DEPARTMENT OF EXERCISE AND SPORT SCIENCE (GRAD)

Contact Information
Department of Exercise and Sport Science
http://www.unc.edu/depts/exercise

Darin A. Padua, Chair

The mission of the Department of Exercise and Sport Science (EXSS) is to discover and promote knowledge of human movement to improve quality of life. Its vision is to transform society by developing leaders and translating scientific knowledge into practical applications. The department prepares individuals to function as scientists, educators, and practitioners. The program offers a master of arts degree in exercise and sport science with specialization in one of three areas: athletic training, exercise physiology, and sport administration. EXSS seeks to provide all students with focused, in-depth knowledge and skills, and an understanding of the challenges facing the areas of athletic training, exercise physiology, and sport administration as well as a global understanding of exercise and sport.

In pursuit of maximum fulfillment of its mission, the department also offers quality practical experiences to students. EXSS has an association with numerous other campus and local area units such as Athletics, Emergency Medicine, Orthopedics, the Duke Center for Living, the Lineberger Comprehensive Cancer Center, Get Real and Heel, the Meadowmont Wellness Center, Campus Health Services, Carolina Adventures, Campus Recreation, the North Carolina High School Athletic Association, and local public parks and recreation departments. Supervised assistantships and internships outside the department help students develop practical skills in the specific fields of study. Furthermore, the requirement of a structured research experience for all master's degree students is an integral part of every student's program of study. Additional research experience opportunities are numerous, and it is an expectation of the department that graduate students will become actively involved in conducting research while studying at UNC-Chapel Hill.

Additional information regarding the Department of Exercise and Sport Science can be found at the department's Web site (http://www.unc.edu/depts/exercise).

Admission
The master's degree programs in exercise and sport science are open to individuals from differing backgrounds. However, the majority of past entrants into the program have earned undergraduate degrees in exercise science, kinesiology, physical education, or recreation/leisure studies. The department offers admission to the fall semester only and does not admit nondegree-seeking students. Potential applicants seeking admission information pertaining to their specific area of specialization should go to the EXSS Graduate Program Admissions page (http://exss.unc.edu/graduate-programs/admissions).

Application Prerequisites and Requirements
All areas of specialization within the exercise and sport science master of arts program have specialization-specific prerequisite coursework and/or experiences for all applicants. Successful completion of an undergraduate statistics class is a prerequisite for all areas of specialization. All applicants must have had a statistics class, or other coursework that includes appropriate content and topics in statistical analysis. Applicants are strongly encouraged to satisfy the statistics prerequisite by having completed an undergraduate statistics class at the time of the application. Advanced Placement credit in statistics will not satisfy this prerequisite. For additional application and admissions information, see the department's Web site (http://www.unc.edu/depts/exercise) or The Graduate School's Web site (http://gradschool.unc.edu/admissions).

Assistantships
The Department of Exercise and Sport Science awards a number of teaching and research assistantships annually to help fund students' education and to provide practical experiences related to their area of study. Assistantships may involve one or more of the following activities: teaching assistant for lifetime fitness and physical activity courses, teaching assistant for the exercise and sport science laboratories, certified athletic trainer, or athletic department assistant. Students may apply for these assistantships by completing and returning the appropriate application form. Please contact the executive assistant to the graduate program in the Department of Exercise and Sport Science for additional information at (919) 962-0018 or email atkins@email.unc.edu.

The Department of Exercise and Sport Science's graduate program offers a master of arts degree in exercise and sport science. Applicants to the program must choose between three areas of specialization: athletic training, exercise physiology, and sport administration. The minimum number of semester credit hours required by The Graduate School for the master of arts degree is 30. However, the minimum required by each area of specialization in exercise and sport science varies and typically exceeds 30 hours. Required courses are determined by the faculty in each area of specialization. In addition to course requirements and other required curricular experiences, all students in all three areas of specialization must pass a written comprehensive examination on all coursework, complete a research thesis, and successfully defend the thesis in a final oral examination on the thesis. Note: Significant discussions began in the fall of 2016 and are continuing in the spring of 2017 considering the possibility of seeking approved substitutes for the written comprehensive examination and for the research thesis. Pertinent information will be immediately published on the Exercise and Sport Science Graduate Program Web site (http://exss.unc.edu/graduate-programs), if and when approved substitutes become available and are options in addition to the comprehensive examination and the research thesis.

