UNIVERSITY-WIDE REQUIREMENTS
128 total semester hours required
Transition students are required to complete 132 total semester hours
Minimum 2.000 GPA required

BS in Computer Science and Multimedia Studies
See page 216.

MUSIC

www.music.neu.edu

ANTHONY P. DE RITIS, PhD
Associate Professor and Chair

MATTHEWS DISTINGUISHED UNIVERSITY PROFESSOR
Judith Tick, PhD

PROFESSORS
Joshua R. Jacobson, DMA
Dennis H. Miller, DMA
Bruce Ronkin, DMA

ASSOCIATE PROFESSORS
Susan Asai, PhD
Leonard L. Brown, PhD
Leon C. Janikian, MM

ASSISTANT PROFESSORS
Allen G. Feinstein, MM
Ava Lawrence, MA
Hilary Poriss, PhD
Emmett G. Price III, PhD
Ronald Bruce Smith, PhD
Richard Strasser, DMA

VISITING ARTIST
Virginia Eskin, BA

ASSISTANT ACADEMIC SPECIALISTS
Michael Frengel, PhD
David A. Herlihy, JD

LECTURERS
James S. Anderson, BM
Paul Beaudoin, PhD
Susan deGhize, PhD
Douglas F. Durant, PhD

PROFESSOR EMERITUS
David D. Sonnenschein, DMA

The music department approaches the study of music from a global, multicultural, and multifaceted perspective. The department offers three concentrations in the context of a broad liberal arts program.

The music industry concentration is the first such undergraduate program in Boston. It is designed for students with an interest in fields such as artist management, the music products industry, the record industry, arts administration, contracting and legal issues, the recording process, and studio techniques. Developed in collaboration with Northeastern's College of Business Administration, the music industry concentration leads to a Bachelor of Science degree.

The music history and analysis concentration includes courses in Western classical music, American music, world music, music theory, and ear training. Students may combine this concentration with the minor in music performance, which entails an audition, private lessons, ensemble performance, and two recitals. They may also combine this concentration with a minor in music industry, ethnomusicology, or music theatre. The music history and analysis concentration leads to a Bachelor of Arts degree.

The music technology concentration teaches students to compose music using the newest electronic music technology, both hardware and software. Students learn techniques such as MIDI sequencing, digital and analog recording, sound design, audio for video, and the latest methods for delivering music over the Internet. Students also study composition for both acoustic and electronic instruments. The concentration includes a thorough background in the fundamentals of music, including music theory and history, and leads to a Bachelor of Science degree.

Through an exchange program, students may attend classes at the New England Conservatory of Music. Students also share an array of high-tech and multimedia equipment.

While some music courses are designed for music majors, the department also offers elective survey courses. Several of these courses fulfill the College of Arts and Sciences core curriculum requirement.

An extensive concert series offers a variety of performances by students, faculty, and guest artists. Students also have the opportunity to participate in active choral groups, bands, chamber ensembles, and the University orchestra. See pages 417–424 for course descriptions.

BA in Music with Concentration in Music History and Analysis

COLLEGE OF ARTS AND SCIENCES

BA CORE REQUIREMENTS
See page 48 for requirement list.

MUSIC REQUIREMENTS FOR MUSIC HISTORY AND ANALYSIS CONCENTRATION

Music Theory and Musicianship
Complete the following eight courses. Music theory courses and musicianship courses should be taken concurrently, as indicated:

MUS U201 Music Theory 1 4 SH
with MUS U241 Musicianship 1 1 SH
MUS U202 Music Theory 2 4 SH
with MUS U242 Musicianship 2 1 SH
### Music Theory Requirement
Complete the following two courses:
- MUS U203 Music Theory for Music Industry 1 4 SH
- MUS U204 Music Theory for Music Industry 2 4 SH

### Music History Requirement
Complete the following four courses. MUS U550 can be taken multiple times:
- MUS U311 Historical Traditions 1: America 4 SH
- MUS U312 Historical Traditions 2: Classical 4 SH
- MUS U313 Historical Traditions 3: World 4 SH
- MUS U550 Historical Traditions 4: Special Topics 4 SH

### Music Literature Requirement
Complete the following course:
- MUS U308 Principles of Music Literature 4 SH

### Piano Class Requirement
Complete the following course:
- MUS U205 Piano Class 1 4 SH

### Music Ensemble Requirement
Complete five music ensembles:
- MUS U904 Chorus 1 SH
- MUS U905 Band 1 SH
- MUS U906 Orchestra 1 SH
- MUS U911 Jazz Ensemble 1 SH
- MUS U912 Rock Ensemble 1 SH
- MUS U913 Blues/Rock Ensemble 1 SH
- MUS U914 Create Your Own Music 1 SH
- MUS U915 Chamber Ensembles 1 SH
- MUS U916 Electronic Music Ensemble 1 SH

### Experiential Education Requirement
Complete one course in experiential education. Please see department for approved courses.

### Music History and Analysis Major Credit Requirement
Complete 49 semester hours in the major.

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

### Cooperative Education
If elected

### University-Wide Requirements
128 total semester hours required
Transition students are required to complete 132 total semester hours
Minimum 2.000 GPA required

### BS in Music with Concentration in Music Industry

### College of Arts and Sciences BS Core Requirements for Arts/Humanities Majors
See page 50 for requirement list.

### Business Course Requirements

#### Economics
Complete the following two courses:
- ECN U115 Principles of Macroeconomics 4 SH
- ECN U116 Principles of Microeconomics 4 SH
Accounting
Complete the following course:
ACC U209  Financial Accounting and Reporting  4 SH

Business Electives
Complete two business courses from the following departments:
ACC, CBA, FIN, HRM, MGT, MKT, or MSC.

