

Bachelor of Science

Exercise Science (BS)

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This program is designed to prepare students for careers in preventive and rehabilitative exercise and wellness programs in settings such as hospitals, wellness and rehabilitation centers, sports medicine clinics, government agencies, health and fitness centers, and corporate industry. Academic preparation focuses on the scientific aspects of exercise related to asymptomatic and symptomatic populations. The program also serves to prepare students for graduate studies in exercise science, physical therapy, and other allied health fields.

Major Declaration

To officially declare a major in Exercise Science, students must complete EXSC 225 and the following courses with a C or better : ENGL 110C, MATH 102M or MATH 103M, BIOL 121N, BIOL 122N, CHEM 121N, CHEM 122N, and BIOL 240 or BIOL 250.

Students who have met all major declaration requirements will be referred by their advisor in the Health Sciences Advising Center to the program director for major declaration and assignment to a program advisor. For additional information on the curriculum or major declaration requirements, please contact: Program Director (jkdavis@odu.edu) or the College of Health Sciences Advising Center (hsadvising@odu.edu).

Advanced Placement

Departmental examinations for advanced placement are available for selected courses in the undergraduate programs. Please contact the department chair for further details. Refer also to the Policy on Prior Learning Assessment Credit Options at the Undergraduate Level in this Catalog.

Requirements

Lower-Division General Education

Written Communication (http://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#written)	6
Oral Communication (http://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#oral)	3
Mathematics (http://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#math)	3
Language and Culture (http://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#language)	0-6
Information Literacy and Research (http://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#information)	3
Human Behavior (http://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#behavior)	3
Human Creativity (http://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#creativity)	3
Interpreting the Past (http://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#interpret)	3
Literature (http://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#literature)	3
Philosophy and Ethics (http://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#philosophy)	3
The Nature of Science (http://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#nature)	8
Impact of Technology (http://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#impact)	3

Written Communication Skills: Grade of C or better required in both courses

Mathematical Skills: MATH 102M or MATH 103M or MATH 162M; grade of C or better required

Nature of Science: BIOL 121N/BIOL 122N and BIOL 123N/BIOL 124N

Information Literacy and Research: HLTH 120G preferred

Impact of Technology: Satisfied with EXSC 417 in the major

Upper-Division General Education

- Option A. Disciplinary Minor (a minimum of 12 hours determined by the department or Second Major or Second Degree)
- Option B. Interdisciplinary Minor (specifically 12 hours, 3 of which may be in the major)
- Option C. An approved Certification Program such as teaching licensure
- Option D. Two Upper-Division Courses from outside the College of Health Sciences and not required by the major (6 hours)

Requirements for Graduation

Requirements for graduation include the following:

- Minimum of 120 credit hours.
- Minimum of 30 credit hours overall and 12 credit hours of upper-level courses in the major program from Old Dominion University.
- Minimum overall cumulative grade point average of C (2.00) in all courses taken.
- Minimum overall cumulative grade point average of C (2.00) in all courses taken toward the major.
- Minimum overall cumulative grade point average of C (2.00) in all courses taken toward a minor.
- Completion of ENGL 110C, ENGL 211C or ENGL 231C, and the writing intensive (W) course in the major with a grade of C or better. The W course must be taken at Old Dominion University.
- Completion of Senior Assessment.

Exercise Science Major

General Education

Complete lower-division requirements	38-44
Complete upper-division requirements (minimum of 6 credit hours)	6

Exercise Science

BIOL 240	Fundamentals of Anatomy and Physiology I	4
or BIOL 250	Human Anatomy and Physiology I	
BIOL 241	Fundamentals of Anatomy and Physiology II	4
or BIOL 251	Human Anatomy and Physiology II	
CHEM 121N & CHEM 122N	Foundations of Chemistry I Lecture and Foundations of Chemistry I Laboratory (C or better required as prerequisite for CHEM 123N-CHEM 124N)	4
CHEM 123N & CHEM 124N	Foundations of Chemistry II Lecture and Foundations of Chemistry II Laboratory	4
EXSC 225	Introduction to Exercise Science	3
EXSC 240	Prevention and Care of Injuries Related to Physical Activity	3
EXSC 250	Strength and Conditioning Leadership	3
EXSC 322	Anatomical Kinesiology	3
EXSC 326	Exercise Physiology I	3
EXSC 327	Exercise Physiology II	3
EXSC 366	Exercise Science Seminar	1
EXSC 408	Nutrition for Fitness and Sport	3
EXSC 415	Exercise Testing for Normal and Special Populations	4
EXSC 417	Biomechanics	4