Specialization Descriptions

Athletic Training
The Department of Exercise and Sport Science offers a specialization in athletic training at the graduate level which has existed as a Post-Professional Athletic Training Education Program since 1975. Our program is one of only 16 such graduate programs in the United States that is accredited by the Commission on Accreditation of Athletic Training Education (CAATE). The primary mission of the Post-Professional Athletic Training Education Program is to provide a science/practice model designed to educate and develop clinical scholars to be leaders in the field of athletic training. The major objectives for students in the program are

1. to provide advanced experiences that improve clinical skills related to evidence-based clinical practice, and
2. To help students develop the academic skills needed to evolve clinical practice and advance the profession of athletic training.

We recruit graduate students who are Board of Certification certified athletic trainers who have distinguished themselves both academically and as highly competent clinicians. We provide the means for each graduate student to gain advanced knowledge and experience in prevention, evaluation, management, and rehabilitation of sport-related injuries through a combination of didactic lecture in the classroom, supervised practical application of this knowledge in a clinical setting, and a strong science-research experience oriented toward clinical practice. All students admitted to this program serve as teaching assistants in the Lifetime Fitness Program and as athletic trainers in the Department of Athletics. A comprehensive examination on all coursework and a research thesis are required of all students. The Athletic Training program’s Web site (http://exss.unc.edu/graduate-programs/specializations/athletic-training) contains additional information. Note: Significant discussions began in the fall of 2016 and are continuing in the spring of 2017 considering the possibility of seeking approved substitutes for the written comprehensive examination and for the research thesis. Pertinent information will be immediately published on the Exercise and Sport Science Graduate Program Web site (http://exss.unc.edu/graduate-programs), if and when approved substitutes become available and are options in addition to the comprehensive examination and the research thesis.

Exercise Physiology
The mission of the exercise physiology specialization is to prepare individuals for careers in the wellness industry, including hospital and corporate fitness centers as well as clinical settings, or to pursue research careers in exercise physiology-related fields. Students seeking a focus in fitness/wellness are provided the background, knowledge, testing skills, and practical experience to prescribe safe fitness/wellness programs in a variety of settings, as well as the knowledge to act as a liaison between the medical community and the layperson regarding the health implications of exercise. Students preparing for further advanced study in a Ph.D. program are provided in-depth understanding of how physiological constructs are applied to exercise and the environment, as well as an understanding of the research process. Concomitantly, the student develops laboratory techniques and skills. Many graduate students present their thesis research findings at national and regional meetings of the American College of Sports Medicine and at other professional meetings or conferences. A minimum of 30 hours (excluding prerequisites) of graduate coursework is required. A comprehensive examination on all coursework and a research thesis are required of all students. The program’s Web site (http://exss.unc.edu/exercise-physiology) contains additional information. Note: Significant discussions began in the fall of 2016 and are continuing in the spring of 2017 considering the possibility of seeking approved substitutes for the written comprehensive examination and for the research thesis. Pertinent information will be immediately published on the Exercise and Sport Science Graduate Program Web site (http://exss.unc.edu/graduate-programs), if and when approved substitutes become available and are options in addition to the comprehensive examination and the research thesis.

