needs and values of clients. Defend decisions and showcase your skills as safe, effective and ethical practitioners. Prerequisites: ESSG 53800. (Y)
3 Credits

ESSG 63000 Independent Research
Student works in close cooperation with a graduate faculty member in a self-directed study, problem solving, or research investigation. Topic, proposal, and a design statement must be approved in advance by the sponsoring professor and graduate chair. This includes one to three credits per course that may be repeated for a total of no more than six credits of independent study courses (ESSG 63000 and ESSG 63100). (W,SU)
1-3 Credits

ESSG 63100 Independent Reading
Reading in the field, arranged between the student and a sponsoring graduate faculty member. Topic, proposal, and a design statement must be approved in advance by the sponsoring professor and graduate chair. This includes one to three credits per course that may be repeated for a total of no more than six credits of independent study courses (ESSG 63000 and ESSG 63100). (W,SU)
1-3 Credits

ESSG 63200 Group Research (NLA)
Group participation in a research project. Small groups of students, under the direction of a faculty adviser, engage in the research process, from literature review, proposal development, submission of human subjects' review documents, data collection, data analysis, and presentation of the data. (IRR)
1-3 Credits

ESSG 64000 Seminar (NLA)
Reviews strategies for academic success in graduate school. Explores career planning, employment preparation, and current topics and/or theories in exercise and sport sciences. Provides opportunities to discuss application of exercise and sport science in real world scenarios. (F,S)
0 Credit

ESSG 64500 Psychophysiology of Exercise and Sport (NLA)
Examines the interaction between psychological states and physiological function, particularly within the realm of exercise and sport. Specific topics include neurohormonal and physiological correlates of disordered eating behaviors, body image, perceived exertion, aggression, stress responses, overtraining, and other behaviors. The way exercise works as a mind-body medicine modality, including mental health and maintenance of cognitive function, is examined. Cognitive states, including arousal and intentionality, are examined as they influence physiological adaptations made during training. (W)
3 Credits

ESSG 64800 Strength and Conditioning: Theories, Mechanisms, and Applications (NLA)
Evidence-based presentation and discussion of methods practiced for improvement of strength and conditioning. Enhancement of athletic performance through new or accepted strength and conditioning techniques will be emphasized, though rehabilitative issues may also be addressed. Prerequisite: One course in exercise physiology. (Sum)
3 Credits

ESSG 66000 Internship
Supervised work experience in an agency related to the student's concentration in the master's degree program. Approval and support of a graduate faculty sponsor and the graduate chair are required, and prerequisite coursework may be needed. One to three credits, for a total of three credits. May be repeated for a total of no more than six credits. (F, S, SU)
1-3 Credits

ESSG 69900 Selected Seminars
Advanced courses on particular topics associated with academic concentrations offered in the exercise and sport sciences programs. Courses are offered at irregular intervals on topics chosen by faculty members or resulting from student requests. Course may be repeated for credit for selected topics on different subjects. Prerequisite: Permission of instructor. (IRR)
1-3 Credits

ESSG 74200 Advanced Techniques of Athletic Training
Consideration of the prevention, management, and rehabilitation of sports injuries. Essential concepts include anatomical basis of common injuries, injury assessment, and principles of therapeutic exercise for areas often injured. Laboratory time is included. Prerequisite: EXSS 24700 or equivalent, or permission of instructor. (SU)
3 Credits