# EXERCISE & SPORT SCIENCE: APPLIED EXERCISE SCIENCE AND PERFORMANCE, MASTER OF SCIENCE

The MS in Exercise & Sport Science: Applied Exercise Science and Performance (AESP) program is designed to examine how the human body functions physiologically, both acutely and chronically, in extreme environments (including, but not limited to, high altitude, heat, cold, and low humidity) during exercise in healthy and diseased populations. The AESP program is a 36-credit, two-year residential program that culminates in a research-based thesis project. Students in the AESP program have the option to choose from one of the three research tracks: Clinical, Environmental, or Performance. Students who complete the AESP program will be prepared for careers in academia, research, applied or clinical practice, as well as further study in the discipline.

## Program Goals

- To enhance student understanding of human physiology – at rest and during exercise, in healthy and diseased populations – in extreme environments, including hyper- and hypobarometric conditions, heat, cold, pollution and zero gravity.
- To prepare students for original research under the supervision of the ESS-AESP faculty.
- To prepare students to share their research as presentations, publications, or both.
- To prepare students for careers in academia, research, applied or clinical practice, as well as for further study in the discipline.

## Student Outcomes

**Research** — AESP graduates will understand Exercise Science research methods and demonstrate the ability to recognize and employ various study designs. They will:

- Be adept at retrieving and analyzing information relevant to Exercise Science.
- Demonstrate knowledge of the background and principle research in their specialization.
- Demonstrate the ability to critically evaluate scientific literature and apply the scientific method to exercise sciences by actively engaging in the research process with critical analysis and research.
- Demonstrate the ability to situate their own research within the broader context of the Exercise Science field.

**Communication and Writing** - AESP graduates will master oral and written skills to present and publish their research in peer-reviewed venues.

**Application/Outreach** - AESP graduates will be able to translate research into practice, developing evidence-based exercise prescriptions for individuals with performance goals – particularly those at risk, including special populations – who seek to perform in extreme environments, such as altitude, cold and heat.

**Critical Thinking** - AESP graduates will effectively use information obtained through traditional and non-traditional sources to solve problems related to academic or professional practice.

**Technology** - AESP graduates will use technology to complete tasks within the Exercise Science profession. This includes proficiency with exercise testing equipment and relevant computer skills.

## Requirements for Full Admission

Candidate must submit:

- Official Transcript of BA or BS degree in Exercise and Sport Science, or related field from a regionally accredited college or university showing cumulative GPA of at least 3.0 on a 4.0 scale.
- Undergraduate Prerequisite Coursework (all prerequisites must be completed by the end of the first year of the MS. Students cannot start the program with more than two course deficiencies.):
  - General Health and/or Wellness course (lower or upper division)
  - Kinesiology or Biomechanics (lower or upper division)
  - Statistics (lower or upper division)
  - Chemistry (1 year lab-based) (lower or upper division)
  - Biology (general biology with lab) (lower or upper division)
  - Anatomy (with lab), Physiology (with lab) – can be a combined course (lower or upper division)
  - Exercise Physiology (with lab) (upper division)
  - Physics (lower or upper division)

**Provisional Admission:** An applicant who does not meet the requirements for full admission to the MS in Exercise & Sport Science: Applied Exercise Science and Performance (AESP) program may be required to submit additional materials in order to be considered for provisional admission upon the recommendation of the program director and approval by the School of Graduate Studies. Prerequisite courses that must be completed prior to entering the AESP program include Anatomy and Physiology and Exercise Physiology (with lab). A provisionally admitted student will have a maximum of one calendar year to complete any pre-requisite academic coursework. The program director or the School of Graduate Studies may set additional timeline requirements.

**International Students:** see Graduate Academic Catalog section, Criteria for International Admission.

For admissions requirements for BS in Exercise and Sport Science, Clinical Exercise Physiology Emphasis & MS in Applied Exercise Science and Performance (3+2) program, please refer to the guidelines outlined in the undergraduate academic catalog under EXERCISE AND SPORT SCIENCE.

## Program Requirements

The MS in Exercise & Sport Science: AESP degree requires a minimum of 36 credits. A 25-credit core (including 9 thesis credits, taken during the final year) and at least 11 other AESP credits are taken over the course of two years.

| Code | Title | Credits |
|---|---|---|
| **Core Courses** | | |
| ESS 600 | Advanced Statistics | 3 |
| ESS 601 | Quantitative Research Methods | 3 |
| ESS 605 | Exercise and Sport Science Testing and Instrumentation-Lab | 3 |
| ESS 606 | Exercise and Sport Science Testing and Instrumentation-Field | 3 |
| ESS 620 | Navigating Post-Graduation | 1 |

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| ESS 640 | Environmental Exercise Physiology I | 3 |
| ESS 695 | Thesis | 9 |
| **Select at least eleven credits from the following list of electives** | | **11** |
| ESS 630 | Clinical Exercise Physiology | |
| ESS 641 | Environmental Exercise Physiology II | |
| ESS 660 | Health Promotion | |
| ESS 675 | Clinical Exercise Programming-Lab | |
| ESS 685 | Cardiopulmonary Physiology | |
| ESS 692 | Independent Study | |
| ESS 696 | Research | |
| ESS 699 | Practicum/Internship | |
| **Total Credits** | | **36** |