Sport Administration
The mission of the sport administration specialization is to integrate theory and practice to prepare graduate students for leadership positions in intercollegiate athletics. Within a two-year learning experience, the sport administration graduate student cohort, consisting of a highly select and diverse group of students from across the United States, engages in both formal coursework and intense practical experiences designed to prepare for a college sport administration career. During their first year, students are provided challenging coursework in administration, economics/finance, legal issues, sport marketing, governance and compliance, research methods/statistical analyses, and sport facility and event management. In addition, students engage in extensive hands-on event-operations experiences with the (UNC) Athletic Department. During the second year, students complete a full-time, one-year internship in a functional area within the UNC Department of Athletics. In addition to successful completion of all required courses and curricular experiences, all students must complete a comprehensive examination on all coursework and a research thesis. Thirty-two hours of graduate coursework are required. The program’s Web site (http://exss.unc.edu/graduate-programs/specializations/sport-administration) contains additional information. Note: Significant discussions began in the fall of 2016 and are continuing in the spring of 2017 considering the possibility of seeking approved substitutes for the written comprehensive examination and for the research thesis. Pertinent information will be immediately published on the Exercise and Sport Science Graduate Program Web site (http://exss.unc.edu/graduate-programs), if and when approved substitutes become available and are options in addition to the comprehensive examination and the research thesis.

Law and Sport Administration Dual-Degree Program (J.D.–M.A.)
The dual-degree program provides an opportunity for students who are interested in both law and sport administration to earn both degrees over four years of study. Students benefit from a respected law curriculum, combined with a sport administration curriculum with a unique focus on intercollegiate athletics. There is a growing market in college athletics for professionals with both degrees. Graduates of the dual-degree program may work in athletic compliance and enforcement at a university, conference office, or national governing body such as the National Collegiate Athletic Association (NCAA). Legal positions in athletic departments, fundraising and development, and law firms that represent colleges and conferences are also likely. Students must be currently enrolled in their second year at the UNC–Chapel Hill School of Law to apply for the J.D.–M.A. dual-degree program. Students will be responsible for paying tuition and fees separately to both the Law School and The Graduate School. The M.A. in exercise and sport science must be completed prior to or simultaneously with completion of the J.D. degree. Completion of the M.A. requires successful completion of all required exercise and sport science courses, a comprehensive examination on all coursework, and a research thesis. Note: Significant discussions began in the fall of 2016 and are continuing in the spring of 2017 considering the possibility of seeking approved substitutes for the written comprehensive examination and for the research thesis. Pertinent information will be immediately published on the Exercise and Sport Science Graduate Program Web site (http://exss.unc.edu/graduate-programs), if and when approved substitutes become available and are options in addition to the comprehensive examination and the research thesis.

Ph.D. Study
An interdisciplinary program in the Human Movement Science Curriculum (HMSC) is available and designed to provide students from various fields an opportunity to pursue doctoral studies. The Department of Allied Health Sciences grants the degree. A key feature of this program is the interdisciplinary orientation of faculty and the combined efforts of several successful programs that span across campus and beyond. The program reflects the ongoing interest, planning, and cooperation...
of the following departments and schools at UNC–Chapel Hill: the Department of Allied Health Science’s Division of Physical Therapy, the Department of Exercise and Sport Science, the joint UNC–NCSU Biomedical Engineering Program, the Gillings School of Global Public Health and its Department of Epidemiology, and the UNC School of Medicine’s Department of Orthopedics and Department of Physical Medicine and Rehabilitation.

The mission of HMSC is to prepare scholars to be exceptional interdisciplinary researchers, educators, and leaders in the field of human movement. HMSC prepares doctoral research scholars who will create and disseminate knowledge in human movement science. Program graduates excel in functioning as part of a team to address scientific problems related to human movement in a global, integrated manner. HMSC faculty members conduct applied and translational research using interdisciplinary approaches focused on healthy and impaired human movement. Research conducted through the program reflects the complexity and interdependence of the multiple systems underlying movement and ultimately will promote health and physical well-being. Students of varied academic disciplines are accepted into the program and study across the spectrum of biomechanics, exercise physiology, and neuromuscular control/motor learning. The curriculum’s Web site (http://hmsc.unc.edu) contains additional information.

Following the faculty member’s name is a section number that students should use when registering for independent studies, reading, research, and thesis and dissertation courses with that particular professor.

