INTL 679
Intelligence Thesis Seminar
1 credit
The goal of this course is to provide students (in a peer group setting) with practical guidance as they construct their research proposal. This course focuses on the identification and formulation of research problems, the development of methodological designs, data collection, and analytic procedures to address those problems.

INTL 680
Thesis in Applied intelligence
3 credits
This capstone course experience is designed to demonstrate a scholarly study of a problem or issue related to applied intelligence and offers conclusions using qualitative and/or quantitative research methods. Research products may range from theoretical studies to applied projects. The thesis requires students to conduct purposeful research, review the literature, write a detailed analysis, offer new insights, and present and defend conclusions.

GRADUATE PROGRAM IN EXERCISE SCIENCE

PROGRAM PHILOSOPHY AND CONTENT

The primary goal of our master;s program in Exercise Science is to train exercise science clinicians. Many graduate programs will focus primarily on the academic aspects of Exercise Science; we not only focus on the academics, but we focus heavily on the clinical skills necessary for you to best serve your patients, clients and athletes. The clinical emphasis is well suited for students with bachelor's degrees in content areas such as exercise science, physical education, wellness or athletic training. The coursework and fieldwork will focus on the theory, foundations, research and practice of evidenced-based assessment and instruction with multiple populations. Due to the clinical focus of our program, the program is completed in a calendar year and is five terms of classes. Students begin in Summer Session (June) then complete the traditional academic year with Fall, J-Term, Spring, and then complete a second Summer term.

To obtain a master's degree in Exercise Science, the student must complete 35 graduate hours of study, including a 6-credit internship, and sit for one of the following American College of Sports Medicine exams: Certified Health Fitness Specialists (HFS), Certified Clinical Exercise SpecialistSM (CES) or, Registered Clinical Exercise Physiologist®. Graduates of the program will be qualified to work in: athletics at many levels, including collegiate and professional, adult fitness, corporate fitness, multiple hospital settings including cardiac rehabilitation, wellness, strength and conditioning coaching and working special needs populations.

As a result of coursework, field experiences and applied research requirements, students completing the master's degree in Exercise Science will be highly qualified to enter/reenter the field of Exercise Science. Graduates will possess a strong connection between theory and practice, with multiple opportunities for carrying out applied research prior to their degree completion. Students considering Ph.D. programs will be strongly encouraged to collaborate with graduate faculty and submit research for publication while enrolled in the program.

SPECIAL ADMISSION POLICY

The graduate Exercise Science Program will follow the same admissions requirements as Mercyhurst University's other master's programs, in addition to several program specific requirements.

PROGRAM SPECIFIC ENTRANCE/ADMISSIONS REQUIREMENTS:

- Completion of the following courses with a minimum grade of C or higher:
  - Human Anatomy and Physiology (with lab), Exercise Physiology (with lab), Chemistry (with lab), and Biology
- 200 hours of documented clinical hours or internship experience in Exercise Science, Exercise Physiology, or Athletic Training
- A one page personal statement discussing your qualifications, educational expectations, career aspirations, and why you are interested in the program at Mercyhurst University
- A one-page essay outlining your educational expectations and career asperiations.
- ACSM Exam track designation
  - (see course degree requirements for exam choices)
- Current professional resume
- Three letters of reference
- Official Graduate Record Exam (GRE) scores
- Undergraduate transcripts from all institutions attended

For full consideration, **Completed Applications** need to be on file by **March 1.**

Application received after March 1 **may be** considered at the discreton of the program director.

- If you are interested in a graduate assistantship, you must fill out a separate form with your online application and submit that as well.
- There is the possibility for employment/assistantships in the areas of: athletic training, strength and conditioning, coaching, biomechanics, and more based on applicant qualifications.

Due to the nature of the program, **there is no part time student option.** Courses are held on Tuesday, Wednesday and Thursday ONLY (barring unforeseen conflicts AND exclusive of both summer terms AND the J-term).

