

# EXERCISE SCIENCE AND ATHLETIC TRAINING

**Jennifer McKeon**, Associate Professor and Athletic Training Program Director

**Deborah King**, Professor and Graduate Exercise and Sport Sciences Program Chairperson

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

Ithaca College offers an accelerated, combined B.S./M.S. in a 5-year dual degree program. This curriculum results in students earning the B.S. in Exercise Science, Pre-Athletic Training and the M.S. in Athletic Training. Students who intend to become certified athletic trainers (ATC) enter Ithaca College as majors in the B.S. in Exercise Science - Pre-Athletic Training curriculum. During the 4th year, students matriculate into the M.S. in Athletic Training program. The B.S. Exercise Science - Pre-Athletic Training Program is the sole entry point into the five-year professional program. Graduates of the dual degree program will be eligible to sit for the national Board of Certification for the Athletic Trainer examination and to apply for professional licensure.

*The following degrees are combined to comprise the dual degree program.*

### B.S., EXERCISE SCIENCE, PRE-ATHLETIC TRAINING (UNDERGRADUATE)

Exercise Science Pre-Athletic Training majors must successfully complete all required courses, maintain a 3.0 GPA, and meet all professional program expectations (see Special Academic Status Policy) in order to matriculate into the professional phase of the dual degree and to continue in the program. Students who do not meet the expectations for admission to the professional phase of the dual degree program will be advised into other majors.

The fourth year of study will include both undergraduate coursework and graduate-level coursework. Completion of the Exercise Science - Pre-Athletic Training (B.S.) alone *does not* provide eligibility for certification as an athletic trainer.

### M.S., ATHLETIC TRAINING (GRADUATE/PROFESSIONAL)

During the fourth year of study, students enter the professional phase (M.S. Athletic Training curriculum). Coursework will continue through year 5, consisting of summer, fall and spring semesters, including the completion of a clinical research project. In the spring of the 5th year, students will complete a 4-week clinical immersion experience. Students who complete both the undergraduate (B.S. Exercise Science - Pre-Athletic Training) and graduate (M.S. Athletic Training) curricula will be eligible to sit for the national Board of Certification for the Athletic Trainer examination and to apply for professional licensure.

- At the midpoint of the Exercise Science Pre-Athletic Training junior year (January, year 3), MS-AT intentioned students will need to file and claim their intentions to matriculate into the graduate and professional phase of the full MS-AT program (which begins in year 4).
- Special Academic Status Policy for BS in Exercise Science, Pre-Athletic Training/MS in Athletic Training: At the end of year 3 (May),

specific criteria will be assessed for student progression into the professional phase of the program, which includes:

- Valid 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) will need to complete this requirement and demonstrate proof in-writing before August 1 of year 4 in order to initiate their clinical education in ATEG 50500 (Practicum in AT I).
- Submission of signed, current physical examination and immunization records from a licensed medical professional (MD, DO, PA or NP). The program uses a Health Clearance Certificate form that must be signed and completed in full and submitted prior to beginning the professional phase of the program.
  - Per CAATE accreditation requirements, each student must have current and up to date immunization records and physical examination (within 1 year of initiating clinical education) BEFORE starting the professional phase of the degree program (year 4). Students without evidence of this requirement during the review (May of year 3) will need to complete this requirement and demonstrate proof before August 1 of year 4 in order to initiate their clinical education in ATEG 50500 (Practicum in AT I).
  - Unless waived (submitting a signed waiver), students must submit medical proof of the following:
    - 2-step Tuberculin Skin Test (2 PPDs done in calendar year of application)
    - Rubella, Rubeola and Mumps vaccination
    - Chicken Pox vaccination
    - Physical examination testifying the physical ability to carry out demands of clinical education/practice.
  - Overall, cumulative G.P.A. greater than or equal to 3.0
  - Combined G.P.A. greater than or equal to 3.0 in EXSS 12000, EXSS 12100, EXSS 24600, EXSS 30600, EXSS 31200, EXSS 32100
  - Grades of C- or greater in the following courses: EXSS 12000, EXSS 12100, EXSS 12600, EXSS 22000, EXSS 24600, EXSS CHEM elective, PSYC 10300, HLTH 21700
    - Achieving a grade below C- (D+, or less) in any of these courses will not allow a student to progress into the professional phase of the program.
    - Students may be provisionally advanced if they have deficiencies in this aspect of the portfolio but MUST retake the offending course(s) and achieve a grade of C- or better for each BEFORE the start of the year 4, fall semester. A maximum of 2 such courses is allowable for this provisional status.