### Professors
- Claudio L. Battaglini (32), Clinical Exercise Physiology, Exercise Assessment and Prescription
- J. Troy Blackburn (33), Biomechanics, Neuromuscular Control, Sports Medicine
- Kevin M. Guskiewicz (24), Sports Medicine, Anatomy
- Anthony C. Hackney (21), Exercise Physiology, Metabolism and Endocrinology
- Darin A. Padua (22), Anatomy, Biomechanics, Sports Medicine
- William E. Prentice (1), Athletic Training, Sports Medicine

### Associate Professors
- Michael D. Lewek (51), Biomechanics
- Jason P. Mihalik (40), Traumatic Brain Injury, Sports-Related Traumatic Brain Injury
- Barbara J. Osborne (29), Legal Issues, Sport Administration
- Edgar W. Shields Jr. (10), Applied Statistics, Research Design

### Assistant Professors
- Erik D. Hanson (48), Clinical Exercise Physiology, Muscle Physiology, Immunology
- Jonathan Jensen (52), Sport Marketing, Sport Analytics, Consumer Behavior
- Zachary Kerr (50), Epidemiology, Traumatic Brain Injury, Injury Prevention Evaluation
- Kristen L. Kucera (46), Sports/Occupational Injury Epidemiology, Musculoskeletal Disorders, Surveillance Exposure Assessment
- Brian G. Pietrosimone (45), Sports Medicine, Joint Injury, Neuromuscular Control
- Nels K. Popp (47), Revenue Generation within College Athletics, Sport Sales, International Sport
- Johna Register-Mihalik (44), Athletic Training, Sports Medicine
- Eric D. Ryan (41), Exercise Physiology, Muscle Function

### Teaching Professors
- Meredith A. Petschauer
- Sherry L. Salyer

### Lecturers
- Alain J. Aguilar
- Roberto Aponte
- Rebecca L. Battaglini
- Bob Malekoff
- Debra C. Murray
- Kristin S. Ondrak
- Meg Pomerantz
- Lee R. Schimmelpfing
- Deborah J. Southall
- Heather L. Tatreau
- Nina Walker

### Post-Doctoral Trainee/Research Associates
- Cassie Ford
- Barnett Frank
- Erin B. Wasserman

### Adjunct Professors
- Carol A. Giuliani, Allied Health Sciences
- Deborah L. Givens, Allied Health Sciences
- Michael T. Gross, Allied Health Sciences
- Laurence M. Katz, Emergency Medicine
- Stephen W. Marshall, Epidemiology
- Karen L. McCulloch, Allied Health Sciences
- Joseph Myers
- Bing Yu, Allied Health Sciences

### Adjunct Associate Professors
- David J. Berkoff, Orthopaedics
- Deborah E. Thorpe, Allied Health Sciences
- Vicki S. Mercer, Allied Health Sciences

### Adjunct Assistant Professors
- Kevin A. Carneiro, Physical Medicine Rehabilitation
- Elizabeth G. Hedgpeth (30), Sport Psychology
- Shawn Kane
- Robert Lutz
- Prudence Plummer, Allied Health Sciences

### Clinical Assistant Professors
- Jonathan D. Defreese
EXSS

Advanced Undergraduate and Graduate-level Courses

**EXSS 408. Theory and Application of Strength Training and Conditioning for Fitness Professionals. 3 Credits.**  
Instructor may approve equivalents for prerequisites. This is an intermediate- to upper-level course designed to provide students with theoretical and practical knowledge of the physiological, biomechanical, functional, and administrative aspects of designing and supervising conditioning programs for various populations.  
**Requisites:** Prerequisites, EXSS 175 and 276.  
**Grading status:** Letter grade.

**EXSS 410. Exercise Testing and Prescription. 4 Credits.**  
Students must take laboratory section along with class. This is an upper division undergraduate course designed to provide the theoretical and practical knowledge in basic exercise testing and prescription for both healthy and select special populations.  
**Requisites:** Prerequisites, EXSS 175, 276, and 385.  
**Grading status:** Letter grade.

**EXSS 475. Functional Anatomy. 3 Credits.**  
This course provides an in-depth exploration of joint mechanics. It exposes students to motions of the cervical, thoracic, and lumbar spine as well as the extremities, and relates these concepts to movement of the body during specific activities.  
**Requisites:** Prerequisites, EXSS 175, 276, and 385.  
**Grading status:** Letter grade.

