

GRADUATE PROGRAM IN EXERCISE SCIENCE

PROGRAM PHILOSOPHY AND CONTENT

The primary goal of our Masters program in Exercise Science is to train exercise science clinicians. Many graduate programs will focus primarily on the academic aspects of Exercise Science; we focus on not only the academics, but 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 5 terms of classes. Students begin in summer session, in June, then complete the traditional academic year with three trimesters: Fall, Winter, and Spring, and then complete a second summer term.

To successfully complete the program students will sit for the highest level of certification currently offered by the American College of Sports Medicine in exercise physiology, the Registered Clinical Exercise Physiologist (ACSM- RCEP). 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.

This course of study will be completed in a approximately 14 months, and is 5 terms of classes. Students begin in summer session, in June, then complete the traditional academic year with three trimesters: Fall, Winter, and Spring, and then complete a second summer term.

PROGRAM SPECIFIC ENTRANCE/ADMISSIONS REQUIREMENTS:

- Completion of Anatomy and Physiology (with a lab), Exercise Physiology (with a lab), Chemistry (with lab), and Biology, with a grade of C or higher.
- 200 hours of documented hands-on experience in exercise science, exercise physiology, or athletic training
- Satisfactory GRE scores
- 3 letters of recommendation
- A one page personal statement discussing your qualifications, future goals, and why you are interested in the program at Mercyhurst College
- All applicant's materials should be on file by April 1st for full consideration
- 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 & conditioning, coaching, and more based on applicant qualifications

EXERCISE SCIENCE MASTER'S DEGREE REQUIREMENTS

BIO 534	Cadaver Anatomy (lec)
BIO 535	Cadaver Anatomy (lab)
SPMD 580	Advanced Exercise Physiology (lec)
SPMD 581	Advanced Exercise Physiology (lab)
SPMD 501	Research Seminar I
SPMD 525	Biostatistics
SPMD 590	Advanced Exercise Assessment and Testing (lec)
SPMD 591	Advanced Exercise Assessment and Testing (lab)
SPMD 560	Advanced Cardiovascular Assessment (lec)
SPMD 511	Directed Research Seminar I
SPMD 502	Research Seminar II
SPMD 512	Directed Research II
SPMD 570	Advanced Exercise Rx (lec)
SPMD 571	Advanced Exercise Rx (lab)
SPMD 613	RCEP Seminar
SPMD 550	Special Populations
SPMD 600	Internship

EXERCISE SCIENCE COURSE DESCRIPTIONS

BIO 534 & 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 580 & 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. Lastly, the role of numerous environmental and human factors on performance will be discussed.

SPMD 525

Biostatistics

3 credits

This course will cover an array of biostatistical methods including: survival analysis, Poisson regression and categorical data analysis. It involves methods and calculations not covered in traditional statistics classes that are critical for graduates in the health and life sciences fields. Biostatistics is more than just the application of statistics to medicine and biology. We will address real life scenarios such as: Does a new drug help individuals with cancer to live longer? Should a new diagnostic technology be adopted on a wide scale?

SPMD 501 & 502

Exercise Science Seminar I, II

1 credit, Fall and Winter, total 2 credits

This seminar over the course of 2 terms will develop skills in conducting, reviewing, and disseminating applied research in the field of exercise science. The seminar provides

training in applied research through readings and discussions of published and on-going research projects; we will also cover controversial topics in the discipline. Students will attend and give lectures and other presentations, based on selected topics relevant to exercise science and physiology. Several guest speakers will visit our class and we may take field trips as well to listen to guest speakers. Given the interactive nature of this course, student preparation, should therefore, emphasize reading and thinking prior to class so that relevant educated dialog in class occurs regularly.

SOMD 511 & 512

Directed Research I & 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 560

Advanced Cardiac Assessment

3 credits

This course is designed to provide the student with the background necessary to conduct 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 the ACSM-RCEP examination.

SPMD 570 & 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 590 & 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. All of this will be covered in addition to advanced hands on skills and techniques with machinery and technology used in testing and prescription. The lab will focus on the practical applications of topics addressed in lecture and clinical proficiency testing will be incorporated.

SPMD 613
RCEP Exam Preparation Seminar
1 credit

The course will review ACSM outlined KSA's, knowledge, skills, and assessments defined in the scope of practice for the ACSM Registered Certified Exercise Physiologist (RCEP), to prepare students to sit for the RCEP exam.

SPMD 550
Special Populations Syllabus
2 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 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.