

Bouvé College of Health Sciences

www.bouve.neu.edu

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The programs in Bouvé College of Health Sciences combine cooperative education experiences with highly innovative academic curricula that are designed to meet the demand for well-educated allied health professionals, nurses, and pharmacists. The college prepares students to become effective professional practitioners, enter graduate schools, and work in many areas responsible for the delivery of health care.

There are three schools within the Bouvé College of Health Sciences: the School of Nursing, the School of Pharmacy, and the School of Health Professions, which comprises the following majors: athletic training, cardiopulmonary and exercise sciences, health science, medical laboratory science, physical therapy, and speech-language pathology and audiology. The college offers students a health-care education that features a curriculum of highly relevant and closely integrated basic courses in the physical, biological, behavioral, and administrative sciences; on-site involvement in clinical patient care, including early and advanced pharmacy practice experiences and clinical affiliations in nursing, physical therapy, and other health professions; a cooperative education work program; and a commitment to the search for and advancement of new and progressive concepts, ideas, and philosophies of education and professional practice.

Each of the programs offered by the college is accredited by the appropriate professional group. The college is a member of the Association of Schools of Allied Health Professions, the American Association of Colleges of Nursing, and the American Association of Colleges of Pharmacy.

Academic Requirements

Students must receive a grade of C or better in professional courses.

Professional courses:

Courses taught within the major/college as identified by unit/faculty: ATP, BHS, CAP, CES, MLS, NUR, PMD, PSC, PTH, SLA, TOX

Nursing—All NUR courses including the following interdisciplinary courses: BHS U105, Nutrition, BHS U450, Research, and PCS U340, Pharmacology

Courses from the above-listed departments that are taken as electives can be exempted from the C or better rule and the University's minimum satisfactory grade will be accepted.

Students must receive a grade of C– or better in selected professional prerequisites.

(Pharmacy students must receive a grade of C or better in professional prerequisites in the second year.)

Professional prerequisites:

All courses, including sciences, essential content, and prerequisite courses, as determined by unit faculty. Laboratory sections may be treated separately from lecture.

- Athletic Training: BIO, CHM, MTH, PHY
- Cardiopulmonary and Exercise Sciences: BIO, CHM, MTH, PHY, PSC
- Medical Laboratory Science: BIO, CHM, MTH, PHY
- Nursing: BIO, CHM, MTH
- Pharmacy: BIO, CHM, PHY, MTH
- Physical Therapy: BIO, CHM, MTH, PHY
- Speech-Language Pathology and Audiology: BIO, MTH, PSY U101

For all other courses:

The University’s minimum passing grade for the course will be accepted.

Academic Standing

Freshmen must have an overall GPA greater than or equal to 1.800 and earn at least 12 semester hours in the semester just completed in order to maintain good academic standing.

Upperclass students must have an overall GPA greater than or equal to 2.000 and earn at least 12 semester hours in the semester just completed in order to maintain good academic standing.

Pharmacy students must have an overall GPA of 2.700 to progress from second- to third-year status and have satisfactorily completed all courses in years one and two of the curriculum.

Status	Freshman	Upperclass
Warning	GPA of less than 1.800 after one semester; earned fewer than 12 semester hours in the semester just completed	NA
Probation	GPA of less than 1.800 at the end of freshman year; earned fewer than 12 semester hours in the semester just completed	GPA of less than 2.000 or earned fewer than 12 semester hours in the semester just completed
Probation Extended	NA	GPA of less than 2.000 for any two consecutive semesters; earned fewer than 12 semester hours in the semester just completed
Dismissal from Program	<ol style="list-style-type: none"> 1. GPA of less than 1.800 after completion of summer remedial work, or 2. Failure to receive minimum required grade in the same course twice 	<ol style="list-style-type: none"> 1. Failure to bring GPA above 2.000 after two semesters of probation, or 2. Three failures in professional courses regardless of remediation, or 3. Failure to pass the same course twice, or 4. Earned fewer than 12 semester hours in each of two prior semesters completed

Academic Progression

In order to progress from freshman to sophomore year, students must have a GPA of 1.800 or better, have completed 27 semester hours, and have met all academic program prerequisite course requirements for their major. In order to progress into the subsequent year of professional courses, the student must have passed all professional courses with a grade of C or better and all professional prerequisites (as determined by the department) with a grade of C- or better.