## 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.

## 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.

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 Biomedical Foundations of Clinical Science in Athletic Training (NLA)

An evidence-based approach to human tissue injury including normal anatomy & physiology, healing and degenerative processes, acute and chronic injury, exercise and movement, and implications for rehabilitation & restoration. Understanding of the relationships among connective tissues specific to sports injuries, issues of aging, and special populations. Examination of principles essential to clinical assessment strategies including diagnostic imaging, as well as intervention for the rehabilitation and prevention of orthopedic injury and dysfunction. Prerequisites: EXSS 32100; EXSS 41100; EXSS 41200. (F)  
3 Credits

### ATEG 50200 Acute Care and Emergency Management in Athletic Training (NLA)

Gain an understanding of acute care and emergency situations. Examine the epidemiology and etiology of emergent injuries and illnesses. Learn how to evaluate patients with various conditions such as sudden cardiac arrest, concussion, cervical spine injury, heat illness, and other athletic related trauma. Understand and implement standard of care practices. Develop and apply intervention skills to properly prevent and treat these conditions within a hands-on lab-based setting. Prerequisites: EXSS 41100; EXSS 41200. (F)  
4 Credits

**ATEG 50300 Clinical Pathoanatomy (NLA)**

Advanced human anatomy course emphasizing musculoskeletal structure, function, and injury by extending and deepening prior knowledge using human cadaveric laboratory instruction. In-depth examination of common sports and activity-based injuries will be integrated. Students are expected to apply and implement anatomy, biomechanics, and clinical reasoning to common sports-related injuries. Prerequisites: EXSS 22000; EXSS 32100. (F)

3 Credits

**ATEG 50400 Professional Practice in Athletic Training (NLA)**

Exploration of the athletic training professional practice. Orientation and implementation of athletic training policies and procedures. Acquire and demonstrate standard documentation procedures, including electronic medical records. Understand and utilize effective healthcare related communication. Skill development and application of taping and wrapping skills. Prerequisites: EXSS 41200. (F)

2 Credits

**ATEG 50500 Practicum in Athletic Training I (NLA)**

Supervised practical experience in a clinical setting focused on the application of clinical skills acquired in previous and current coursework. Clinical milestones include execution of competencies relative to patient management, acute and emergency care, injury prevention, documentation, and professional behaviors. Prerequisites: EXSS 41200. (F)

3 Credits

**ATEG 50600 Assessment of Musculoskeletal Conditions and Injuries (NLA)**

In-depth analysis of complete assessment theories, procedures, principles and skills related to the evaluation of upper extremity, spine and lower extremity orthopedic injuries and conditions. Emphasis is placed on clinical reasoning, evidence-informed practice, and the anatomical basis and mechanisms of athletic injuries and conditions common in active populations and athletics. Skill instruction and lab-based practice included to develop essential practical skills germane to orthopedic assessment. Prerequisites: ATEG 50100. (S)

4 Credits

**ATEG 50700 Clinical Principles of Medical Science (NLA)**

Examine the etiology, pathology, process, diagnosis and treatment of diseases of the human body. Emphasis is placed on the immune, cardiovascular, pulmonary, gastrointestinal, endocrine, renal, urogenital, dermatological systems and their associated disorders and conditions. Analysis of pharmacological interventions and their application will be discussed. Lab activities will enhance clinical skills for assessment of common medical conditions. Prerequisites: ATEG 50100; ATEG 50200. (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 Practicum in Athletic Training II (NLA)**