This scheduling is done for several reasons. Including, so that students may:

- Attain, maintain or advance clinical skills in a flexible way around a full time student schedule
- Participate in and attain their 200 hours of research OR clinical course required experiences in a meaningful way
- Participate in professional experiences that suit their personalized needs, possibly including, but not limited to, being Graduate Assistants

EXERCISE SCIENCE MASTER'S DEGREE REQUIREMENTS

- Complete all graduate coursework, with 3.0 or higher GPA
- Complete 200 hours of directed graduate research OR clinical course experience
  - Based on ACSM Exam track
    - If you choose HFS you will complete SPMD 511 and 512
    - If you choose CES or RCEP you will complete SPMD 521 and 522
- Sit for an ACSM certification, including the HFS, CES, or RCEP
    - If you are entering with an ACSM certification, you must sit for a higher level credential to satisfy your graduate exam requirement
- **CERTIFIED HEALTH FITNESS SPECIALIST (HFS)**
  The ACSM Certified Health Fitness SpecialistSM (HFS) is a health fitness professional with a minimum of a bachelor's degree in exercise science. The HFS performs pre-exercise health risk assessments, conducts physical fitness assessments, interprets results, develops exercise prescriptions, and applies behavioral and motivational strategies to apparently healthy individuals and individuals with medically controlled diseases and health conditions to support clients in adopting and maintaining healthy lifestyle behaviors. The academic preparation of the HFS also includes fitness management, administration, and supervision. The HFS is typically employed or self-employed in commercial, community, studio, corporate, university, and hospital settings.
- **ACSM CERTIFIED CLINICAL EXERCISE SPECIALISTSM (CES)**
  The ACSM Certified Clinical Exercise SpecialistSM (CES) is a professional with a minimum of a bachelor's degree in exercise science. The CES works with patients and clients challenged with cardiovascular, pulmonary, and metabolic diseases and disorders, as well as with apparently healthy populations in cooperation with other healthcare professionals to enhance quality of life, manage health risk, and promote lasting health behavior change.

  The CES conducts pre-participation health screening, maximal and submaximal graded exercise tests, and performs strength, flexibility and body composition tests. The CES develops and administer programs designed to enhance aerobic endurance, cardiovascular function, muscular strength and endurance, balance, and range of motion. The CES educates their clients about testing, exercise program components, and clinical and lifestyle self- are for control of chronic disease and health conditions.
- **REGISTERED CLINICAL EXERCISE PHYSIOLOGIST (RCEP)** ®
  The ACSM Registered Clinical Exercise Physiologist (RCEP) is an allied health professional with a minimum of a master's degree in exercise science, and works in the application of physical activity and behavioral interventions for those clinical diseases and health conditions that have been shown to provide therapeutic and/or functional benefit. Services provided by an RCEP include, but are not limited to, individuals with cardiovascular, pulmonary, metabolic, orthopedic, musculoskeletal, neuromuscular, neoplastic, immunologic, and hematologic disease. The RCEP provides primary and secondary prevention and rehabilitative strategies designed to improve physical fitness and health in populations ranging across the lifespan.

  The RCEP performs exercise screening, clinical exercise testing, exercise prescription, exercise and physical activity counseling, exercise supervision, exercise and health education/ promotion, and measurement and evaluation of exercise and physical activity related outcome measures. The RCEP works individually or as part of an interdisciplinary team in a clinical, community, or public health setting. The practice and supervision of the RCEP is guided by published professional guidelines, standards, and applicable state and federal laws and regulations.

COURSE SEQUENCE

TERM	COURSE NUMBER SPMD	COURSE TITLE
Summer 1	BIO 534	Cadaver Anatomy (LEC)
Summer 1	BIO 535	Cadaver Anatomy (LAB)
Fall	580	Advanced Exercise Physiology (LEC)
Fall	581	Advanced Exercise Physiology (LAB)
Fall	505	Measurement & Methodology
Fall	590	Advanced Exercise Assessment and Testing (LEC)
Fall	591	Advanced Exercise Assessment and Testing (LAB)
Fall	511	Directed Research Seminar I - for HFS track students

TERM	COURSE NUMBER SPMD	COURSE TITLE	PRE-REQUI-SITES
Fall	521	Directed Clinical Experience I - for CES & RCEP track students	
J Term	570	Advanced Exercise Rx (LEC)	
Spring	560	Advanced Cardiovascular Assessment (LEC)	
Spring	571	Advanced Exercise Rx (LAB)	**570, 590, 591**
Spring	512	Directed Research Seminar II - for HFS track students	**511**
Spring	522	Directed Clinical Experience I - for CES & RCEP track students	**521**
Spring	550	Special Populations	
Summer 2	600	Internship	

BIO 534 and 535
Cadaver Anatomy w/lab
6 credits
This course examines the gross anatomy of the human systems. Developmental anatomy and regional anatomy of the back, thorax, abdomen, pelvis, extremities, and perineum are examined. Cadaver-based dissection labs accompany lecture topics.