**EXSS 478. Sports Performance Training. 3 Credits.**  
An upper-level course designed to provide students who have a fitness background with the theoretical and practical knowledge related to the Performance Enhancement Specialization for athletes of all ages.  
**Requisites:** Prerequisites, EXSS 175 and 276.  
**Grading status:** Letter grade.

**EXSS 479. Performance Enhancement Specialization for Health Professionals. 1 Credit.**  
An upper-level course designed to provide students who have a health profession background with the theoretical and practical knowledge related to the Performance Enhancement Specialization for athletes.  
**Requisites:** Prerequisites, EXSS 175, 276, 366, and 368.  
**Grading status:** Letter grade.

**EXSS 493. Field Experience in Sport Administration. 1-3 Credits.**  
A grade of B or better in EXSS 221 is required. Permission of the instructor required for students lacking the prerequisites. This field experience offers implementation of theory and the practical application of sport administration in a sport organization worksite, under the direct supervision of a business professional.  
**Requisites:** Prerequisites, EXSS 221 and at least two of the following: EXSS 322, 323, 324, 326.  
**Gen Ed:** EE-Academic Internship.  
**Repeat rules:** May be repeated for credit. 6 total credits. 2 total completions.  
**Grading status:** Letter grade.

**EXSS 576. Exercise Endocrinology. 3 Credits.**  
Advanced course examining the responses of the endocrine system to exercise and the adaptations that occur with exercise training. Provides the fundamentals necessary for exercise science and allied health science students to understand the integral role that the endocrine system plays in exercise.  
**Requisites:** Prerequisites, EXSS 175, 276, and 376.  
**Grading status:** Letter grade.

**EXSS 580. Neuromechanics of Human Movement. 3 Credits.**  
This course explores interactions between the nervous and musculoskeletal systems via integration of concepts from neuroanatomy, neurophysiology, anatomy, neuromuscular control, and biomechanics. Topics include muscle mechanics, sensorimotor function, joint stability, movement disorders, neurocognition, and neuroplasticity following injury and disease. Course meetings involve both lecture and laboratory content.  
**Requisites:** Prerequisites, EXSS 175, 380, and 385.  
**Grading status:** Letter grade.

**EXSS 593. Practicum in Physical Fitness and Wellness. 1-3 Credits.**  
Recommended preparation, EXSS 360 - site dependent. Current CPR certification and student liability insurance is required. Introductory practical experience to enable student to apply knowledge and skills in a worksite under direct supervision of certified professionals.  
**Requisites:** Prerequisites, EXSS 220, 385, 408, and 410.  
**Gen Ed:** EE-Academic Internship.  
**Grading status:** Letter grade.

**EXSS 693H. Senior Honors Thesis. 3 Credits.**  
Required preparation, a cumulative grade point average meeting the University standard and permission of the department. Directed independent research under the supervision of a faculty advisor who teaches in the exercise and sport science curriculum.  
**Requisites:** Prerequisite, EXSS 273.  
**Gen Ed:** EE-Mentored Research.  
**Grading status:** Letter grade.

**EXSS 694H. Senior Honors Thesis. 3 Credits.**  
Required preparation, a cumulative grade point average meeting the University standard and permission of the department. Preparation of an honors thesis and an oral examination on the thesis.  
**Requisites:** Prerequisite, EXSS 273.  
**Gen Ed:** EE-Mentored Research.  
**Grading status:** Letter grade.
Graduate-level Courses

EXSS 700. Applied Statistics and Research Methods in Exercise and Sport Science. 3 Credits.

EXSS 705. Applied Statistics and Research Methods Laboratory. 3 Credits.
Required preparation, any undergraduate statistics course. Builds heavily upon material presented in EXSS 700. Planning, conducting, and reporting of research. Thesis writing and writing for publication. Problem-solving and practical experience in applied statistical analysis, interpretation, and presentation of data from the field of exercise and sport science.