Pharmacy students must receive a grade of C or better in professional prerequisites and have an overall GPA of 2.700 or better to progress from second- to third-year status and have satisfactorily completed all courses in years one and two of the curriculum.

Physical therapy majors are required to have a 2.670 overall GPA to progress from fourth to fifth year in their program. They must maintain a 3.000 overall GPA during their sixth year.

Students are responsible for following the curriculum plan based on their assigned major, cooperative education division, and year of graduation. Students have a responsibility for monitoring their own progress through the curriculum by registering for the proper courses, knowing the course prerequisites, and knowing the sanctions for unsatisfactory academic progress.

Special requirements

Cooperative education is a required component for all Bouvé programs unless otherwise noted.

Graduation requirements

The college reserves the right to amend programs, courses, and degree requirements to fulfill its educational responsibility to respond to relevant changes in the field. Students must complete all of the requirements in the degree program in which they are candidates. Degree requirements are based on the year of graduation, determined by the date of entry or reentry into the college. Degree requirements and the year of graduation for a degree candidate who fails to make satisfactory academic progress will be subject to review and possible change.

Pathways Program

The Pathways Program is designed for students who want to explore the health science professions within Bouvé College before selecting a major. The program offers freshmen a core of courses designed to provide the basic scientific background for many of the professional programs in the college.

Satisfactory completion of the Pathways curriculum is necessary for transfer, on a space-available basis, to one of the professional programs of the college.

Transfer Credit

The college may accept qualified transfer students who have successfully completed course work in an accredited college or university. No student transferring from another college or university may receive a degree unless 32 of the last 40 semester hours of academic work immediately preceding graduation have been completed at Northeastern.

SCHOOL OF HEALTH PROFESSIONS

www.bouve.neu.edu/programs/health/index.php

MARY E. WATSON, EdD, RRT,
Dean of the School and Associate Dean of the College

ATHLETIC TRAINING

www.bouve.neu.edu/programs/at/index.php

JAMIE L. MUSLER, MS, ATC
Program Director and Assistant Clinical Specialist

ASSOCIATE PROFESSOR

Chad A. Starkey, PhD

COORDINATOR OF CLINICAL EDUCATION
AND ASSISTANT CLINICAL SPECIALIST

Kimberly Ashton Wise, MS, ATC

ASSISTANT CLINICAL SPECIALIST

Michelle Burke Burgess, MBA, ATC, CSCS

The five-year athletic training education program is designed for students who are interested in an allied health-care profession specializing in the health care of the physically active. Working under a physician's supervision, athletic trainers are members of the sports medicine field who specialize in the prevention, evaluation, management, treatment, and rehabilitation of injuries and illnesses. Athletic trainers function as integral members of the health-care team in secondary schools, colleges and universities, professional sports programs, sports medicine clinics, hospitals, corporate and industrial settings, and other health-care facilities.

Students may apply from high school or apply for transfer into the athletic training education program after successfully completing their first year of academic study. To be accepted into the program, transfer applicants must demonstrate an established academic record with a solid foundation in the sciences. In addition, the athletic training education program has minimum physical, emotional, and cognitive skill requirements considered necessary for all students admitted to the program. These requirements are outlined in the Technical Standards that can be found on the program Web site and from the program office. Candidates for selection to the athletic training education program will be required to verify they understand and meet these Technical Standards or that they believe, with certain accommodations, they can meet the standards. It is the sole responsibility of the student to notify the Disability Resource Center if they feel accommodations are needed.

Students in the program take courses designed to develop competencies in the following domains: risk management and

injury prevention, pathology of injuries and illnesses, assessment and evaluation, acute care of injury and illness, pharmacology, therapeutic modalities, therapeutic exercise, general medical conditions and disabilities, nutritional aspects of injury and illness, psychosocial intervention and referral, health-care administration, and professional development and responsibilities. The athletic training education program is committed to the advancement of scholarship by implementing evidence-based practice into didactic, clinical, and cooperative education. In addition, students are required to fulfill clinical education requirements in four structured clinical affiliations during academic semesters. These affiliations may include Northeastern University, other colleges, universities, and high schools as well as clinics and medical facilities in the Boston area. To progress in the program, students must maintain acceptable standards of scholarship, academic performance, and psychomotor development as outlined in this catalog and the student handbook.