EXPERIENTIAL EDUCATION REQUIREMENT
Complete one course in experiential education. Please see department for approved courses.

MUSIC INDUSTRY MAJOR CREDIT REQUIREMENT
Complete 78 semester hours in the major.

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

COORDERATIVE EDUCATION
If elected

UNIVERSITY-WIDE REQUIREMENTS
128 total semester hours required
Transition students are required to complete 132 total semester hours
Minimum 2.000 GPA required

BS in Music with Concentration in Music Technology

COLLEGE OF ARTS AND SCIENCES BS CORE
REQUIREMENTS FOR ARTS/HUMANITIES MAJORS
See page 50 for requirement list.

GENERAL MUSIC REQUIREMENTS

Music Theory and Musicianship
Complete the following four courses with corresponding musicianship courses:
MUS U201  Music Theory 1  4 SH
with MUS U241  Musicianship 1  1 SH
MUS U202  Music Theory 2  4 SH
with MUS U242  Musicianship 2  1 SH
MUS U303  Music Theory 3  4 SH
with MUS U343  Musicianship 3  1 SH
MUS U304  Music Theory 4  4 SH
with MUS U344  Musicianship 4  1 SH

Music History
Complete the following four courses:
MUS U308  Principles of Music Literature  4 SH
MUS U311  Historical Traditions 1: America  4 SH
MUS U312  Historical Traditions 2: Classical  4 SH
MUS U313  Historical Traditions 3: World  4 SH

Music Composition
Complete the following three courses:
MUS U250  Instrumentation and Notation  4 SH
MUS U420  Music Composition Seminar 1  4 SH
MUS U422  Music Composition Seminar 2  4 SH

Composition Lessons
Complete the following (repeatable) course six times:
MUS U903  Composition Lessons  1 SH

Ensemble
Complete two music ensembles:
MUS U904  Chorus  1 SH
MUS U905  Band  1 SH
MUS U906  Orchestra  1 SH
MUS U911  Jazz Ensemble  1 SH
MUS U912  Rock Ensemble  1 SH
MUS U913  Blues/Rock Ensemble  1 SH
MUS U914  Create Your Own Music  1 SH
MUS U915  Chamber Ensembles  1 SH
MUS U916  Electronic Music Ensemble  1 SH

MUSIC TECHNOLOGY REQUIREMENTS

Music Technology
Complete the following four courses:
MUS U220  Music and Technology 1  4 SH
MUS U221  Music and Technology 2  4 SH
MUS U315  History of Electronic Music  4 SH
MUS U421  Digital Audio Processing  4 SH

Electronic Composition and Performance
Complete the following four courses:
MUS U320  Sound Design  4 SH
MUS U520  Interactive Real-Time Performance  4 SH
MUS U610  Composition for Electronic Instruments  4 SH
MUS U611  Music Technology Capstone/Senior Recital  4 SH

Music Technology Electives
Complete one course from the following list, or see your adviser for approval of other acceptable courses:
ART U130  Visual Studies Foundation 1  4 SH
ART U180  Video Basics  4 SH
ART U290  Introduction to Digital Tools  4 SH
MMS U305  Programming for Multimedia  4 SH
MMS U400  Hypermedia  4 SH
MUS U233  Music Production for Radio and Web  4 SH
MUS U336  Computer Applications in Music Business  4 SH
MUS U699  Advanced Television Production  4 SH

EXPERIENTIAL EDUCATION REQUIREMENT
Complete one course in experiential education. Please see department for approved courses.

MUSIC TECHNOLOGY MAJOR CREDIT REQUIREMENT
Complete 92 semester hours in the major.

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

COORDERATIVE EDUCATION
If elected

UNIVERSITY-WIDE REQUIREMENTS
128 total semester hours required
Transition students are required to complete 132 total semester hours
Minimum 2.000 GPA required
BS in Computer Science and Music with Concentration in Music Technology
See page 217.

Minor in General Music

MUSIC THEORY AND MUSICIANSHP
Complete the following four courses. Music Theory and Musicianship should be taken concurrently as indicated:
MUS U201 Music Theory 1 4 SH
with MUS U241 Musicianship 1 1 SH
MUS U202 Music Theory 2 4 SH
with MUS U242 Musicianship 2 1 SH

PRINCIPLES IN MUSIC LITERATURE
Complete the following course:
MUS U308 Principles of Music Literature 4 SH

MUSIC HISTORY ELECTIVE
Complete one course from the following list:
MUS U311 Historical Traditions 1: America 4 SH
MUS U312 Historical Traditions 2: Classical 4 SH
MUS U313 Historical Traditions 3: World 4 SH
MUS U315 History of Electronic Music 4 SH
MUS U550 Historical Traditions 4: Special Topics 4 SH

MUSIC ELECTIVE
Complete one course from the Department of Music.

