College of the Environment, Forestry, and Natural Sciences 2020-2021

Department of Biological Sciences

Exercise Science, Bachelor of Science

This degree prepares students for the job market in areas such as clinical exercise physiology as well as for entry into graduate programs in the exercise sciences or professional programs in the health professions.

Careers

What Can I Do with a Bachelor of Science in Exercise Science?

The biological sciences encompass numerous cutting-edge disciplines. Each offers a multitude of exciting career paths. One of the most exciting is the growing field of exercise science. By studying exercise science at Northern Arizona University, you can prepare for a career in clinical exercise physiology, working in areas such as cardiac and pulmonary rehabilitation, or for admission to graduate or professional school in areas such as medicine, physical therapy, occupational therapy, physician's assistant, or other health care fields. You'll receive plenty of personal attention from faculty in the classroom, in research laboratories, and in our Biology Advisement Center. Numerous undergraduate research opportunities involve you in the process and application of science. And you can take advantage of our location on the Colorado Plateau, which offers a high quality of life with many excellent destinations for field projects and recreation.

Career opportunities that might be pursued:

- Medical corporations
- Biological testing laboratories
- Schools
- Gyms

With further education, one of these paths is possible:

- Athletic Trainer
- Physical Therapist
- Physician
- Researcher
- Personal trainer
- University professor

University Requirements

- To receive a bachelor's degree at Northern Arizona University, you must complete at least 120 units of credit that minimally includes a major, the liberal studies requirements, and university requirements as listed below.
    - All of Northern Arizona University's liberal studies, diversity, junior-level writing, and capstone requirements.
    - All requirements for your specific academic plan(s).
    - At least 30 units of upper-division courses, which may include transfer work.
    - At least 30 units of coursework taken through Northern Arizona University, of which at least 18 must be upper-division courses (300-level or above). This requirement is not met by credit-by-exam, retro-credits, transfer coursework, etc.
    - A cumulative grade point average of at least 2.0 on all work attempted at Northern Arizona University.

The full policy can be viewed here.

Overview

In addition to University Requirements:

- At least 80 units of major requirements
- Up to 9 units of major prefix courses may be used to satisfy Liberal Studies requirements; these same courses may also be used to satisfy major requirements
- For this major the liberal studies prefix is BIO. Contact Biology Advisement for information about liberal studies courses that are recommended for this major.
- Elective courses, if needed, to reach an overall total of at least 120 units

Please note that you may be able to use some courses to meet more than one requirement. Contact your advisor for details.

Minimum Units for Completion	120
Major GPA	C
Highest Mathematics Required	MAT 125
Fieldwork Experience/Internship	Optional
Research	Optional
University Honors Program	Optional
AZ Transfer Students complete AGEC-A	Recommended
Progression Plan Link	View Progression Plan

Purpose Statement

The Bachelor of Science degree in Exercise Science consists of core studies in areas such as chemistry, physics, anatomy and physiology, and general biology, as well as more advanced courses specific to the study of physiology and movement during exercise. Students will develop an understanding of human physiology, human movement, and the biological and chemical responses of the body to acute and chronic (training) exercise in the core Exercise Science classes; Introduction to Exercise Science, Exercise Physiology and its lab, Functional Anatomy and Kinesiology, Exercise Testing and Prescription and its lab, and in their senior capstone. With the help of advisors, students choose approved Exercise Science electives, which cover a wide range of disciplinary areas and are selected based on the individual student's career or graduate school goals. These include courses in psychology, microbiology, genetics, pathology, cell and molecular biology, amongst many others.

Research opportunities are available for students in individual faculty's research labs, as well as in NAU's research centers and institutes, such as the Center for Bioengineering Innovation (CBI). Exercise Science students also have the option of completing an internship in sports performance or cardiac rehabilitation if they are considering a career in clinical exercise physiology.

Students graduating with an Exercise Science degree will be well prepared for careers in clinical exercise physiology, for admission into graduate programs in exercise science and for admission into professional programs such as physical therapy, physician's assistant, occupational therapy, athletic training, and medicine.

Student Learning Outcomes

- Students will be able to communicate scientific information effectively with specialized knowledge of issues in health related fields related to exercise science.
- As preparation for careers in exercise and the health sciences, students will be able to collect, analyze and interpret scientific data with application to problems including human disease and acute and chronic responses to exercise.
- Students will develop proficiency in the quantitative skills necessary to analyze biological problems (*e.g.*, arithmetic, algebra, dimensional analysis, and statistical analysis), with an emphasis of quantitative techniques applicable to exercise science.
- Students will be able to apply the scientific method as a demonstration that they understand the basic paradigm of scientific inquiry as it relates to exercise science.
- Students will be able to access and interrogate the primary scientific literature.
- Students will be able to synthesize material from across a human biological sub-discipline and apply this to advanced-level course material (*i.e.*, a Capstone experience)

specifically, students will draw from their learning experiences in the fields of anatomy & physiology, nutrition, exercise testing, etc as related to the topic of their capstone course.