Supervised practical experience in a clinical setting focused on the application of clinical skills acquired in previous and current coursework. Clinical milestones include execution of competencies relative to assessment of musculoskeletal injuries, recognition and care of general medical conditions, selection and application of therapeutic interventions, documentation, and professional behaviors. Prerequisites: ATEG 50500. (S)

3 Credits

**ATEG 51100 Clinical Research in Athletic Training I (NLA)**

This first of a 3-semester clinical research sequence prepares students to be clinician-scientists by addressing key elements of clinical research in athletic training. Students will initiate a clinical research project.

Prerequisites: EXSS 41100. (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 imaging techniques and laboratory testing. Describe and identify common dermatological conditions and treatment paradigms. Prerequisites: ATEG 51000. (U)

2 Credits

**ATEG 60400 Foundations of Health Care Delivery and Administration (NLA)**

Addresses the organization and administration of health care delivery systems specific to athletic training. Emphasis on continual quality improvement, patient and clinical outcomes, payor systems and reimbursement, legal aspects, and operational management.

Prerequisites: ATEG 50400. (S)

3 Credits

**ATEG 60500 Practicum in Athletic Training III (NLA)**

Supervised practical experience in a clinical setting focused on the application of clinical skills acquired in previous and current coursework. Clinical milestones include execution of advanced competencies relative to clinical care and selection and application of therapeutic interventions, demonstration of evidence based practice, documentation, and professional behaviors. Prerequisites: ATEG 51000. (F)

3 Credits

**ATEG 60700 Medical and Health Aspects of Athletic Training Practice (NLA)**

Develop and apply clinical skills related to special populations, and the multidimensional aspects of health, wellness, and sport performance.

Prerequisites: ATEG 50700. (S)

2 Credits

**ATEG 60800 Therapeutic Interventions in Athletic Training II (NLA)**

Acquisition 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 Practicum in Athletic Training IV (NLA)**

Supervised practical experience in a clinical setting focused on the application of clinical skills acquired in previous and current coursework. Students will demonstrate increased autonomy and clinical capability across all domains of professional practice, demonstrating professional behaviors and communication. Includes 4 week, full time clinical immersion rotation either on or off campus. Prerequisites: ATEG 60500. (S)

5 Credits

**ATEG 61100 Clinical Research in Athletic Training II (NLA)**

This second course of a 3-semester clinical research sequence prepares students to be clinician-scientists by addressing key elements of clinical research in athletic training. Students will continue work on a clinical research projects. Prerequisites: ATEG 51100. (F)

2 Credits

**ATEG 61200 Clinical Research in Athletic Training III (NLA)**

This final course of a 3-semester clinical research sequence prepares students to be clinician-scientists by addressing key elements of clinical research in athletic training. Students will complete work on a clinical research project. Prerequisites: ATEG 61100. (S)

2 Credits

**ATEG 61500 Advanced Clinical Capabilities in Athletic Training (NLA)**

Apply evidence-based theory and develop techniques concerning the assessment and treatment of the spine and peripheral joints. Formulate and design rehabilitation interventions for athletes and active populations. Prerequisites: ATEG 60500. (S)

2 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. (SU)

2 Credits

**ESSG 51800 Exercise and Rehabilitation Psychology (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. Students may not get credit for both ESSG 51800 and EXSS 46500. Graduate students have additional workload and responsibilities. (F, Y)

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. (F,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 63200-63201 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**

In-depth seminar on particular topics associated with academic concentrations offered in exercise and sport sciences. Students explore and critically examine current readings, philosophies, theories, and/or practices associated with a given topic and discuss potential applications of these concepts to actual or simulated situations.

Students may present research findings, thesis proposals, or thesis defenses. Students must pass two semesters of this zero-credit seminar.

Pass/fail only. (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