GPA REQUIREMENT
2.000 GPA required in the minor

Minor in Ethnomusicology

REQUIRED COURSES
Complete the following four courses. MUS U201 and MUS U241 should be taken concurrently:
MUS U201 Music Theory 1 4 SH
with MUS U241 Musicianship 1 1 SH
MUS U308 Principles of Music Literature 4 SH
MUS U350 Introduction to Ethnomusicology 4 SH
Music industry majors may substitute the following course for MUS U201:
MUS U203 Music Theory for Music Industry 1 4 SH

ETHNOMUSICOLOGY ELECTIVES
Complete three of the following courses:
MUS U104 Survey of African-American Music 4 SH
MUS U127 Introduction to World Music 4 SH
MUS U128 Music of Africa 4 SH
MUS U130 Music of Asia 4 SH
MUS U131 Music of Latin America and the Caribbean 4 SH
MUS U132 Music of the Jewish People 4 SH

GPA REQUIREMENT
2.000 GPA required in the minor

Minor in Music Industry

MUSIC THEORY AND LITERATURE
Complete the following two courses:
MUS U101 Introduction to Music 4 SH
or MUS U308 Principles of Music Literature 4 SH
MUS U203 Music Theory for Music Industry 1 4 SH
or MUS U201 Music Theory 1 4 SH

MUSIC INDUSTRY
Complete the following two courses:
MUS U230 Music Industry 1 4 SH
MUS U231 Music Industry 2 4 SH

MUSIC INDUSTRY ELECTIVES
Complete two music industry courses.

GPA REQUIREMENT
2.000 GPA required in the minor

Minor in Music Performance

Restricted to music majors.

MUSIC THEORY AND MUSICIANSHP
Complete the following eight courses. Music Theory and Musicianship should be taken concurrently, as indicated.
Music industry majors take program-specific music theory courses, as outlined below. A minimum grade of C or better is required in music theory courses:
MUS U201 Music Theory 1 4 SH
with MUS U241 Musicianship 1 1 SH
MUS U202 Music Theory 2 4 SH
with MUS U242 Musicianship 2 1 SH
MUS U303 Music Theory 3 4 SH
with MUS U343 Musicianship 3 1 SH
MUS U304 Music Theory 4 4 SH
with MUS U344 Musicianship 4 1 SH
Music Industry Majors Only
MUS U203 Music Theory for Music Industry 1 4 SH
with MUS U241 Musicianship 1 1 SH
MUS U204 Music Theory for Music Industry 2 4 SH
with MUS U242 Musicianship 2 1 SH
MUS U303 Music Theory 3 4 SH
with MUS U343 Musicianship 3 1 SH
MUS U304 Music Theory 4 4 SH
with MUS U344 Musicianship 4 1 SH

PERFORMANCE PRACTICE
Complete the following course:
MUS U621 Seminar in Performance Practice 4 SH

MUSIC LESSONS
Complete the following (repeatable) course three times:
MUS U901 Music Lessons 1 1 SH

MUSIC RECITALS
Complete the following two courses:
MUS U410 Recital 1 1 SH
MUS U622 Recital 2 1 SH
MUSIC ENSEMBLE
Complete seven music ensembles:
MUS U904 Chorus 1 SH
MUS U905 Band 1 SH
MUS U906 Orchestra 1 SH
MUS U911 Jazz Ensemble 1 SH
MUS U912 Rock Ensemble 1 SH
MUS U913 Blues/Rock Ensemble 1 SH
MUS U914 Create Your Own Music 1 SH
MUS U915 Chamber Ensembles 1 SH
MUS U916 Electronic Music Ensemble 1 SH

GPA REQUIREMENT
2.000 GPA required in the minor

Minor in Music Theatre

MUSIC THEORY, LITERATURE, AND THEATRE
Complete the following four courses:
MUS U201 Music Theory 1 4 SH
with MUS U241 Musicianship 1 1 SH
MUS U308 Principles of Music Literature 4 SH
THE U310 American Musical Theatre 4 SH

MUSIC HISTORY ELECTIVE
Complete one course from the following list:
MUS U311 Historical Traditions 1: America 4 SH
MUS U312 Historical Traditions 2: Classical 4 SH
MUS U313 Historical Traditions 3: World 4 SH
MUS U315 History of Electronic Music 4 SH
MUS U550 Historical Traditions 4: Special Topics 4 SH

VOICE LESSONS
Complete four semesters of voice lessons (courses are repeatable):
MUS U901 Music Lessons 1 1 SH
MUS U902 Music Lessons 2 1 SH

PERFORMANCE: CHORUS
Complete four semesters of chorus:
MUS U904 Chorus 1 SH

MUSIC ELECTIVE
Complete one course from the Department of Music.

GPA REQUIREMENT
2.000 GPA required in the minor

Philosophy and Religion

ASSOCIATE PROFESSORS
William J. DeAngelis, PhD
Patricia M. L. Illingworth, JD, PhD
Michael R. Lipton, PhD

ASSISTANT PROFESSORS
Shawn Dolansky, PhD
M. Whitney Kelting, PhD
Ronald L. Sandler, PhD

LECTURERS
D. Kerry Dugan, MEd
Margaret C. Huff, PhD
Michael C. Meyer, PhD

Philosophy addresses questions and theories related to morality, society, religion, and the natural and social sciences. The study of philosophy challenges students to examine, through critical reflection, their beliefs in many areas.

Courses aim to provide students with an understanding of the methods and traditions of philosophical and religious thought. Through readings, discussion, and writing, students examine questions concerning the nature and validity of religious beliefs, moral judgments, political ideas, and scientific theories, as well as questions about values and social policy in such areas as law, medicine, and technology.