- Students will develop an understanding and ability to describe the role of science as applied to human movement, exercise and work, and human-environment interactions.

- Students will develop an appreciation for the interdisciplinary role of science as applied to human health challenges, with a focus on the health and wellness benefits of exercise.

- Students will understand the acute and chronic metabolic, cardiorespiratory and neuromuscular responses to exercise.

Details

Major Requirements

- **Take the following 80 units:**

    - BIO 181, BIO 181L, BIO 182, BIO 192, BIO 201, BIO 201L, BIO 202, BIO 202L, BIO 334, BIO 338, BIO 338L, BIO 442, BIO 460, BIO 460L (32 units)
    - NTS 135 (3 units)
    - ENG 302W or ENG 305W which meets the junior-level writing requirement, (3 units)
    - Select from: BIO 408C, BIO 412C, BIO 420C, BIO 454C, BIO 462C, BIO 465C, BIO 485C which meets the senior capstone requirement (3 units)

    - Select at least 9 additional units of exercise science electives, of which at least three must be upper division, from the following list (9 units):
        - AT 200
        - BIO 154, BIO 205, BIO 205L, BIO 240, BIO 320, BIO 343, BIO 344, BIO 350, BIO 408*, BIO 416, BIO 420C (when not used as a capstone), BIO 424, BIO 444C, BIO 484, BIO 485, BIO 497
        - (CHM 320 and CHM 320L) or CHM 440
        - ES 260
        - FW 330, FW 343, FW 405
        - HS 200
        - MAT 136 (may not be used for both the math requirement and a major elective), MAT 137
        - ME 240
        - NTS 356, NTS 425
        - PHI 332
        - PRM 216
        - PSY 227, PSY 240, PSY 250, PSY 255, PSY 260
        - SOC 318
        - STA 371

*Note: Internship (408 or 408C) requires outside placement and must be planned at least six months before the internship is to begin. See Biology Advisement for more information.

Please note that many of the following major requirements also satisfy Liberal Studies requirements.

- Basic chemistry sequence: CHM 151, CHM 151L, CHM 152, CHM 152L (9 units)
- Organic chemistry course: CHM 230 or CHM 235 (3-4 units)
- Biochemistry course: CHM 360 or CHM 461 (3 units)
- Math combination: MAT 125 and (STA 270 or PSY 230) (7-8 units)
- Physics sequence: (PHY 111 and PHY 112) or (PHY 161, PHY 262, and PHY 262L) (8 units)

All prerequisite coursework must be completed with grades of C or better.

The Department of Biological Sciences does not allow dual majors within the department.

- You must attain a grade of "C" or better in CHM 151, CHM 151L, CHM 152, CHM 152L; BIO 192, BIO 201, BIO 201L, BIO 202, BIO 202L, BIO 334, BIO 338, BIO 338L; PHY 111, PHY 161, MAT 125; ENG 105.

- **Accelerated Bachelor's to Master's Program**

  This program is available as an Accelerated Undergraduate/Graduate Plan. Accelerated Programs provide the opportunity for outstanding undergraduates working on their bachelor's degree to simultaneously begin work on a master's degree. Departments may allow students to complete both degrees in an accelerated manner by approving up to 12 units applicable toward both degrees. Students must apply to the accelerated program and the master's program by the application deadline, and meet all requirements as listed on the Accelerated Bachelor's to Master's Programs to be considered for admission. Admission to programs is competitive and qualified applicants may be denied because of limits on the number of students admitted each year. Be sure to speak with your advisor regarding your interest in Accelerated Programs.

General Electives

- Additional coursework is required, if, after you have met the previously described requirements, you have not yet completed a total of 120 units of credit.

  You may take these remaining courses from any academic areas, using these courses to pursue your specific interests and goals. We encourage you to consult with your advisor to select the courses that will be most advantageous to you. (Please note that you may also use prerequisites or transfer credits as electives if they weren't used to meet major, minor, or liberal studies requirements.)

Additional Information

- Be aware that some courses may have prerequisites that you must also take. For prerequisite information click on the course or see your advisor.

Campus Availability

- Flagstaff