SPMD 505
Measurement and Methodology
3 credits
This course will cover an array of biostatistical methods, research design, the differences between and usefulness of normative and individual data. Review and presentation of the literature and methodology within Exercise Science will also be covered.

SPMD 511 and 512
Directed Research I and II
1 credit each, total of 2 credits
Participation and involvement in research are hallmark experiences of the graduate education process. As such, the question of what research is, why it is conducted and how to proceed with research will be discussed and answered. Investigative research methods, theories, and techniques, including quantitative and qualitative measurements, relative to the field of Exercise Science will be discussed and implemented. You will be working on faculty directed research projects and gain experience in some or all of the following content areas depending on how far along the faculty project you are involved with has progressed: literature review, literature matrices, Endnote/Refworks database creation and maintenance, grant proposal, Institutional Review Board, data collection, data analysis, determining conclusions based on results, and writing of scholarly manuscripts.

SPMD 521 & 522 Directed Clinical Experience I and II
1 credit each, total of 2 credits
Students will gain clinical experience in patients with chronic diseases such as cardiovascular and pulmonary disease, diabetes, obesity, and more. You will see and be involved in assessment of and intervention within these populations.

SPMD 550
Special Populations Syllabus
3 credits
This course is designed to provide students with the background on physiology, pathophysiology, and pharmacology in special populations, with respect to practice for the Clinical Exercise Physiologist. The rate at which chronic diseases and the proportion of the population that is aged are significantly increasing and shifting the health and wellness of the nation; considerations specific to physiology across the lifespan and the impact of individual disease and co-morbidity is relevant to the assessment, diagnosis, and appropriate treatment of an ever growing proportion of the total population.

SPMD 560
Advanced Cardiac Assessment
3 credits
This course is designed to provide the student with the background necessary to conduce and interpret clinical exercise testing. This will include assessment of resting and exercise electrocardiogram (ECG), knowledge of when to terminate an exercise test, and how to interpret clinical exercise test data. The student will also be able to describe other procedures for diagnostic exercise testing (e.g., echocardiography, angiography, nuclear stress testing, etc.) This course will follow ACSM exercise testing recommendations and guidelines to prepare the student for ACSM examinations.

SPMD 570 and 571
Advanced Exercise Rx w/lab
4 credits
The student will gain experience in prescription of appropriate exercise tests and interventions based on assessment of a client/athlete in the following areas: maximal and submaximal graded cardiorespiratory exercise tests utilizing a variety of equipment and methods, anaerobic exercise testing utilizing a variety of equipment, assessment of body composition utilizing a variety of equipment. The student will be also exposed to the utilization and interpretation of ECG. Learning how to create an appropriate prescription for an individual or a group based on factors fitness level, client: goals, health status, restrictions, and likes and dislikes will be covered.

SPMD 580 and 581
Advanced Exercise Physiology w/lab
4 credits
This course describes behavioral, physiological, and biochemical effects of physical exercise, with a heavy emphasis on biochemistry. It builds upon basic human physiology and focuses particular attention on homeostasis, nervous system control, bioenergetics, metabolism, measuring work, performance, adaptations to exercise training, factors that affect performance and adaptations, and special populations. The effects and outcomes of exercise training on multiple systems within the body are emphasized as well. Tests used to evaluate conditioning and performance will be explained some in lecture but emphasized in the laboratory course.

SPMD 590 and 591
Advanced Exercise Assessment and Testing
4 credits
A lecture and lab course that expands on the specifics of exercise assessment techniques beyond those taught in undergraduate courses, specifically targeting ACSM KSA (knowledge, skill, and assessment) content areas outlined in the most recent edition of, ACSM's Resources for Clinical Exercise Physiology. Students will learn how to work with patients suffering from a wide variety of chronic diseases and disabilities beyond cardiovascular and pulmonary disease, including orthopedic, neurologic, metabolic, musculoskeletal, neoplastic, and immunodeficiency conditions. Following the ACSM guidelines students will learn how to work with these often underserved populations by providing them with exercise evaluation, prescription, supervision, education, and outcome evaluation. The lab will focus on the practical applications of topics addressed in lecture.

SPMD 600
INTERNSHIP
6 CREDITS
The graduate internship is conducted in settings conducive to the development/refinement of skills and abilities related to a professional role, under the guidance of an approved field supervisor and/or university personnel. An important aspect in the preparation of exercise scientists is practical "hands on" experience in the health promotion/fitness workplace, this internship provides experience outside of lecture and laboratory settings to hone and expand upon the skills that you acquire in your coursework.