Course work in philosophy can strengthen the student's work in other areas. Philosophy majors enter diverse careers, ranging from college-level teaching to law and business. The program strives to help students sharpen their critical abilities. The department offers three ways to major in philosophy: the standard major, the concentration in law and ethics, and the concentration in religious studies. See pages 428–433 for course descriptions.

BA/BS in Philosophy

COLLEGE OF ARTS AND SCIENCES BA CORE REQUIREMENTS OR BS CORE REQUIREMENTS FOR ARTS/HUMANITIES MAJORS
For BA core, see page 48 for requirement list.
For BS core, see page 50 for requirement list.

CONCENTRATION
Complete either the philosophy generalist requirements, the concentration in law and ethics, or the concentration in religious studies.

Philosophy Generalist

PHILOSOPHY REQUIRED COURSES
Complete the following three courses:
PHL U115 Introduction to Logic 4 SH
or PHL U215 Symbolic Logic 4 SH
PHL U325 Ancient Philosophy 4 SH
PHL U330 Modern Philosophy 4 SH

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Susan M. Setta, PhD
Associate Professor and Chair

PROFESSOR
Stephen L. Nathanson, PhD
ADVANCED PHILOSOPHY ELECTIVE
Complete one course from the following list:
- PHL U435 Moral Philosophy 4 SH
- PHL U500 Theory of Knowledge 4 SH
- PHL U505 Metaphysics 4 SH
- PHL U535 Philosophy of Mind 4 SH

PHILOSOPHY SEMINAR
Complete one seminar:
- PHL U605 Advanced Seminar: Spinoza 4 SH
- PHL U901 Topics in Philosophy Seminar 4 SH
- PHL U902 Great Philosophers Seminar 4 SH
- PHL U903 Seminar in Religion 4 SH

ADDITIONAL ELECTIVES
Complete four additional electives in philosophy.

Concentration in Law and Ethics

PHILOSOPHY REQUIRED COURSES
Complete the following four courses:
- PHL U115 Introduction to Logic 4 SH
  or PHL U215 Symbolic Logic 4 SH
- PHL U325 Ancient Philosophy 4 SH
- PHL U330 Modern Philosophy 4 SH
- PHL U435 Moral Philosophy 4 SH

PHILOSOPHY SEMINAR
Complete one course from the following list:
- PHL U605 Advanced Seminar: Spinoza 4 SH
- PHL U901 Topics in Philosophy Seminar 4 SH
- PHL U902 Great Philosophers Seminar 4 SH
- PHL U903 Seminar in Religion 4 SH

PHILOSOPHY ELECTIVE
Complete one course in philosophy.

LAW-RELATED ELECTIVES
Complete two courses from the social science departments listed below. Courses are to be chosen in consultation with department: AFR, ECN, HS, HST, IAF, LIN, POL, PSY, SOA, or SOC.

Concentration in Religious Studies

PHILOSOPHY REQUIRED COURSES
Complete the following four courses:
- PHL U115 Introduction to Logic 4 SH
  or PHL U215 Symbolic Logic 4 SH
- PHL U325 Ancient Philosophy 4 SH
- PHL U330 Modern Philosophy 4 SH
- PHL U435 Moral Philosophy 4 SH

PHILOSOPHY SEMINAR
Complete one seminar:
- PHL U605 Advanced Seminar: Spinoza 4 SH
- PHL U901 Topics in Philosophy Seminar 4 SH
- PHL U902 Great Philosophers Seminar 4 SH
- PHL U903 Seminar in Religion 4 SH
- PHL U904 Major Figures in Religious Studies 4 SH
- PHL U906 Topics in Religious Studies 4 SH

RELIGIOUS STUDIES COURSES
Complete three elective courses. See department for an approved list.

PHILOSOPHY ELECTIVE
Complete one elective course in philosophy.

EXPERIENTIAL EDUCATION REQUIREMENT
Complete one course in experiential education. Please see department for approved courses.

PHILOSOPHY MAJOR CREDIT REQUIREMENT
Complete 32 semester hours in the major.

UPPER-DIVISION ELECTIVES
Complete three general electives at 300 level or above.

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

COOPERATIVE EDUCATION
If elected

UNIVERSITY-WIDE REQUIREMENTS
128 total semester hours required
Transition students are required to complete 132 total semester hours
Minimum 2.000 GPA required

BA in Cinema Studies and Philosophy
See page 79.

BS in Physics and Philosophy
See page 140.

Minor in Philosophy

REQUIRED COURSES
Complete the following two courses:
- PHL U325 Ancient Philosophy 4 SH
- PHL U330 Modern Philosophy 4 SH

ELECTIVE COURSES
Complete three philosophy courses.

GPA REQUIREMENT
2.000 GPA required in the minor

Minor in Religious Studies

REQUIRED COURSES
Complete the following four courses:
- PHL U150 Understanding the Bible 4 SH
- PHL U275 Eastern Religions 4 SH
- PHL U280 Islam 4 SH
- PHL U390 Cults and Sects 4 SH

ELECTIVE COURSE
Complete one religious studies elective.

GPA REQUIREMENT
2.000 GPA required in the minor
Physics examines the fundamental principles that govern natural phenomena, ranging in scale from collisions of subatomic particles, through the behavior of solids, liquids, and biomolecules, to exploding stars and colliding galaxies.

