College of Arts and Sciences

Donald E. Hall, dean; Diane T. Hyland, senior associate dean; Cameron B. Wesson, associate dean; Jackie Kraras, associate dean; Dominic Packer, associate dean.

The College of Arts and Sciences is the heart of Lehigh University, offering a wide variety of academic majors, minors, and interdisciplinary programs, while also providing essential liberal arts access to all Lehigh students. Arts and Sciences faculty are engaged as active scholars, are highly accessible, and are committed to the teaching mission of our undergraduate programs. A hallmark of our college is the faculty's ability to engage students interactively and experientially in teaching, research, and scholarship.

Students in the College develop new habits of mind that have become the hallmarks of a liberal arts education, testing assumptions, seeking evidence to support their understanding of the world, and probing the unknown with curiosity. These habits prepare our graduates to thrive in an uncertain world. Through a combination of college-wide distribution requirements and major field requirements in their chosen discipline, Lehigh Arts and Sciences students investigate and acquire knowledge of human cultures and the physical and natural world by studying arts, humanities, mathematics, natural sciences, and social sciences.

Studying broadly in these areas while pursuing a deeper concentration in a major field helps develop the intellectual curiosity and requisite skills necessary to creating lifelong learning habits as our graduates confront constant changes in society, technology, as well as their careers and personal lives.

The College of Arts and Sciences offers several curricular options:

- A four-year arts and sciences curriculum leading to a bachelor of arts or bachelor of science degree in designated fields.
- A five-year arts-engineering curriculum leading to a bachelor’s degree from the College of Arts and Sciences and a bachelor of science degree from the College of Engineering and Applied Science.
- Dual degree programs within the college and in conjunction with the other two undergraduate colleges.
- A five-year program leading to a bachelor’s degree from the College of Arts and Sciences and a master’s degree in Education from the College of Education. Please see below for more information.

MAJOR DEGREE PROGRAMS IN THE COLLEGE

Bachelor of Arts and Bachelor of Science Degree Programs

Two distinct bachelor-degree programs are offered by the College, the BA and the BS, each distinguished by the number of courses taken in the major field and ancillary disciplines. For the Bachelor of Arts degree a student takes a comparatively smaller number of courses to fulfill the major requirements plus a selection of courses in various fields outside the major. For the Bachelor of Science degree a student takes a more extensive concentration in the major field, along with a proportionally smaller number of courses outside the major. Except for this distinction, the same basic requirements must be met for both degree programs (including the minimum number of 120 hours for graduation and the minimum grade point average in the major of 2.0). No more than six hours of military science may be applied toward either degree.

Bachelor of Arts Degree

ba degrees are offered in the following areas

ARTS
  Architecture, art, art history, design, music, music composition, theatre

HUMANITIES
  Asian studies, classical civilization, classics, English, modern languages and literature (Chinese, French, Francophone Studies, German, Spanish, and Hispanic Studies), philosophy, religion studies

Social Sciences
  Africana studies, anthropology, cognitive science, economics, environmental studies, global studies, history, international relations, IR/MLL joint major, IR/ECO joint major, journalism, journalism/science writing, political science, psychology, science, technology and society, sociology, sociology and anthropology, women, gender and sexuality studies

Mathematics and Natural Science
  Astronomy, behavioral neuroscience, biology, chemistry, computer science, earth and environmental science, mathematics, molecular biology, physics

BA degrees in premedical science, premedical science, or preoptometry science are available to students who are admitted to certain combined degree programs (see Pre-Health Professions Programs).

Bachelor of Science Degree

BS degrees are offered in the following areas
  Astrophysics, behavioral neuroscience, biochemistry, biology, chemistry, computer science, earth and environmental science, mathematics, molecular biology, pharmaceutical chemistry, physics, psychology, statistics

GENERAL PLAN OF UNDERGRADUATE STUDY

Students in the College are required to choose (usually by the end of the sophomore year) a major field and to complete a program of courses selected in consultation with the student's advisor. For most students, the credits earned for the major and those earned for college distribution requirements are not enough to meet the graduation requirement of 120 credit hours. Students normally take free elective courses in areas of interest to earn these remaining credits. Three types of courses - one in the student's area of concentration (the major-field requirements), a second set drawn from certain designated disciplines (the distribution requirements), and a third set without constraints (the free electives) - comprise the educational program of the College.