The program is accredited by the Commission on Accreditation of Allied Health Education Programs (CAAHEP). Students who graduate from the athletic training education program are eligible to sit for the Board of Certification examination for athletic trainers and may be eligible for state licensure in those states that require licensure for athletic trainers. See pages 266–268 for course descriptions.

BS in Athletic Training

SEMESTER 1

Athletic Health-Care Overview

Complete the following course with a grade of C or higher:

ATP U106	Overview of Athletic Health Care	2 SH
	(pending approval)	

Freshman Seminar

Complete the following course:

BHS U100	College: An Introduction	1 SH
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Anatomy and Physiology 1

Complete the following course with corresponding lab:

BIO U117	Integrated Anatomy and Physiology 1	4 SH
with BIO U118	Lab for BIO U117	1 SH

Chemistry 1

Complete the following course with corresponding lab:

CHM U101	General Chemistry for Health Sciences	4 SH
with CHM U102	Lab for CHM U101	1 SH

Precalculus

Complete the following course:

MTH U121	Precalculus	4 SH
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SEMESTER 2

Clinical Practice Skills

Complete the following course with corresponding lab:

ATP U120	Clinical Practice Skills in Athletic Training	3 SH
with ATP U121	Lab for ATP U120	1 SH

Application of Protective Devices

Complete the following course:

ATP U122	Lab: Application of Protective Devices in Athletic Training	1 SH
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Anatomy and Physiology 2

Complete the following course with corresponding lab:

BIO U119	Integrated Anatomy and Physiology 2	4 SH
with BIO U120	Lab for BIO U119	1 SH

Introductory English

Complete the following course with a grade of C or higher:

ENG U111	College Writing	4 SH
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Physics 1

Complete the following course with corresponding lab:

PHY U145	Physics for Life Sciences 1	4 SH
with PHY U146	Lab for PHY U145	1 SH

SEMESTER 3**Therapeutic Modalities**

Complete the following course with corresponding lab:

ATP U310	Therapeutic Modalities	3 SH
with ATP U311	Lab for ATP U310	1 SH

Therapeutic Exercise

Complete the following course with corresponding lab:

ATP U320	Therapeutic Exercise	3 SH
with ATP U321	Lab for ATP U320	1 SH

Athletic Training Affiliation 1

Complete the following course:

ATP U941	Athletic Training Clinical Affiliation 1	3 SH
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Clinical Kinesiology

Complete the following course with corresponding lab:

CES U504	Clinical Kinesiology	4 SH
with CES U505	Lab for CES U504	1 SH

SEMESTER 4 (SUMMER)**Neuromuscular and Cardiovascular Programming**

Complete the following course:

ATP U330	Neuromuscular and Cardiovascular Programming	2 SH
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Evaluation: Head and Spine

Complete the following course with corresponding labs:

ATP U520	Evaluation: Head and Spine	4 SH
with ATP U521	Evaluation: Head and Spine Skills Lab	1 SH
with ATP U522	Evaluation: Head and Spine Anatomy Lab	1 SH

SEMESTER 5**Evaluation: Lower Extremity**

Complete the following course with corresponding labs:

ATP U500	Evaluation: Lower Extremity	4 SH
with ATP U501	Evaluation: Lower Extremity Skills Lab	1 SH
with ATP U502	Evaluation: Lower Extremity Anatomy Lab	1 SH

Athletic Training Affiliation 2

Complete the following course:

ATP U942	Athletic Training Clinical Affiliation 2	3 SH
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Advanced Writing in the Disciplines

Complete the following course with a grade of C or higher:

ENG U306	Advanced Writing in the Health Professions	4 SH
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Psychology

Complete the following course:

PSY U101	Foundations of Psychology	4 SH
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SEMESTER 6 (SUMMER)**Evaluation: Upper Extremity**

Complete the following course with corresponding labs:

ATP U510	Evaluation: Upper Extremity	4 SH
with ATP U511	Evaluation: Upper Extremity Skills Lab	1 SH
with ATP U512	Evaluation: Upper Extremity Anatomy Lab	1 SH

Health Counseling

Complete the following course:

CAP U502	Health Counseling	3 SH
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SEMESTER 7**Athletic Training Affiliation 3**

Complete the following course:

ATP U943	Athletic Training Clinical Affiliation 3	3 SH
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Nutrition

Complete the following course:

BHS U105	Nutrition	4 SH
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Exercise Physiology

Complete the following course with corresponding lab:

CES U500	Exercise Physiology 1	4 SH
with CES U501	Lab for CES U500	1 SH

Pharmacology

Complete the following course:

PSC U340	Pharmacology for the Health Professions	4 SH
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SEMESTER 8**Disease and Disabilities**

Complete the following course:

ATP U530	Disease and Disabilities in Athletics	3 SH
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Research

Complete the following course:

BHS U450	Health-Care Research	4 SH
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Diversity

Complete the following course:

SOA U101	Peoples and Cultures	4 SH
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or complete a course from the list "Approved Courses: Diversity" on page 51.

Athletic Training Affiliation 4

Complete the following course:

ATP U944	Athletic Training Clinical Affiliation 4	3 SH
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SEMESTER 9**Administration**

Complete the following course:

ATP U600	Administration in Athletic Health Care	4 SH
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Senior Experience

Complete the following course:

ATP U946 Athletic Training Senior Experience 2 SH

Free Electives

Complete two courses outside athletic training.

GRADE REQUIREMENTS

A grade of C or higher is required in all ATP and professional courses.

GENERAL ELECTIVES

Additional courses taken beyond college and major course requirements to satisfy graduation credit requirements.

COOPERATIVE EDUCATION**UNIVERSITY-WIDE REQUIREMENTS**

128 total semester hours required

Transition students are required to complete 132 total semester hours

Minimum 2.000 GPA required

CARDIOPULMONARY AND EXERCISE SCIENCES

www.bouve.neu.edu/programs/cardio/index.php

WILLIAM J. GILLESPIE, EdD
Associate Professor and Chair

ASSOCIATE PROFESSORS

Marilyn A. Cairns, ScD
Carol Ewing Garber, PhD
Patrick F. Plunkett, EdD, RRT
Mary E. Watson, EdD, RRT

ASSOCIATE CLINICAL SPECIALISTS

Scott A. Stanley, MS, RRT
Annemarie C. Sullivan, MS

PROFESSOR EMERITUS

Thomas A. Barnes, EdD, RRT

The Department of Cardiopulmonary and Exercise Sciences offers both five-year co-op and four-year non-co-op Bachelor of Science (BS) degree programs in exercise physiology. In addition, the department offers a six-year co-op and five-year non-co-op combined Bachelor of Science/Master of Science (BS/MS) degree program in clinical exercise physiology.

The exercise physiology program has a common core curriculum in arts and sciences and cardiopulmonary sciences during the freshman and sophomore years. At the completion of the sophomore year, students decide on the various program options (co-op or non-co-op, BS or BS/MS).

Exercise Physiology

Exercise physiologists administer exercise tests and develop, implement, and supervise exercise and health-promotion

programs for people to help improve their health, fitness, and functional capacity. Clinical exercise physiologists do the above, but work primarily with patients who have chronic cardiovascular, pulmonary, metabolic, and musculoskeletal diseases and disorders to help improve their health, fitness, and functional status.

All students in the program take courses in exercise physiology, exercise testing and prescription, clinical kinesiology, and health promotion and program planning. Students then choose a concentration in health and fitness, research, or clinical exercise physiology. Students in the health and fitness concentration complete a two-semester practicum sequence during their senior year in which they have internship experiences in a commercial and/or corporate health and fitness center. Students in the research concentration complete a two-semester thesis sequence during their senior year in which they complete a research project under the direction of a faculty member. Students in the clinical exercise physiology program complete graduate courses during their final two years in advanced cardiopulmonary physiology, cardiopulmonary pathophysiology, musculoskeletal pathophysiology and assessment, electrocardiography, pharmacology, advanced exercise physiology, clinical exercise testing, and exercise in health and disease. Students then complete twelve months or three semesters of rotations in cardiology departments performing exercise testing and in rehabilitation programs working with people with a variety of diseases and disabilities.