EXSS 730. Management of Athletic Injuries. 3 Credits.
Permission of the instructor for nonmajors. Designed to provide basic knowledge and skills that aid in the prevention and treatment of injuries common to athletics.

EXSS 732. Human Anatomy for Athletic Trainers. 4 Credits.
Graduate standing in exercise and sport science or permission of the instructor. The study of gross human anatomy, with emphasis on the functional and clinical aspects of the neck, back, and extremities as related to athletic injuries.

EXSS 733. Psychological Considerations for Injury and Rehabilitation. 3 Credits.
Athletic training graduate students only. Psychological impact of injury and rehabilitation on the injured athlete. Stress from injury, coping skills for the rigors of rehabilitation, and the improvement of communication skills in order to better the relationship between the athletic trainer, the injured athlete, and the injured athlete’s coach.

EXSS 735. Sports Medicine Analysis: Special Problems Related to Sports Medicine. 3 Credits.
Permission of the instructor for nonmajors. Problem and research oriented.

EXSS 736. Clinical Methods in Athletic Training. 3 Credits.
Analysis of theories and techniques used in clinical sports medicine settings
Requisites: Prerequisite, EXSS 730.

EXSS 737. Advanced Muscular Assessment and Treatment. 3 Credits.
Discussion of mechanical properties and healing of musculoskeletal tissues throughout the life cycle, and laboratory/seminar units concerned with assessment and treatment of musculoskeletal pathology.
Requisites: Prerequisites, EXSS 730, 732, and 736; Permission of the instructor for students lacking the prerequisite.

EXSS 738. Laboratory Techniques in Sports Medicine. 3 Credits.
This course provides an introduction to measurement techniques used in sports medicine/athletic training research. Course meetings involve lecture and laboratory sessions which encompass data collection, analysis, and interpretation techniques.

EXSS 739. Practicum in Athletic Training. 3 Credits.
Graduate standing in exercise and sport science or permission of the instructor. The implementation of theories and practices in a professional setting under the direction of a competent practitioner.

EXSS 740. Administration of Sport. 3 Credits.
Permission of the instructor for nonmajors. Policies and problems of organization and administration of athletic programs in colleges.

EXSS 742. Social Issues in Exercise and Sport. 3 Credits.
A comprehensive study of race and gender discrimination, adherence, value development, violence, and other socialization factors in youth, collegiate, and Olympic sport.

EXSS 744. Collegiate Sport Marketing. 3 Credits.
Graduate standing required. This course is designed to develop a thorough understanding of sport marketing principles and their application to collegiate athletics.

EXSS 746. Organizational and Financial Management of Sport. 3 Credits.
Graduate standing in exercise and sport science or permission of the instructor. The study of administrative structures and financial concerns of collegiate athletic programs. An intensive study of NCAA regulations is included.

EXSS 747. College Sport Facility and Event Management. 3 Credits.
This course provides students with necessary knowledge and skills to manage college-sport facilities and plan a complete sport event. Students also evaluate facility functions related to risk and event management.

EXSS 748. Legal Issues in Collegiate Sport. 3 Credits.
Provides an introduction to the United States legal system, legal principles, and legal issues related to intercollegiate athletics.

EXSS 749. NCAA Governance and Compliance. 3 Credits.
The implementation of theories and practices in a professional setting under the direction of a competent practitioner.
Requisites: Prerequisite, EXSS 740.

EXSS 750. Sport Administration Leadership Seminar I. 1 Credit.
Successful completion of first year in sport administration graduate program. An introduction of organizational leadership concepts in a practical applied context. Students will lead class discussion tying relevant current events with leadership theory.

EXSS 751. Sport Administration Leadership Seminar II. 1 Credit.
Successful completion of first year in sport administration graduate program. An introduction of organizational leadership concepts in a practical applied context. Students will lead class discussion tying relevant current events with leadership theory.

EXSS 770. Motor Learning. 3 Credits.
A study of the physical and psychological factors that influence skill acquisition and performance in sport and exercise, including applications to teaching and coaching.
Requisites: Prerequisite, EXSS 380; Permission of the instructor for students lacking the prerequisite.