The program aims to help students experience the intellectual stimulation of studying physics and astrophysics and the excitement of frontline research; understand the basic principles and techniques of physics-related careers; and prepare for graduate study in physics or related fields.

The department offers four levels of undergraduate courses: descriptive courses for nonscience majors with limited mathematical background; general survey courses for students in scientific and engineering fields; advanced courses primarily intended for physics majors; and highly advanced courses primarily intended for prospective graduate students.

In addition to work in industrial, government, or high-technology laboratories in areas of applied physics, students may find opportunities in such fields as biological physics, computer science, geophysics, medical and radiation physics, and engineering. Many physics majors pursue advanced degrees in physics and related fields.

Undergraduates have the option of majoring in biomedical physics. At the most basic level, biomedical physics seeks to understand the role of physical processes occurring on molecular, cellular, or macroscopic scales, in vital biological functions, ranging from the extraction of oxygen from the lungs by red blood cells to the generation of complex electrical signals in the brain and nervous system. At the most practical level, biomedical physics examines how physical principles and modern instrumentation techniques can be used in a rapidly increasing number of medical applications, ranging from imaging tissue structures and organ functions, to detecting and curing diseases, to performing sophisticated surgeries.

An additional option is the BS/MS program in applied physics and engineering, jointly sponsored by the physics department and the Department of Electrical and Computer Engineering (ECE). Students acquire a strong interdisciplinary training in physics, math, and electrical engineering to achieve a BS degree in applied physics and take graduate courses in ECE in the fourth and fifth years that lead directly to an MS degree in electrical engineering.

BS in Physics

COLLEGE OF ARTS AND SCIENCES BS CORE REQUIREMENTS FOR NATURAL SCIENCE MAJORS
See page 51 for requirement list.

BREADTH COURSES FOR PHYSICS

Mathematics
Complete the following six courses:

- MTH U241  Calculus 1 for Science and Engineering 4 SH
- MTH U242  Calculus 2 for Science and Engineering 4 SH
- MTH U341  Calculus 3 for Science and Engineering 4 SH
- MTH U345  Ordinary Differential Equations 4 SH
- MTH U371  Linear Algebra 4 SH
- MTH U481  Probability and Statistics 4 SH
**General Engineering**
Complete the following course:
GE U111  Engineering Problem Solving  4 SH

**Chemistry**
Complete the following course with corresponding lab:
CHM U211  General Chemistry 1  4 SH
with CHM U212 Lab for CHM U211  1 SH

**Technical Electives**
Complete 8 semester hours of intermediate or advanced courses from the following list:
BIO U300 to BIO U699
CHE U301 to CHE U699
CHM U300 to CHM U699
CIV U301 to CIV U699
CS U300 to CS U699
ECE U301 to ECE U699
GEO U300 to GEO U699
MIM U301 to MIM U699
MTH U301 to MTH U699
PHY U300 to PHY U699

**PHYSICS MAJOR REQUIREMENTS**

**Introductory Physics**
Complete the following two courses with corresponding labs:
PHY U161  Physics 1  4 SH
with PHY U162 Lab for PHY U161  1 SH
or PHY U151  Physics for Engineering 1  4 SH
with PHY U152 Lab for PHY U151  1 SH

**Intermediate Physics**
Complete the following three courses:
PHY U303  Modern Physics  4 SH
PHY U305  Thermodynamics and Statistical Mechanics  4 SH
PHY U371  Electronics  4 SH

**Advanced Physics**
Complete the following five courses:
PHY U600  Advanced Physics Laboratory 1  4 SH
PHY U601  Classical Dynamics  4 SH
PHY U602  Electricity and Magnetism  4 SH
PHY U603  Electromagnetic Waves and Optics  4 SH
PHY U617  Quantum Mechanics  4 SH

**Elective Course**
Complete one course from the following list:
PHY U500  Physics with Computers  4 SH
PHY U611  Astrophysics and Cosmology  4 SH
PHY U613  Particle and Nuclear Physics  4 SH
PHY U614  Condensed Matter Physics  4 SH
PHY U621  Biological Physics 1  4 SH
PHY U623  Medical Physics  4 SH

**Senior Capstone and Experiential Education**
Complete the following two courses:
PHY U700  Advanced Physics Laboratory 2  4 SH
PHY U954  Experiential Education Directed Study  4 SH

**PHYSICS MAJOR CREDIT REQUIREMENT**
Complete 95 semester hours in the major.

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

**COOPERATIVE EDUCATION**
If elected

**UNIVERSITY-WIDE REQUIREMENTS**
128 total semester hours required
Transition students are required to complete 132 total semester hours
Minimum 2.000 GPA required

**BS in Applied Physics**

**COLLEGE OF ARTS AND SCIENCES BS CORE REQUIREMENTS FOR NATURAL SCIENCE MAJORS**
See page 51 for requirement list.

**BREADTH COURSES FOR APPLIED PHYSICS**

**Mathematics**
Complete the following four courses:
MTH U241  Calculus 1 for Science and Engineering  4 SH
MTH U242  Calculus 2 for Science and Engineering  4 SH
MTH U341  Calculus 3 for Science and Engineering  4 SH
MTH U345  Ordinary Differential Equations  4 SH

**General Engineering**
Complete the following course:
GE U111  Engineering Problem Solving  4 SH

**Chemistry**
Complete the following course with corresponding lab:
CHM U211  General Chemistry 1  4 SH
with CHM U212 Lab for CHM U211  1 SH