Students completing the BS degree program in exercise physiology with a concentration in health and fitness are eligible to sit for the American College of Sports Medicine Health/Fitness Certification. Students completing the MS degree program in clinical exercise physiology are eligible to sit for the ACSM Clinical Exercise Physiology Registry Examination and Exercise Specialist Certification.

BS in Cardiopulmonary and Exercise Sciences**SEMESTER 1****Chemistry 1**

Complete the following course with corresponding lab:

CHM U101	General Chemistry for Health Sciences	4 SH
	with CHM U102 Lab for CHM U101	1 SH
or CHM U211	General Chemistry 1	4 SH
	with CHM U212 Lab for CHM U211	1 SH

Calculus

Complete one course from the following list:

MTH U141	Calculus 1	4 SH
MTH U142	Calculus 2	4 SH
MTH U151	Calculus and Differential Equations for Biology 1	4 SH
MTH U152	Calculus and Differential Equations for Biology 2	4 SH
MTH U241	Calculus 1 for Science and Engineering	4 SH
MTH U242	Calculus 2 for Science and Engineering	4 SH

Introductory English

Complete the following course with a grade of C or higher:

ENG U111 College Writing 4 SH

Diversity

Complete the following course:

SOA U101 Peoples and Cultures 4 SH

or complete a course from the list "Approved Courses: Diversity" on page 51.

SEMESTER 2**Chemistry 2**

Complete the following course with corresponding lab:

CHM U104 Organic Chemistry for Health Sciences 4 SH

with CHM U105 Lab for CHM U104 1 SH

or CHM U214 General Chemistry 2 4 SH

with CHM U215 Lab for CHM U214 1 SH

Psychology

Complete the following course:

PSY U101 Foundations of Psychology 4 SH

General Electives

Complete two courses outside the CES department.

SEMESTER 3**Anatomy and Physiology 1**

Complete the following course with corresponding lab:

BIO U117 Integrated Anatomy and Physiology 1 4 SH

with BIO U118 Lab for BIO U117 1 SH

Moral Problems in Medicine

Complete the following course:

PHL U165 Moral Problems in Medicine 4 SH

Physics 1

Complete the following course with corresponding lab:

PHY U145 Physics for Life Sciences 1 4 SH

with PHY U146 Lab for PHY U145 1 SH

Humanities Elective

Complete one course from the following departments:

ART, ASL, CMN, ENG, JRN, LNA, LNC, LNF, LNG, LNH, LNI, LNJ, LNL, LNM, LNR, LNS, MUS, PHL, or THE.

Seminar

Complete the following course:

COP U101 Professional Development for Co-op 1 SH

SEMESTER 4**Anatomy and Physiology 2**

Complete the following course with corresponding lab:

BIO U119 Integrated Anatomy and Physiology 2 4 SH

with BIO U120 Lab for BIO U119 1 SH

Cardiopulmonary and Exercise Sciences Seminar

Complete the following two courses:

CES U201 Cardiopulmonary and Exercise Sciences Seminar 1 SH

CES U202 Basic Clinical Skills 3 SH

Physics 2

Complete the following course with corresponding lab:

PHY U147 Physics for Life Sciences 2 4 SH

with PHY U148 Lab for PHY U147 1 SH

General Elective

Complete one course outside the CES department.

SEMESTER 5**Research**

Complete the following course:

BHS U450 Health-Care Research 4 SH

Physiology and Pathophysiology

Complete the following course:

CES U300 Cardiopulmonary Physiology and 4 SH

Pathophysiology

Cardiopulmonary Assessment

Complete the following course:

CES U301 Cardiopulmonary Assessment 4 SH

Clinical Kinesiology

Complete the following course:

CES U504 Clinical Kinesiology 4 SH

SEMESTER 6**Exercise Physiology 1**

Complete the following course with corresponding lab:

CES U500 Exercise Physiology 1 4 SH

with CES U501 Lab for CES U500 1 SH

Exercise Testing and Prescription

Complete the following course:

CES U502 Exercise Testing and Prescription 4 SH

Advanced Writing in the Disciplines

Complete the following course with a grade of C or higher:

ENG U306 Advanced Writing in the Health 4 SH

Professions

Pharmacology

Complete the following course:

PSC U340 Pharmacology for the Health Professions 4 SH

SEMESTER 7**Practicum or Thesis**

Complete the first course in the practicum sequence or the thesis sequence:

CES U940 Practicum in Exercise Physiology 1 6 SH

or CES U701 Senior Thesis in Exercise Physiology 1 6 SH

Health Program and Planning

Complete the following course:

CES U506 Health Promotion and Program Planning 4 SH

CES Elective

Complete one course in the CES department.

SEMESTER 8**Practicum or Thesis**

Complete the second course in the practicum sequence or the thesis sequence:

CES U941 Practicum in Exercise Physiology 2 6 SH

or CES U702 Senior Thesis in Exercise Physiology 2 6 SH

Exercise Physiology 2

Complete the following course with corresponding lab:
 CES U520 Exercise Physiology 2 3 SH

Free Elective

Complete one course outside the CES department.

CARDIOPULMONARY AND EXERCISE SCIENCES GRADE REQUIREMENT

A grade of C or higher is required in all CES courses.

GENERAL ELECTIVES

Additional courses taken beyond college and major course requirements to satisfy graduation credit requirements.

COOPERATIVE EDUCATION**UNIVERSITY-WIDE REQUIREMENTS**

132 total semester hours required
 Minimum 2.000 GPA required

BS/MS in Clinical Exercise Physiology**SEMESTER 1****Chemistry 1**

Complete the following course with corresponding lab:
 CHM U101 General Chemistry for Health Sciences 4 SH
 with CHM U102 Lab for CHM U101 1 SH
 or CHM U211 General Chemistry 1 4 SH
 with CHM U212 Lab for CHM U211 1 SH

Calculus

Complete one course from the following list:
 MTH U141 Calculus 1 4 SH
 MTH U142 Calculus 2 4 SH
 MTH U151 Calculus and Differential Equations 4 SH
 for Biology 1
 MTH U152 Calculus and Differential Equations 4 SH
 for Biology 2
 MTH U241 Calculus 1 for Science and Engineering 4 SH
 MTH U242 Calculus 2 for Science and Engineering 4 SH

Introductory English

Complete the following course with a grade of C or higher:
 ENG U111 College Writing 4 SH

Diversity

Complete the following course:
 SOA U101 Peoples and Cultures 4 SH
 or complete a course from the list "Approved Courses:
 Diversity" on page 51.

SEMESTER 2**Chemistry 2**

Complete the following course with corresponding lab:
 CHM U104 Organic Chemistry for Health Sciences 4 SH
 with CHM U105 Lab for CHM U104 1 SH
 or CHM U214 General Chemistry 2 4 SH
 with CHM U215 Lab for CHM U214 1 SH

Psychology

Complete the following course:
 PSY U101 Foundations of Psychology 4 SH

General Electives

Complete two courses outside the CES department.

SEMESTER 3**Anatomy and Physiology 1**

Complete the following course with corresponding lab:
 BIO U117 Integrated Anatomy and Physiology 1 4 SH
 with BIO U118 Lab for BIO U117 1 SH

Moral Problems in Medicine

Complete the following course:
 PHL U165 Moral Problems in Medicine 4 SH

Physics 1

Complete the following course with corresponding lab:
 PHY U145 Physics for Life Sciences 1 4 SH
 with PHY U146 Lab for PHY U145 1 SH

Humanities Elective

Complete one course from the following departments:
 ART, ASL, CMN, ENG, JRN, LNA, LNC, LNF, LNG, LNH, LNI,
 LNJ, LNL, LNM, LNR, LNS, MUS, PHL, or THE.

Seminar

Complete the following course:
 COP U101 Professional Development for Co-op 1 SH

SEMESTER 4**Anatomy and Physiology 2**

Complete the following course with corresponding lab:
 BIO U119 Integrated Anatomy and Physiology 2 4 SH
 with BIO U120 Lab for BIO U119 1 SH

Cardiopulmonary and Exercise Sciences Seminar

Complete the following two courses:
 CES U201 Cardiopulmonary and Exercise Sciences 1 SH
 Seminar
 CES U202 Basic Clinical Skills 3 SH

Physics 2

Complete the following course with corresponding lab:
 PHY U147 Physics for Life Sciences 2 4 SH
 with PHY U148 Lab for PHY U147 1 SH

General Elective

Complete one course outside the CES department.