EXSS 780. Physiology of Exercise. 3 Credits.
The study of the physical, biochemical, and environmental factors that influence human performance. Emphasis is placed on metabolic, cardiovascular, respiratory, muscular, and endocrine systems. Three hours of lecture and two hours of laboratory per week.
Requisites: Prerequisite, EXSS 276 or 376.
Same as: HMSC 702.

EXSS 781. Clinical Exercise Prescription and Testing. 2-3 Credits.
Students who take EXSS 410L must pass with B or equivalent. This course concentrates on the knowledge and skills necessary for providing exercise testing and prescription in the clinical setting, emphasizing cardiac rehabilitation.
Requisites: Prerequisite, EXSS 376 or 410L; permission of the instructor for students lacking the prerequisite.
RECR 782. Nutritional Aspects of Exercise. 2-3 Credits.
Graduate standing in physical education or permission of the instructor. Exploration of the role of macronutrients and micronutrients as they apply to exercise, physical conditioning, and competition. Students obtain experience in dietary analysis as it applies to athletic populations.

RECR 783. Assessment of Physiological Functions in Exercise. 3 Credits.
Designed to develop laboratory techniques and experimental design skills as applied to the physiology of human performance.

**Requisites:** Prerequisite, EXSS 780; Permission of the instructor for students lacking the prerequisite.

**Repeat rules:** May be repeated for credit; may be repeated in the same term for different topics.

RECR 784. Advanced Topics in Exercise Physiology. 3 Credits.
Required preparation, completion of a graduate level exercise physiology course. Graduate standing required. This course deals with current and rapidly developing aspects of the exercise physiology field. Specifically enhancing and adding to the content area of basic physiology acquired in EXSS 780.

RECR 785. Seminar in Exercise Physiology. 3 Credits.
Graduate standing in exercise and sport science or permission of the instructor. In-depth study of selected advanced topics in exercise physiology. Emphasis on metabolism, biochemical, and cardiorespiratory physiology, with student presentations on selected topics.

RECR 789. Practicum in Exercise Physiology. 3 Credits.
The implementation of theories and practices of fitness or cardiac rehabilitation in a professional setting under the direction of an experienced practitioner.

**Requisites:** Prerequisite, EXSS 410L, 780, or 781; permission of the instructor for students lacking the prerequisite.

EXSS 890. Special Topics in Exercise and Sport Science. 1-3 Credits.
Graduate standing or permission of the instructor. The study of special topics directed by an authority in the field.

EXSS 990. Research in Exercise and Sport Science. 1-3 Credits.
Graduate standing in exercise and sport science or permission of the instructor. Individually designed research projects conducted by students under the direction of a graduate faculty member.

EXSS 993. Master's Research and Thesis. 3 Credits.

RECR Advanced Undergraduate and Graduate-level Courses

RECR 420. Program Planning in Recreation Services. 3 Credits.
This experiential course covers the concepts and skills used in program planning. Students apply their program planning skills to real-life situations and implement a recreation program for a community agency.

**Gen Ed:** EE-Service Learning.

**Grading status:** Letter grade.

RECR 430. Introduction to Leadership and Group Dynamics. 3 Credits.
An analysis of the techniques, methods, and motives of group and community leaders. Special attention is focused upon the roles of organizational structure, personnel policies, and in-service training programs.

**Gen Ed:** CI.

**Grading status:** Letter grade.

RECR 440. Outdoor Recreation and Environmental Issues. 3 Credits.
A survey course taught from a psychosocial perspective addressing the roles of public and private agencies in meeting increased demand for outdoor recreation. Emphasizes the implications of environmental awareness on outdoor recreation.

**Gen Ed:** SS.

**Grading status:** Letter grade.

RECR 470. Recreation and Leisure across the Lifespan. 3 Credits.
An analysis of aspects that affect recreation and leisure behavior from birth to death, with a focus on issues associated with race, class, gender, sexual identity, and disabling conditions.