EXSC 428	Exercise Prescription for Chronic Disease	3
EXSC 431W	Wellness Programming and Administration *	3
PHYS 111N	Introductory General Physics	4
Options		
Select one of the following:		17
Scientific Foundations of Exercise		
Preventive/Rehabilitative Exercise		
Total Credit Hours		117-123

* Grade of C or better required

Options

Scientific Foundations of Exercise

PHYS 112N	Introductory General Physics	4
STAT 130M	Elementary Statistics	3
EXSC 420	Research Methods in Exercise Science (STAT 130M required as prerequisite)	3
Electives		7
Total Credit Hours		17

Preventive/Rehabilitative Exercise

EXSC 368	Internship	12*
Electives		5
Total Credit Hours		5-17

* In order to be eligible to register for EXSC 368, a student must have completed all EXSC courses with a GPA of 2.0 overall and in the major.

All EXSC courses will be used to calculate the major grade point average, which must be 2.00 to graduate.

Elective credit may be needed to meet the minimum of 120 credits required for the degree.

Degree Program Guide

The Degree Program Guide is a suggested curriculum to complete this degree program in four years. It is just one of several plans that will work and is presented only as broad guidance to students. Each student is strongly encouraged to develop a customized plan in consultation with their academic advisor. Additional information can also be found in Degree Works.

Exercise Science - Preventive/Rehabilitative Exercise Option

Course	Title	Credit Hours
Freshman		
Fall		
ENGL 110C	English Composition (C or better required)	3
MATH 102M or MATH 103M	College Algebra (C or better required) or College Algebra with Supplemental Instruction	3
Oral Communication		3
Human Behavior		3
BIOL 121N	General Biology I	3
BIOL 122N	General Biology I Lab	1
Credit Hours		16
Spring		
Information Literacy and Research (HLTH 120G preferred)		3

BIOL 123N	General Biology II	3
BIOL 124N	General Biology II Lab	1
EXSC 225	Introduction to Exercise Science	3
CHEM 121N	Foundations of Chemistry I Lecture	3
CHEM 122N	Foundations of Chemistry I Laboratory	1
Credit Hours		14

Summer

BIOL 240 or BIOL 250	Fundamentals of Anatomy and Physiology I (C or better required) or Human Anatomy and Physiology I	4
Credit Hours		4

Sophomore

Fall

ENGL 211C or ENGL 231C	Writing, Rhetoric, and Research (C or better required) or Writing, Rhetoric, and Research: Special Topics	3
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EXSC 250	Strength and Conditioning Leadership	3
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CHEM 123N	Foundations of Chemistry II Lecture	3
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CHEM 124N	Foundations of Chemistry II Laboratory	1
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Interpreting the Past (http://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#interpret)		3
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Minor or Elective or Foreign Language (if required)		3
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Credit Hours **16**

Spring

Philosophy and Ethics		3
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EXSC 240	Prevention and Care of Injuries Related to Physical Activity	3
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BIOL 241 or BIOL 251	Fundamentals of Anatomy and Physiology II or Human Anatomy and Physiology II	4
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Literature (http://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#literature)		3
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Minor or Elective or Foreign Language (if required)		3
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Credit Hours **16**

Junior

Fall

Human Creativity		3
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EXSC 322	Anatomical Kinesiology	3
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EXSC 326	Exercise Physiology I	3
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Minor or Upper-Division General Education		3
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Credit Hours **12**

Spring

PHYS 111N	Introductory General Physics	4
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EXSC 327	Exercise Physiology II	3
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EXSC 415	Exercise Testing for Normal and Special Populations	4
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EXSC 366	Exercise Science Seminar	1
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Minor or Upper-Division General Education		3
Credit Hours		15
Senior		
Fall		
EXSC 428	Exercise Prescription for Chronic Disease	3
EXSC 431W	Wellness Programming and Administration (C or better required)	3
EXSC 417	Biomechanics	4
EXSC 408	Nutrition for Fitness and Sport	3
Elective		2
Credit Hours		15
Spring		
EXSC 368	Internship	12
Credit Hours		12
Total Credit Hours		120