SEMESTER 5**Research**

Complete the following course:
 BHS U450 Health-Care Research 4 SH

Physiology and Pathophysiology

Complete the following course:
 CES U300 Cardiopulmonary Physiology and 4 SH
 Pathophysiology

Cardiopulmonary Assessment

Complete the following course:
 CES U301 Cardiopulmonary Assessment 4 SH

Clinical Kinesiology

Complete the following course:
 CES U504 Clinical Kinesiology 4 SH

SEMESTER 6**Exercise Physiology 1**

Complete the following course with corresponding lab:
 CES U500 Exercise Physiology 1 4 SH
 with CES U501 Lab for CES U500 1 SH

Exercise Testing and Prescription

Complete the following course:
 CES U502 Exercise Testing and Prescription 4 SH

Advanced Writing in the Disciplines

Complete the following course with a grade of C or higher:
 ENG U306 Advanced Writing in the Health Professions 4 SH

Pharmacology

Complete the following course:
 PSC U340 Pharmacology for the Health Professions 4 SH

SEMESTER 7**Advanced Cardiopulmonary Physiology**

Complete the following course:
 CES G200 Cardiopulmonary Physiology 3 SH

Advanced Pharmacology

Complete the following course:
 CES G203 Clinical Pharmacology 3 SH

Musculoskeletal Pathophysiology

Complete the following course:
 CES G230 Musculoskeletal Pathophysiology 3 SH

Research Design

Complete the following course:
 CES G263 Research Design and Methodology 3 SH

Free Elective

Complete one course outside the CES department.

SEMESTER 8**Advanced Cardiopulmonary Pathophysiology**

Complete the following course:
 CES G201 Cardiopulmonary Pathophysiology 3 SH

Advanced Exercise Physiology

Complete the following course:
 CES G220 Exercise Physiology 3 SH

Clinical Cardiopulmonary Exercise Testing

Complete the following course:
 CES G221 Clinical CP Exercise Testing 2 SH

Advanced Electrocardiography

Complete the following course:
 CES G202 Electrocardiography 3 SH

Free Elective

Complete one course outside the CES department.

SEMESTER 9**Musculoskeletal Assessment**

Complete the following course:
 CES G231 Musculoskeletal Assessment 2 SH

Internship

Complete the first course in the internship sequence:
 CES G401 Clinical Exercise Physiology Internship 1 3 SH

CES Elective

Complete one course in the CES department.

SEMESTER 10**Internship or Thesis**

Complete the second course in the internship sequence or the first course in the thesis sequence:
 CES G402 Clinical Exercise Physiology Internship 2 3 SH
 or CES G691 Thesis 1 3 SH

Exercise in Health and Disease

Complete the following course:
 CES G222 Exercise in Health and Disease 3 SH

SEMESTER 11**Internship or Thesis**

Complete the third course in the internship sequence or the second course in the thesis sequence:
 CES G403 Clinical Exercise Physiology Internship 3 3 SH
 or CES G692 Thesis 2 3 SH

CES Elective

Complete one course from the CES department.

**CARDIOPULMONARY AND EXERCISE SCIENCES
GRADE/GPA REQUIREMENTS**

A grade of C or higher is required in all CES courses.
 Minimum 3.000 GPA required for all graduate courses.

GENERAL ELECTIVES

Additional courses taken beyond college and major course requirements to satisfy graduation credit requirements.

COOPERATIVE EDUCATION**UNIVERSITY-WIDE REQUIREMENTS**

156 total semester hours required
 Minimum 2.000 GPA required

Minor in Exercise Physiology

A minimum grade of C is required in all courses taken toward the minor.