Major Field of Concentration

By majoring in a specific discipline a student establishes a foundation of knowledge and develops expertise and intellectual sophistication in their field.

The minimum number of credits for a major is 30. A student must maintain a minimum grade-point average of 2.0 in the major field, and in the entire coursework.

Standard major sequences

When a student declares a major they are assigned a major advisor from that department or program's faculty. The major advisor assists students with course selection, research opportunities, internship selection, and other areas of professional development. In all cases, the final responsibility for meeting both major and non-major requirements rests with the student.

Special interdisciplinary majors

In addition to our established major programs, specially structured interdisciplinary majors linking multiple disciplines are possible. For example, a student interested in a professional school of urban or regional planning might wish to structure a special major consisting primarily of courses in political science, environmental studies, sociology, or any other relevant disciplines.

Any student may, with the aid of faculty members chosen from the disciplines involved, devise an interdisciplinary major program to include no less than thirty credits of related course work, with at least 15 credits from advanced courses. The major advisors and the dean of the college must approve the program.

Multiple majors and Dual degrees

A student who wishes to fulfill the requirements for more than one major program has two options: a double major or a dual degree.

A double major is a single BA degree with two majors. A student pursues a double major by declaring both majors. Typically, double majors can be completed in four years, but sequencing of courses and time conflicts with required courses can introduce delays. No more than three courses may be used to meet both majors' requirements.

DIRECTED MAJOR

A student who wishes to pursue a major program that normally includes a special concentration may declare a major in that discipline (for example, English) and select a concentration in another discipline (for example, history). The student must maintain a minimum grade-point average of 2.0 in the major field.
A dual degree program is a combined BA and BS program or two BS degrees in one or more of our undergraduate colleges. The BA is offered by the College of Arts and Sciences, and the BS may be in CAS or in one of the other undergraduate colleges. A student pursues a dual degree by declaring the first program and then petitioning the Standing of Students Committee for permission to pursue the second degree program. A semester-by-semester plan and a major declaration for the second degree must accompany the petition to pursue a dual degree. The dual-degree student must satisfy major and distribution requirements for both degrees and earn a minimum of 30 additional credits beyond those required for the first degree. All of the 30 additional credits must be taken at Lehigh or in Lehigh residency programs. The requirement of 30 additional credits typically makes the dual degree program a five-year program. There is no limit on the number of overlapping courses between two degrees, but there must be at least 30 credits of stand alone coursework in each degree program. For administrative purposes, students who take two degrees or two majors must designate one as their primary major or primary degree program.

Distribution Requirements

Whatever expertise in a single discipline an undergraduate may achieve, curiosity lures most of us beyond the confines of a single chosen specialty. Furthermore, in a swiftly changing world, careers are rapidly being redefined and only a person of broad intellectual mindset can consider where their talents may be most useful to society. Many of the basic modes of thought and work in various fields are being reformulated, often producing surprising influences in the public and private spheres. To develop a satisfying professional life and be a responsible citizen of our increasingly global world, one needs exposure to the concepts and methods of a variety of disciplines.

CAS distribution requirements draw upon five primary domains of learning: arts, humanities, mathematics, natural sciences, and social sciences. The faculty believe exposure to these broad areas will help students develop a basic understanding of the various forms of knowledge generated in these fields. Specific credit hours are required in each of the following four domains: arts and humanities, mathematics, natural sciences, and social sciences.

Distribution Requirements for the B.A. and the B.S.

First-Year Seminar

One course during the first year 3-4

English Composition

Two courses during the first year 6

Mathematics 1

Chosen from designated courses in mathematics, philosophy, or computer science 3

Natural Sciences 1

Chosen from designated courses in astronomy, astrophysics, biological anthropology, biosciences, chemistry, earth and environmental sciences, physics, and neuroscience 8

At least one science course must also include the associated laboratory.