Exercise Science - Scientific Foundations of Exercise Option

Course	Title	Credit Hours
Freshman		
Fall		
ENGL 110C	English Composition (C or better required)	3
MATH 102M or MATH 103M	College Algebra (C or better required) or College Algebra with Supplemental Instruction	3
Oral Communication		3
BIOL 121N	General Biology I	3
BIOL 122N	General Biology I Lab	1
Human Behavior		3
Credit Hours		16
Spring		
Information Literacy and Research (HLTH 120G)		
BIOL 123N	General Biology II	3
BIOL 124N	General Biology II Lab	1
EXSC 225	Introduction to Exercise Science	3
CHEM 122N	Foundations of Chemistry I Laboratory	1
CHEM 121N	Foundations of Chemistry I Lecture	3
Credit Hours		14
Summer		
BIOL 240 or BIOL 250	Fundamentals of Anatomy and Physiology I (C or better required) or Human Anatomy and Physiology I	4
Credit Hours		4

Sophomore		
Fall		
ENGL 211C or ENGL 231C	Writing, Rhetoric, and Research (C or better required) or Writing, Rhetoric, and Research: Special Topics	3
EXSC 250	Strength and Conditioning Leadership	3
CHEM 123N	Foundations of Chemistry II Lecture	3
CHEM 124N	Foundations of Chemistry II Laboratory	1
Interpreting the Past (http://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#interpret)		3
Minor or Elective or Foreign Language (if required)		3
Credit Hours		16
Spring		
STAT 130M	Elementary Statistics (required as prerequisite for EXSC 420)	3
EXSC 240	Prevention and Care of Injuries Related to Physical Activity	3
BIOL 241 or BIOL 251	Fundamentals of Anatomy and Physiology II or Human Anatomy and Physiology II	4
Literature (http://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#literature)		3
Minor or Elective or Foreign Language (if required)		3
Credit Hours		16
Junior		
Fall		
PHYS 111N	Introductory General Physics	4
EXSC 322	Anatomical Kinesiology	3
EXSC 326	Exercise Physiology I	3
Human Creativity		3
Credit Hours		13
Spring		
PHYS 112N	Introductory General Physics	4
EXSC 327	Exercise Physiology II	3
EXSC 366	Exercise Science Seminar	1
Philosophy and Ethics		3
Minor or Upper-Division General Education		3
Credit Hours		14
Senior		
Fall		
EXSC 428	Exercise Prescription for Chronic Disease	3
EXSC 420	Research Methods in Exercise Science	3
EXSC 408	Nutrition for Fitness and Sport	3
EXSC 415	Exercise Testing for Normal and Special Populations	4
Credit Hours		13
Spring		
EXSC 417	Biomechanics	4
EXSC 431W	Wellness Programming and Administration (C or better required)	3

Minor or Upper-Division General Education	3
Electives	4
Credit Hours	14
Total Credit Hours	120

Courses

Exercise Science (EXSC)

EXSC 225 Introduction to Exercise Science (3 Credit Hours)

Broad overview of exercise science including the history of the discipline and introduction to the following: Healthy People 2010 goals and objectives related to physical activity and nutrition; basic principles of nutrition, body composition, applied physiology, functional anatomy, and exercise prescription/programming for healthy individuals and those who are high risk/diseased; career opportunities in various allied-health fields such as physical therapy, physician assistant, personal training, community/corporate/hospital-based wellness programs, cardiac rehabilitation; and research areas in exercise science.

Prerequisites: open only to students with Exercise Science as a concentration or major or minor

EXSC 240 Prevention and Care of Injuries Related to Physical Activity (3 Credit Hours)

Practice in the skills of injury recognition and evaluation and training in cardiopulmonary resuscitation. Principles and uses of therapeutic modalities are also discussed.

Prerequisites: BIOL 240 or BIOL 250 AND MATH 102M or higher with a C or better

EXSC 250 Strength and Conditioning Leadership (3 Credit Hours)

This course will provide the student with skills in exercise leadership. The student will learn how to lead resistance training, flexibility training, cardiovascular training involving a variety of exercise modes, and group exercise, such as step aerobics.

Prerequisites: BIOL 240 or BIOL 250 AND MATH 102M or higher with a C or better

EXSC 322 Anatomical Kinesiology (3 Credit Hours)

Anatomical and mechanical analysis of human musculoskeletal function including skeletal, muscular, and neuromuscular control aspects necessary for movement.

Prerequisites: BIOL 240 or BIOL 250 AND MATH 102M or higher with a C or better

EXSC 326 Exercise Physiology I (3 Credit Hours)

An investigation into the metabolic adaptations, neuromuscular, endocrinological, and respiratory responses to acute and chronic exercise endeavors. Implications for enhanced health and physical performance are integrated.