**Computer Science**
Complete two intermediate or advanced CS courses:
CS U300 to CS U699

**Technical Electives**
Complete 16 semester hours of intermediate or advanced courses from the following list:
BIO U300 to BIO U699
CHE U301 to CHE U699
CHM U300 to CHM U699
CIV U301 to CIV U699
CS U300 to CS U699
ECE U301 to ECE U699
GEO U300 to GEO U699
MIM U301 to MIM U699
MTH U301 to MTH U699
PHY U300 to PHY U699
APPLIED PHYSICS MAJOR REQUIREMENTS

**Introductory Physics**
Complete the following two courses with corresponding labs:
- PHY U161 Physics 1 4 SH
  - with PHY U162 Lab for PHY U161 1 SH
- or PHY U151 Physics for Engineering 1 4 SH
  - with PHY U152 Lab for PHY U151 1 SH
- PHY U165 Physics 2 4 SH
  - with PHY U166 Lab for PHY U165 1 SH
- or PHY U155 Physics for Engineering 2 4 SH
  - with PHY U156 Lab for PHY U155 1 SH

**Intermediate Physics**
Complete the following three courses:
- PHY U303 Modern Physics 4 SH
- PHY U305 Thermodynamics and Statistical Mechanics 4 SH
- PHY U371 Electronics 4 SH

**Advanced Physics**
Complete the following two courses:
- PHY U600 Advanced Physics Laboratory 1 4 SH
- PHY U602 Electricity and Magnetism 4 SH

**Advanced Physics Elective**
Complete one course from the following list:
- PHY U500 Physics with Computers 4 SH
- PHY U603 Electromagnetic Waves and Optics 4 SH
- PHY U611 Astrophysics and Cosmology 4 SH
- PHY U613 Particle and Nuclear Physics 4 SH
- PHY U614 Condensed Matter Physics 4 SH
- PHY U621 Biological Physics 1 4 SH
- PHY U623 Medical Physics 4 SH

**Senior Capstone and Experiential Education**
Complete the following two courses:
- PHY U700 Advanced Physics Laboratory 2 4 SH
- PHY U954 Experiential Education Directed Study 4 SH

**APPLIED PHYSICS MAJOR CREDIT REQUIREMENT**
Complete 91 semester hours in the major.

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

**COORDINATE EDUCATION**
If elected

**UNIVERSITY-WIDE REQUIREMENTS**
128 total semester hours required
Transition students are required to complete 132 total semester hours
Minimum 2.000 GPA required

**BS in Biomedical Physics**

**COLLEGE OF ARTS AND SCIENCES BS CORE REQUIREMENTS FOR NATURAL SCIENCE MAJORS**
See page 51 for requirement list.

**BREADTH COURSES FOR BIOMEDICAL PHYSICS MAJOR**

**Mathematics**
Complete the following three courses:
- MTH U241 Calculus 1 for Science and Engineering 4 SH
- MTH U242 Calculus 2 for Science and Engineering 4 SH
- MTH U341 Calculus 3 for Science and Engineering 4 SH

**General Engineering**
Complete the following course:
- GE U111 Engineering Problem Solving and Computation

**Biology**
Complete the following two courses with corresponding labs:
- BIO U111 General Biology 1 4 SH
  - with BIO U112 Lab for BIO U111 1 SH
- or BIO U113 General Biology 2 4 SH
  - with BIO U114 Lab for BIO U113 1 SH

**Chemistry**
Complete the following course and corresponding lab:
- CHM U211 General Chemistry 1 4 SH
  - with CHM U212 Lab for CHM U211 1 SH

**Technical Electives**
Complete two intermediate or advanced courses from the following departments:
- BIO U300 to BIO U699
- CHE U301 to CHE U699
- CHM U300 to CHM U699
- CIV U300 to CIV U699
- CS U300 to CS U699
- ECE U301 to ECE U699
- GEO U300 to GEO U699
- MIM U301 to MIM U699
- MTH U300 to MTH U699
- PHY U300 to PHY U699

**BIOMEDICAL PHYSICS MAJOR REQUIREMENTS**

**Introductory Physics**
Complete the following two courses:
- PHY U161 Physics 1 4 SH
  - with PHY U162 Lab for PHY U161 1 SH
- or PHY U151 Physics for Engineering 1 4 SH
  - with PHY U152 Lab for PHY U151 1 SH
- PHY U165 Physics 2 4 SH
  - with PHY U166 Lab for PHY U165 1 SH
- or PHY U155 Physics for Engineering 2 4 SH
  - with PHY U156 Lab for PHY U155 1 SH

**Intermediate Physics**
Complete the following three courses:
- PHY U303 Modern Physics 4 SH
- PHY U305 Thermodynamics and Statistical Mechanics 4 SH
- PHY U371 Electronics 4 SH
**Advanced Physics**
Complete the following four courses:
- PHY U600  Advanced Physics Laboratory 1 4 SH
- PHY U601  Classical Dynamics 4 SH
- PHY U602  Electricity and Magnetism 4 SH
- PHY U603  Electromagnetic Waves and Optics 4 SH

**Biomedical Physics**
Complete the following four courses:
- PHY U621  Biological Physics 1 4 SH
- PHY U623  Medical Physics 4 SH
- PHY U651  Medical Physics Seminar 1 4 SH
- PHY U652  Medical Physics Seminar 2 4 SH