Social Sciences 1, 2

Chosen from designated courses in anthropology, classics, economics, political science, history, international relations, journalism, psychology, social psychology, social relations, sociology, and STS 8

Arts and Humanities 1, 2

Chosen from designated courses in architecture, art, classics, history, modern languages and literature, English, music, philosophy, religion studies, and theatre 8

Junior Year Writing Intensive 1

Only courses designated as "WI" in the class schedule or select independent studies may be used to fulfill this requirement 3-4

Total Credits 39-41

1 Students and advisors should monitor closely the progress toward completion of requirements. Courses taken to satisfy a major program may be used to satisfy distribution requirements in only one distribution area.

2 CAS also offers courses in interdisciplinary programs that satisfy Arts & Humanities and Social Science distribution requirements in the following programs: Africana Studies, Asian Studies, Cognitive Science, Environmental Studies, Global Citizenship, Global Studies, HMS (Health, Medicine, & Society), Jewish Studies, Latin American and Latino Studies, and WGSS (Women, Gender, & Sexuality Studies).

Total required for graduation: 120 credits

FIRST-YEAR SEMINAR PROGRAM

During their first academic year, preferably in the fall, every student in the College of Arts and Sciences is required to enroll in a First-Year Seminar. College seminars provide an intimate and supportive environment that facilitates the transition to university life. Within the seminar students develop skills that serve as a framework for their future scholarly work – how to read closely, think critically, write clearly, learn cooperatively, speak persuasively, and solve problems creatively.

Courses in this program are an excellent way to explore a subject that may be new, or to enter more deeply into an area of previous interest. Whatever the topic, FYSs emphasize reading assignments, papers, and oral presentations, while others include tests, laboratory work, or fieldwork.

JUNIOR-YEAR WRITING CERTIFICATION

The faculty of the College of Arts and Sciences value writing as an essential tool for learning. Writing well is indispensable for performing responsibly in any profession and in most areas of life. Beyond the two English courses required in the first year, students are encouraged to take courses that provide continued practice in writing. In particular, each student must complete at least one "writing-intensive" course, normally during their junior year. Some major programs require the writing-intensive course be taken in the major field, while others allow it to be chosen freely from writing-intensive courses offered by any department or program. Courses that satisfy the writing-intensive requirement may also be used to fulfill major or distribution requirements. Please note: only courses designated as "WI" in the course catalog or select independent studies may be used to fulfill this requirement. Transfer credits may not be used to meet the Writing Intensive requirement.

MINOR PROGRAMS IN THE COLLEGE

Certain departments, divisions, and programs in the College afford students an opportunity to minor in an additional field of concentration other than their major field of study.

Minors require a minimum of 15 credits, but the specific content is determined by the department, division, or program offering that minor. A minor is optional, and if successfully completed, will be shown on the university transcript in the same manner as the major field. A 2.0 minimum grade-point average is required for courses in the minor. Because of this requirement, no course in the minor program may be taken with Pass/Fail grading. No more than one course may be double-counted toward a major and a minor, and no more than one course may overlap between two minors.

Minors in the College of Arts and Sciences are available for degree candidates in other colleges within the university, with approval of their college advisor.

The following are established minors in the College of Arts and Sciences. Some minor-program descriptions are collected within departmental descriptions, or located elsewhere, as indicated by parentheses. Students in the College of Arts and Sciences may also complete a minor in Business through the Business College or an Engineering minor through the College of Engineering.