Prerequisites: BIOL 240 or BIOL 250 with a C or better and MATH 102M or higher with a C or better

Pre- or corequisite: BIOL 241 or BIOL 251 with a C- or better and CHEM 121N and CHEM 122N with a C- or better

EXSC 327 Exercise Physiology II (3 Credit Hours)

Focuses on cardiovascular responses to exercise and applied exercise physiology, specifically the effects of different training modes, environmental factors, aging, disease states, nutrition, and ergogenic aids.

Prerequisites: BIOL 240 or BIOL 250 AND MATH 102M or higher with a C or better; EXSC 326

EXSC 366 Exercise Science Seminar (1 Credit Hour)

Seminar will include resume and cover letter writing skills, internship requirements, agency placement referrals, interviewing techniques, and certification options.

Prerequisites: BIOL 240 or BIOL 250 AND MATH 102M or higher with a C or better; EXSC 326

EXSC 368 Internship (12 Credit Hours)

Final field placement required for all students with an emphasis in exercise science. Students will be placed in an agency to gain experience in methodologies, administration techniques, and programs specific to their area of emphasis. Minimum of 400 clock hours. (qualifies as a CAP experience)

Prerequisites: senior standing, permission of the instructor, and completion of all required courses in appropriate emphasis areas

EXSC 369 Practicum in Exercise Science (3-6 Credit Hours)

Field-based experience in a fitness or allied-health setting. Minimum of 200 clock hours.

Prerequisites: EXSC 225

EXSC 397 Independent Study (1-3 Credit Hours)

Independent study of special topics under supervision of faculty.

Prerequisites: Junior standing and permission of the instructor

EXSC 403 Lifetime Fitness and Wellness (3 Credit Hours)

The focus of this course is on a positive healthy lifestyle designed to enhance the current and future quality of life. Topics include: proper exercise programs, healthful nutrition, stress management techniques, and avoidance of high-risk health behaviors in order to reduce disease risk and promote healthful aging. Various laboratory assessments are used to identify health status and recommend remedial approaches.

Prerequisites: Junior standing

EXSC 408/508 Nutrition for Fitness and Sport (3 Credit Hours)

Emphasizes the role of nutrition as a means to enhance health and performance in sport. Topics covered include energy metabolism and nutrients, regulation of metabolism by vitamins and minerals, and weight control.

Prerequisites: BIOL 240 or BIOL 250 with a C or better and MATH 102M or higher with a C or better

Pre- or corequisite: BIOL 241 or BIOL 251 with a C- or better and CHEM 121N and CHEM 122N with a C- or better

EXSC 415/515 Exercise Testing for Normal and Special Populations (4 Credit Hours)

The application of different methodologies in the measurement of physiologic responses to exercise. Emphasis is placed on understanding American College of Sports Medicine guidelines, appropriate experimental techniques, and equipment necessary to evaluate changes in body composition and various metabolic, cardiovascular, and respiratory adjustments during exercise.

Prerequisites: BIOL 240 or BIOL 250 AND MATH 102M or higher with a C or better; EXSC 326

EXSC 417/517 Biomechanics (4 Credit Hours)

Application of physical laws and mechanical principles to the human musculoskeletal system.

Prerequisites: BIOL 240 or BIOL 250 and MATH 102M or higher with a C or better; PHYS 111N with a C- or better; EXSC 322

EXSC 420 Research Methods in Exercise Science (3 Credit Hours)

Introduction to the scientific method applied to exercise science research including bioethics, review of the literature, research design, data collection, appropriate statistical analysis, research writing, and peer review.

Prerequisites: BIOL 240 or BIOL 250 and MATH 102M or higher with a C or better; STAT 130M

EXSC 428/528 Exercise Prescription for Chronic Disease (3 Credit Hours)

A study of pathophysiology of common diseases with concentration in the design, implementation and administration of exercise prescription for a variety of chronic diseases.

Prerequisites: BIOL 240 or BIOL 250 AND MATH 102M or higher with a C or better; EXSC 326

EXSC 431W/531 Wellness Programming and Administration (3 Credit Hours)

This course provides an introduction to the principles of administration and implementation of fitness and wellness programs to individuals, groups, centers, and corporate settings. This is a writing intensive course.

Prerequisites: BIOL 240 or BIOL 250, MATH 102M or MATH 103M or MATH 162M, and ENGL 211C or ENGL 221C or ENGL 231C with a C or better