REQUIRED COURSES

Complete the following three courses with corresponding lab:
 CES U300 Cardiopulmonary Physiology and Pathophysiology 4 SH
 CES U500 Exercise Physiology 1 4 SH
 with CES U501 Lab for CES U500 1 SH
 CES U502 Exercise Testing and Prescription 4 SH

ELECTIVE COURSES

Complete two courses with corresponding labs from the following list:
 BHS U530 Clinical Nutrition Applications in Health and Disease 4 SH
 CES U301 Cardiopulmonary Assessment 4 SH
 CES U504 Clinical Kinesiology 4 SH

CES U506	Health Promotion and Program Planning	4 SH
CES U508	Echocardiography	4 SH
with CES U509	Lab for CES U508	1 SH
CES U520	Exercise Physiology 2	3 SH

GPA REQUIREMENT

2.000 GPA required in the minor

Minor in Respiratory Care

A minimum grade of C is required in all courses taken toward the minor.

REQUIRED COURSES

Complete the following three courses with corresponding lab:

CES U301	Cardiopulmonary Assessment	4 SH
CES U302	Cardiopulmonary Disease	4 SH
CES U600	Fundamentals of Respiratory Therapy	4 SH
with CES U601	Lab for CES U600	1 SH

ELECTIVE COURSE

Complete one course from the following list:

CES U604	Neonatal and Pediatric Respiratory Therapy	3 SH
CES U606	Advanced Cardiovascular Life Support	3 SH

GPA REQUIREMENT

2.000 GPA required in the minor

HEALTH SCIENCE

www.bouve.neu.edu/programs/healthsci/index.php

PATRICK F. PLUNKETT, EdD

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The rapidly changing health system is creating a demand for broadly educated graduates possessing a strong understanding of health, health care, and community-service related issues. Individuals with these skills are needed by public and private agencies, public health services, hospitals and other nonprofit and for-profit companies, and health-related organizations. The health science major is designed to prepare graduates to meet this critical need. The major is designed for undergraduate students who are seeking a general preparation for positions in health care, health education, health administration, and community-based public health. It is also aimed at providing students with the appropriate background and preparation for entry into graduate and professional programs including medicine, dentistry, veterinary medicine, psychology, public health, physician assistant, and social work.

The health science curriculum is an integrated model that builds upon a foundation of the social sciences, natural sciences, and the liberal arts. Health science students complete

an array of major courses that introduce them to the health-care system in the United States and provide them with the opportunity to develop a deep understanding of health policy and administration, health research, quality improvement, medical informatics, and evidence-based health care. The health science curriculum also includes a significant number of electives that enable students to enrich their intellectual lives. Students will identify a specific area of interest and use the majority of these electives to explore their declared focus. Students may use the electives to undertake a formal minor in an academic area that is related to and complements their health science studies. The entire academic experience is drawn together through a capstone project during the senior year. The capstone project is intended to provide students with a structured opportunity to broaden, deepen, and integrate the knowledge and skills acquired in prior courses and experiential activities.

BS in Health Science

Note: "TBD" stands for "to be determined."

YEAR 1

American Health Care

Complete the following course:

BHS U260	The American Health-Care System	4 SH
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Freshman Seminar

Complete the following course:

BHS U100	College: An Introduction	1 SH
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General Biology 1 and 2

Complete the following two courses with corresponding labs:

BIO U111	General Biology 1	4 SH
with BIO U112	Lab for BIO U111	1 SH
BIO U113	General Biology 2	4 SH
with BIO U114	Lab for BIO U113	1 SH

Mathematics

Complete the following course:

MTH U121	Precalculus	4 SH
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General Chemistry 1

Complete one of the following courses with corresponding lab:

CHM U101	General Chemistry for Health Sciences	4 SH
with CHM U102	Lab for CHM U101	1 SH
CHM U211	General Chemistry 1	4 SH
with CHM U212	Lab for CHM U211	1 SH

General Chemistry 2

Complete one of the following courses with corresponding lab:

CHM U104	Organic Chemistry for Health Sciences	4 SH
with CHM U105	Lab for CHM U104	1 SH
CHM U214	General Chemistry 2	4 SH
with CHM U215	Lab for CHM U214	1 SH

Foundations of Psychology

Complete the following course:

PSY U101	Foundations of Psychology	4 SH
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College Writing

Complete the following course with a grade of C or higher:

ENG U111	College Writing	4 SH
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