- Actuarial Science (Mathematics)
- Africana Studies
- Anthropology (Sociology and Anthropology)
- Art (Art, Architecture and Design)
- Art/Architecture History (Art, Architecture and Design)
- Asian Studies
• Astronomy
• Biology (Biological Sciences)
• British Literature (English)
• Business
• Chemistry
• Chinese (Modern Languages and Literature)
• Classical Civilization (Classical Studies)
• Classics (Classical Studies)
• Cognitive Science
• Communication (Journalism and Communication)
• Computer Science
• Design
• Earth and Environmental Sciences
• Economics
• Education (Education Minor, this section)
• Engineering
• English
• Environmental Studies
• French (Modern Languages and Literature)
• German (Modern Languages and Literature)
• Global Studies
• Graphic Communication (Art and Architecture)
• Health, Medicine and Society
• History
• International Environmental Policy
• International Relations
• Japanese
• Jewish Studies
• Journalism (Journalism and Communication)
• Latin (Classical Studies) (minor offered through Classics program)
• Latin American and Latino Studies
• Mathematics, Applied (Mathematics)
• Mathematics, Pure (Mathematics)
• Military Science
• Molecular Biology (Biological Sciences)
• Museum Studies (Art and Architecture)
• Music
• Music Industry
• Philosophy
• Physics
• Political Science
• Probability and Statistics (Mathematics)
• Psychology
• Public Administration (Political Science)
• Public Relations (Journalism and Communication)
• Religion Studies
• Russian (Modern Languages and Literature)
• Science, Technology and Society
• Science Writing (Journalism and Communication)
• Social Relations (Sociology and Anthropology)
• Sociology (Sociology and Anthropology)
• Spanish (Modern Languages and Literature)
• Studio Art (Art and Architecture)
• Sustainable Development
• Theatre
• Women, Gender, and Sexuality Studies
• Writing (English)

*For minors outside of the College of Arts & Sciences, please see below.
also provides opportunities for gaining academic credit in several off-campus programs that provide practical experience in law and public affairs.

Advising is available to prospective pre-law students on a continuous basis from first-year orientation through the law school application process in the senior year. The pre-professional advisor in the Center for Career and Professional Development coordinates these pre-law counseling services.

PRE-HEALTH PROFESSIONAL PROGRAMS
Schools of medicine, dentistry, optometry, podiatry, and veterinary medicine stress the importance of a strong liberal arts education as well as prescribed studies in the sciences. Although most pre-health students will choose a major in a pure or applied science, as long as candidates have the essential courses in biology, chemistry, physics, and mathematics, they may major in any of the three undergraduate colleges.

A health careers advisory committee, which includes the pre-professional advisor and faculty members from the sciences and social sciences, provides career and academic counseling and works closely with students from first-year orientation through the entire process of applying to professional schools. Students with an interest in the health professions are urged to consult with the pre-professional advisor in the Center for Career and Professional Development as early as possible in their academic career.

COMBINED-DEGREE PROGRAM IN MEDICINE
In cooperation with Drexel University College of Medicine, Lehigh offers an accelerated program that enables selected students to earn both the baccalaureate degree (B.A.) with a major in premedical science and the M.D. degree after seven total years of study at the two institutions. In the first three academic years at Lehigh, credit hours are earned toward the 120 credits required for the baccalaureate degree. The next four years are spent in the regular program of medical education at Drexel University College of Medicine in Philadelphia. By successfully completing their first year at the medical school, students acquire the necessary additional credit hours for the Lehigh baccalaureate degree.

During their pre-professional years at Lehigh, students are expected to make satisfactory progress in academic areas as well as in the more subtle task of personal growth in those attributes ultimately needed as a physician. Drexel University College of Medicine receives student grades and monitors student progress through feedback from Lehigh. Students are expected to attain specified grade point averages and MCAT scores. Students' undergraduate credentials are processed through the Admissions Committee of Drexel University College of Medicine before a final definitive acceptance is offered. The medical college reserves the right to withdraw an offer of acceptance on the grounds of academic or personal maturation concerns.

Application for admission to this program is made through Lehigh's Office of Admissions. Application deadline is November 15.