**Senior Capstone and Experiential Education**
Complete the following two courses:
- PHY U700  Advanced Physics Laboratory 2 4 SH
- PHY U954  Experiential Education Directed Study 4 SH

**BIOMEDICAL PHYSICS MAJOR CREDIT REQUIREMENT**
Complete 101 semester hours in the major.

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

**COOPERATIVE EDUCATION**
If elected

**UNIVERSITY-WIDE REQUIREMENTS**
128 total semester hours required
Transition students are required to complete 132 total semester hours
Minimum 2.000 GPA required

**BS in Physics and Philosophy**

**COLLEGE OF ARTS AND SCIENCES BS CORE REQUIREMENTS FOR NATURAL SCIENCE MAJORS**
See page 51 for requirement list.

**BREADTH COURSES**

**Mathematics**
Complete the following four courses:
- MTH U241  Calculus 1 for Science and Engineering 4 SH
- MTH U242  Calculus 2 for Science and Engineering 4 SH
- MTH U341  Calculus 3 for Science and Engineering 4 SH
- MTH U343  Differential Equations and Linear Algebra 4 SH for Engineering

**PHILOSOPHY REQUIREMENTS FOR DUAL MAJOR**

**Philosophy Required Courses**
Complete the following four courses:
- PHL U115  Introduction to Logic 4 SH
- or PHL U215  Symbolic Logic 4 SH
- PHL U325  Ancient Philosophy 4 SH
- PHL U330  Modern Philosophy 4 SH
- PHL U505  Metaphysics 4 SH

**PhDology Seminar**
Complete the following seminar:
- PHL U902  Great Philosophers Seminar 4 SH

**Additional Electives**
Complete four additional electives in philosophy.

**PHYSICS REQUIREMENTS FOR DUAL MAJOR**

**Introductory Physics**
Complete the following two courses with corresponding lab:
- PHY U161  Physics 1 4 SH
- with PHY U162  Lab for PHY U161 1 SH
- or PHY U151  Physics for Engineering 1 4 SH
- with PHY U152  Lab for PHY U151 1 SH
- PHY U165  Physics 2 4 SH
- with PHY U166  Lab for PHY U165 1 SH
- or PHY U155  Physics for Engineering 2 4 SH
- with PHY U156  Lab for PHY U155 1 SH

**Intermediate Physics**
Complete the following three courses:
- PHY U303  Modern Physics 4 SH
- PHY U305  Thermodynamics and Statistical Mechanics 4 SH
- PHY U371  Electronics 4 SH

**Advanced Physics**
Complete the following three courses:
- PHY U600  Advanced Physics Laboratory 1 4 SH
- PHY U602  Electricity and Magnetism 4 SH
- PHY U603  Electromagnetism 4 SH
- PHY U617  Quantum Mechanics 4 SH

**Physics Elective**
Complete one physics elective course.

**PHYSICS/PHILOSOPHY INTEGRATIVE REQUIREMENTS**
Complete the following two courses:
- PHL U510  Philosophy of Science 4 SH
- PHY U601  Classical Dynamics 4 SH

**EXPERIENTIAL EDUCATION REQUIREMENT**
Complete one course in experiential education. Please see department for approved courses.

**PHYSICS AND PHILOSOPHY MAJOR CREDIT REQUIREMENT**
Complete 98 semester hours in the major.

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

**COOPERATIVE EDUCATION**
If elected

**UNIVERSITY-WIDE REQUIREMENTS**
128 total semester hours required
Transition students are required to complete 132 total semester hours
Minimum 2.000 GPA required
**BS in Computer Science and Physics**
See page 219.

**BS in Electrical Engineering and Physics**
See page 242.

**BS in Environmental Geology and Physics**
See page 91.

**BS in Geology and Physics**
See page 91.

**BS in Mathematics and Physics**
See page 124.

**BS/MS in Applied Physics and Engineering**

**GPA PROGRESSION REQUIREMENT**
A GPA of 3.500 is required by the end of year three in order to enroll in the graduate ECE courses in year four.

**COLLEGE OF ARTS AND SCIENCES BS CORE REQUIREMENTS FOR NATURAL SCIENCE MAJORS**
See page 51 for requirement list.

**BREADTH COURSES**

**Mathematics**
Complete the following four courses:
- MTH U241 Calculus 1 for Science and Engineering 4 SH
- MTH U242 Calculus 2 for Science and Engineering 4 SH
- MTH U341 Calculus 3 for Science and Engineering 4 SH
- MTH U345 Ordinary Differential Equations 4 SH

**General Engineering**
Complete the following course:
- GE U111 Engineering Problem Solving and Computation 4 SH

**Chemistry**
Complete the following course with corresponding lab:
- CHM U211 General Chemistry 1 4 SH
  with CHM U212 Lab for CHM U211 1 SH

**MAJOR REQUIREMENTS**

**Introductory Physics**
Complete the following two courses with corresponding labs:
- PHY U161 Physics 1 4 SH
  with PHY U162 Lab for PHY U161 1 SH
  or PHY U151 Physics for Engineering 1 4 SH
  with PHY U152 Lab for PHY U151 1 SH
- PHY U165 Physics 2 4 SH
  with PHY U166 Lab for PHY U165 1 SH
  or PHY U155 Physics for Engineering 2 4 SH
  with PHY U156 Lab for PHY U155 1 SH