**Gen Ed:** SS.

**Grading status:** Letter grade.

RECR 475. Disability, Culture, and Therapeutic Recreation. 3 Credits.
An examination of disability from a cultural perspective with the application of theoretical and scientific knowledge to provide recreation interventions that facilitate participation in life by individuals with disabilities.

**Gen Ed:** SS, US.

**Grading status:** Letter grade.

RECR 676. Clinical Skills in Therapeutic Recreation. 3 Credits.
Development of helping skills for the practice of therapeutic recreation emphasizing rationale, techniques, and role responsibilities of therapeutic recreation in the area of leisure education. A 24-hour practicum is required.

**Grading status:** Letter grade.

RECR 677. Disabling Conditions and the Practice of Therapeutic Recreation. 3 Credits.
Instruction in the relationship between various disabling conditions and the practice of therapeutic recreation. A 24-hour practicum is required.

**Requisites:** Prerequisites, RECR 475 and 676.

**Grading status:** Letter grade.

RECR 691H. Honors in RECR. 3 Credits.
Special studies for undergraduates. Intensive study on a particular topic under the supervision of a qualified member of the staff. For RECR majors, with special permission of the faculty members involved and the director of undergraduate studies.

**Gen Ed:** EE-Mentored Research.

**Grading status:** Letter grade.

RECR 692H. Honors in RECR. 3 Credits.
Honors project in recreation. The completion of a special project, approved by the department, by a student who has been designated a candidate for undergraduate honors. The second of a two-course honors sequence.

**Gen Ed:** EE-Mentored Research.

**Grading status:** Letter grade.

Graduate-level Courses

RECR 710. Leisure and Organized Recreation in the United States. 3 Credits.
An analysis of the scope of leisure research, recreation services, the evolution of leisure, and the of individual recreation behavior.

RECR 770. Administration of Therapeutic Recreation Services. 3 Credits.
Emphasis on information specific to the administration of therapeutic recreation such as fiscal management, quality assurance, evaluation, marketing of therapeutic recreation, and other general administrative topics.
RECR 775. Principles and Procedures in Therapeutic Recreation. 3 Credits.
A study of the existing practices and principles of therapeutic recreation. An in-depth treatment of assessment/evaluation, goal setting and individualized planning, documentation, leisure counseling, and clinical skills.

RECR 790. Independent Field Study. 3 Credits.
Permission of the department. May be repeated for credit.

Repeat rules: May be repeated for credit.

RECR 830. Managing Organizational Behavior in Recreation Services. 3 Credits.
This course addresses organizational behavior and theory to promote insight into micro and macro issues confronting professionals in organized recreation services.

RECR 865. Issues and Trends in Recreation Management. 3 Credits.
A seminar to involve graduate recreation students in in-depth analyses of selected topics, issues, and problems relevant to the recreation management in public and not-for-profit leisure service organizations.

RECR 876. Issues and Trends in Therapeutic Recreation. 3 Credits.
An analysis of selected issues, problems, and concerns in the provision of therapeutic recreation and inclusive recreation services.

RECR 880. Internship in Recreation Administration. 2 Credits.
Participation in full-time, practical on-the-job experience in a recreational agency of the student’s choice.

RECR 881. Internship in Recreation Administration. 2 Credits.
Completion of a professional project and in-depth paper reflecting the outcomes of the internship completed in RECR 880.

RECR 890. Seminar in Leisure Studies. 3 Credits.
A survey of contemporary views of society and their structures and functions, as they relate to concepts of leisure and recreation behaviors.

RECR 950. Recreation Research Design and Methods I. 3 Credits.
An appraisal of current recreation and leisure research design using both quantitative and qualitative data. Students complete and deliver a formal research proposal.

RECR 951. Recreation Research Design and Methods II. 3 Credits.
Required preparation, any statistics course. Students analyze quantitative and qualitative data and apply their work to theory and practice. Students complete the research proposed in RECR 950.

Requisites: Prerequisite, RECR 950.

RECR 993. Master's Research and Thesis. 3 Credits.