REQUIRED SCIENCE AND MATH COURSES

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<tr>
<th>Chemistry</th>
<th>Select one of the following:</th>
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<tbody>
<tr>
<td>CHM 030 &amp; CHM 031</td>
<td>Introduction to Chemical Principles and Chemical Equilibria in Aqueous Systems</td>
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<tr>
<td>CHM 040 &amp; CHM 041</td>
<td>Honors General Chemistry I and Honors General Chemistry II</td>
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<tr>
<td>CHM 110 &amp; CHM 111</td>
<td>Organic Chemistry I and Organic Chemistry Laboratory I</td>
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<tr>
<td>CHM 112 &amp; CHM 113</td>
<td>Organic Chemistry II and Organic Chemistry Laboratory II</td>
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<td>BIOS 041 &amp; BIOS 042</td>
<td>Biology Core I: Cellular and Molecular Biology and Biology Core I: Cellular and Molecular Lab</td>
</tr>
<tr>
<td>BIOS 115 &amp; BIOS 116</td>
<td>Biology Core II: Genetics and Biology Core II: Genetics Laboratory</td>
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<td>PHY 010 &amp; PHY 012</td>
<td>General Physics I and Introductory Physics Laboratory I</td>
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<tr>
<td>PHY 011 &amp; PHY 012</td>
<td>Introductory Physics I and Introductory Physics Laboratory I</td>
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<tr>
<td>MATH 012</td>
<td>Basic Statistics</td>
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<tr>
<td>MATH 021 &amp; MATH 022</td>
<td>Calculus I and Calculus II</td>
</tr>
<tr>
<td>MATH 051 &amp; MATH 052</td>
<td>Survey of Calculus I and Survey of Calculus II</td>
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| Total Credits | 54-56 |

Required Non-Science Courses

| Total Credits | 45-50 |

Combined-Degree Program in Dentistry
In cooperation with the School of Dental Medicine at the University of Pennsylvania, Lehigh offers an accelerated program that enables selected students to earn both the baccalaureate degree (B.A.) with a major in preclinical science and the doctor of dental medicine degree (D.M.D.) after seven years of study at the two institutions. In the first three academic years at Lehigh, credit hours are earned toward the 120 credits required for the baccalaureate degree. The next four years are spent in the regular program of dental education at the Penn School of Dental Medicine in Philadelphia. By successfully completing their first year at the dental school, students acquire the necessary additional credit hours for the Lehigh baccalaureate degree.

During their first three years at Lehigh, students are expected to make satisfactory progress in prescribed academic areas as well as in the area of personal growth, developing those attributes ultimately needed to become a dentist. Penn Dental School receives student grades and monitors student progress through feedback from Lehigh. Students are expected to attain specified grade point averages and DAT scores. Students' undergraduate credentials are processed through the Admissions Committee of Penn Dental School before a final definitive acceptance is offered. The dental college reserves the right to withdraw an acceptance, or require that a student spend additional time on the undergraduate level, on the grounds of academic or personal maturation concerns.

Application for admission to this program is made through Lehigh's Office of Admissions. Application deadline is January 1.
Admissions Committee of SUNY Optometry before a final definitive acceptance is offered. The optometry college reserves the right to withdraw an offer of acceptance on the grounds of academic or personal maturation concerns.

Students may apply to this program either during their initial application or during their enrollment at Lehigh. Application for incoming students is made through Lehigh’s Office of Admissions. Application deadline is January 1.

**Required Science and Math Courses**

**Chemistry**

Select one of the following:

- CHM 030 & CHM 031: Introduction to Chemical Principles and Chemical Equilibria in Aqueous Systems
- CHM 040 & CHM 041: Honors General Chemistry I and Honors General Chemistry II
- CHM 110 & CHM 111: Organic Chemistry I and Organic Chemistry Laboratory I
- CHM 112 & CHM 113: Organic Chemistry II and Organic Chemistry Laboratory II

**Biology**

Select one of the following:

- BIOS 041 & BIOS 042: Biology Core I: Cellular and Molecular and Biology Core I: Cellular and Molecular Lab
- BIOS 115 & BIOS 116: Biology Core II: Genetics and Biology Core II: Genetics Laboratory
- BIOS 121 & BIOS 122: Biology Core III: Integrative & Comparative Biology and Biology Core III: Integrative and Comparative Lab
- BIOS 371: Elements of Biochemistry I
- BIOS 372: Elements of Biochemistry II

**Physics**

Select one of the following:

- PHY 010 & PHY 012: General Physics I and Introductory Physics Laboratory I
- PHY 011 & PHY 012: Introductory Physics I and Introductory Physics Laboratory I