**Intermediate Physics**
Complete the following three courses:
- PHY U303 Modern Physics 4 SH
- PHY U305 Thermodynamics and Statistical Mechanics 4 SH
- PHY U371 Electronics 4 SH

**Advanced Physics**
Complete the following four courses:
- PHY U600 Advanced Physics Laboratory 1 4 SH
- PHY U602 Electricity and Magnetism 4 SH
- PHY U603 Electromagnetic Waves and Optics 4 SH
- PHY U617 Quantum Mechanics 4 SH

**Senior Capstone and Experiential Education**
Complete the following two courses:
- PHY U700 Advanced Physics Laboratory 2 4 SH
- PHY U954 Experiential Education Directed Study 4 SH

**Engineering Undergraduate Requirements**
Complete the following three courses:
- ECE U400 Linear Circuits 4 SH
- ECE U402 Electronics 4 SH
- ECE U464 Linear Systems 4 SH

**Engineering Graduate Requirements**
Complete the following two courses:
- ECE G200 Linear Systems Analysis 4 SH
- ECE G204 Applied Probability and Stochastic Processes 4 SH

**Engineering Graduate Electives**
Complete six courses from the ECE graduate department.

**EXPERIENTIAL EDUCATION REQUIREMENT**
Complete one course in experiential education. Please see department for approved courses.

**APPLIED PHYSICS AND ENGINEERING MAJOR CREDIT REQUIREMENT**
Complete 115 semester hours in the major.

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

**COOPERATIVE EDUCATION**
If elected

**UNIVERSITY-WIDE REQUIREMENTS**
160 total semester hours required
Minimum 3.000 GPA required

**Minor in Physics**

**REQUIRED COURSES**
Complete one of the following sequences:

**Physics 1 and 2**
- PHY U161 Physics 1 4 SH
  with PHY U162 Lab for PHY U161 1 SH
- PHY U165 Physics 2 4 SH
  with PHY U166 Lab for PHY U165 1 SH

**Physics for Engineering 1 and 2**
- PHY U151 Physics for Engineering 1 4 SH
  with PHY U152 Lab for PHY U151 1 SH
- PHY U155 Physics for Engineering 2 4 SH
  with PHY U156 Lab for PHY U155 1 SH
ELECTIVE COURSES
Complete three courses from the following list:

PHY U303 Modern Physics 4 SH
PHY U305 Thermodynamics and Statistical Mechanics 4 SH
PHY U371 Electronics 4 SH
PHY U600 Advanced Physics Laboratory 1 4 SH
PHY U601 Classical Dynamics 4 SH
PHY U602 Electricity and Magnetism 4 SH
PHY U603 Electromagnetic Waves and Optics 4 SH
PHY U611 Astrophysics and Cosmology 4 SH
PHY U613 Particle and Nuclear Physics 4 SH
PHY U614 Condensed Matter Physics 4 SH
PHY U621 Biological Physics 1 4 SH
PHY U623 Medical Physics 4 SH

GPA REQUIREMENT
2.000 GPA required in the minor

POLITICAL SCIENCE

www.casdn.neu.edu/~polisci

Professor and Chair

RUSSELL B. AND ANDRÉE B. STEARNS TRUSTEE PROFESSOR OF POLITICAL ECONOMY
Barry Bluestone, PhD

THOMAS P. O’NEILL CHAIR IN PUBLIC LIFE
William Crotty, PhD

DISTINGUISHED PROFESSOR
Michael S. Dukakis, JD

COLLEGE OF ARTS AND SCIENCES
DISTINGUISHED PROFESSOR
David A. Rochefort, PhD

EDWARD W. BROOKE PROFESSOR OF POLITICAL SCIENCE
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Bruce A. Wallin, PhD

ASSISTANT PROFESSORS
Andrew B. Baker, PhD
Richard L. O’Bryant, PhD

VISITING ASSISTANT PROFESSOR
Denise M. Horn, PhD

Political science majors study the art and science of politics, the structure and functions of government, political behavior, and public policymaking. Students will learn about the political and policy dimensions of societies, economic systems, and cultures, today and across time, both in the United States and in other nations.

Political science majors can choose from a wide array of courses in American politics, international relations, comparative politics, public administration, and political theory. Majors can follow a general studies path, selecting from among electives as they go along, or they can pursue more structured and more specialized concentrations in law and legal issues, international and comparative politics, or public policy and administration. Most majors participate in the cooperative education program, with placements in local, state, and federal government agencies; law firms; nonprofit institutions; and corporations. Many students complete either a co-op position or an internship with a congressional representative, a senator, a governor, or other elected public servant.

Students may also participate in extracurricular programs designed to expand their leadership ability, such as the Political Science Student Association/Pi Sigma Alpha, Model United Nations, Model Arab League, student government, College Democrats, College Republicans, or other student groups. Many students study in one of the college’s international programs, such as the Irish Studies program, which includes an internship in the Irish Parliament. Students also may qualify for the University Honors Program.

A major in political science helps prepare students for law school, graduate school, and careers in the government and the nonprofit sector, as well as for teaching, journalism, legislative or lobbying positions, public relations activities, and work in international corporations. See pages 441–447 for course descriptions.

BA in Political Science

COLLEGE OF ARTS AND SCIENCES

BA CORE REQUIREMENTS
See page 48 for requirement list.

INTRODUCTION TO COLLEGE
POL U100 College: An Introduction 1 SH