Select one of the following:

- PHY 013 & PHY 022: General Physics II and Introductory Physics Laboratory II
- PHY 021 & PHY 022: Introductory Physics II and Introductory Physics Laboratory II

**Math**

Select one of the following:

- MATH 012: Basic Statistics
- MATH 021 & MATH 022: Calculus I and Calculus II
- MATH 051 & MATH 052: Survey of Calculus I and Survey of Calculus II

**Total Credits: 54-56**

**Required Non-Science Courses**

First-Year Seminar: 3-4
English Comp & Lit (I and II): 6
Humanities (two courses): 8
Social Sciences (two courses): 8
Junior Writing Intensive: 3-4
Approved Electives: 11-12

**Total Credits: 39-42**

**Combined-Degree Program in Optometry**

In cooperation with the State University of New York College of Optometry in New York City, Lehigh offers an accelerated program in which students may earn both the baccalaureate degree (B.A.) with a major in behavior neuroscience and the doctor of optometry degree (O.D.) after seven years of study at the two institutions. In the first three academic years at Lehigh, credit hours are earned toward the 120 credits required for the baccalaureate degree. The next four years are spent in the regular program of optometry education at SUNY College of Optometry. By successfully completing their first year at the optometry college, students acquire the necessary additional credit hours for the Lehigh baccalaureate degree.

SUNY College of Optometry receives student grades and monitors student progress through feedback from Lehigh. Students are expected to attain specified grade point averages and OAT scores. Students' undergraduate credentials are processed through the...
understanding of education as a central intellectual activity of our
culture and to provide self-understanding of one’s own potential as an
educator.
An undergraduate may take these courses with the approval of the
adviser and minimum GPA of 2.75. Completion of the minor does
not assure admission to one of the Teacher Education Programs to
become a certified elementary or secondary teacher.
Fifteen credit hours are required for the education minor.
Completion of the minor does not guarantee subsequent admission
into any of the College of Education degree or certification programs.

For more information about our Education Minor, visit http://
coe.lehigh.edu/academics/disciplines/teachered or contact
the Teaching, Learning and Technology Program Director at
TLTProgram@Lehigh.edu or 610-758-3230.

FIVE-YEAR BACHELOR’S PLUS MASTER’S OF EDUCATION AND SECONDARY TEACHER CERTIFICATION
The College of Education offers a five-year degree program that is
designed to allow students to earn both a bachelor’s degree and a
master’s degree in five years instead of the traditional six.
The combined degree program leads to (1) a B.A./B.S. degree in an
academic discipline from the College of Arts and Sciences, the P.C.
Rossin College of Engineering and Applied Sciences, or the College
of Business and Economics, and (2) an M.Ed. degree in elementary
education or an M.Ed. or M.A. degree in secondary education. In
addition, students also earn eligibility for an Instructional I teaching
certificate from the Pennsylvania Department of Education (PDE).
These PDE certification areas are:
  • Biology 7-12
  • Chemistry 7-12
  • Earth and Space Science K-12
  • English 7-12
  • General Science 7-12
  • Mathematics 7-12
  • Physics 7-12
  • PreK-4th grade
  • Social Studies 7-12

Freshmen, sophomores and juniors with a minimum overall GPA
of 2.75 may apply to the 5-year teacher education program. Those
accepted typically begin education courses in the second semester of
their sophomore year (junior year for those admitted later).
Criteria for admission to the program include:
  • A demonstrable commitment to learning and intellectual growth
  • An expressed interest in teaching as a career
  • Previous experience in working with young people; this can be
    gained in the summers of freshman and sophomore years.

In the fall semester of their senior year, students must complete
an application for admission to the graduate College of Education
(elementary or secondary education) in order to continue in the
program and complete the master’s degree/Instructional Level I
teacher certification eligibility portion of the program.
For more information about the 5-year Teacher Education Program,
visit http://coe.lehigh.edu/academics/disciplines/teachered or contact
the Teaching, Learning, and Technology Program Director at
TLTProgram@Lehigh.edu or 610-758-3230.