## College of Liberal Arts and Sciences

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## Departments of the College

- Air Force Aerospace Studies
- Anthropology
- Biochemistry, Biophysics, and Molecular Biology
- Chemistry
- Computer Science
- Ecology, Evolution, and Organismal Biology
- Economics
- English
- Genetics, Development, and Cellular Biology
- Geological and Atmospheric Sciences
- Greenlee School of Journalism and Communication
- History
- Mathematics
- Military Science (Army Reserve Officers' Training Corps)
- Music and Theatre
- Naval Science
- Philosophy and Religious Studies
- Physics and Astronomy
- Political Science
- Psychology
- Sociology
- Statistics
- World Languages and Cultures

The College of Liberal Arts and Sciences is the academic home, the foundation, for many essential learning disciplines. The college provides students with all the components of a modern liberal education. Students may choose to study in various fields of the physical, Biological, and social sciences; in mathematical disciplines; in methods and systems of communication; and in the arts and humanities.

## Learning and Teaching Mission

The primary mission of the college is to promote learning in all its dimensions by providing the student with ample opportunities to acquire the requisite knowledge, abilities, and skills to succeed in the world beyond the university. Throughout coursework within the major and in general education, students will develop skills in reasoning, analysis, and communication; achieve an understanding of the intellectual, historical, and artistic foundations of culture; and work to strengthen their abilities to interact with people, cultures, and the environment in an ethical and sensitive manner. To achieve these learning goals, the college asks students to acquire depth in learning within disciplines of their own choosing, and to acquire breadth through general education courses and electives.

## The Curriculum

A baccalaureate degree in liberal arts and sciences is the end result of a curriculum that connects and integrates study in a major with general education. Requirements for a degree are deliberately flexible. Students select programs of study suited to a variety of interests and goals. Students having academic interests not fully met by a departmental major may also pursue a major offered by one of the college's interdepartmental programs or may apply for an undergraduate major in interdisciplinary studies (See Index, Cross-Disciplinary Studies, Courses and Programs). The college participates in the University Honors Program; thus, students with exceptional academic promise can develop unique and challenging programs of study.

The college has four curricula: a curriculum in Liberal Arts and Sciences, leading to the bachelor of arts or the bachelor of science degree; a curriculum in music, leading to the bachelor of music degree; a curriculum in liberal studies, leading to the bachelor of liberal studies degree; and a curriculum in software engineering, leading to the bachelor of science degree.

## High School Preparation/ Admission Requirements

Students entering the college are required to present evidence of the following high school preparation:
4 years of English (Typically this preparation includes courses in British, American, and world literature in which critical reading and writing skills are emphasized and courses in speech and composition, including at least one senior-level writing course.)
3 years of social studies (Typically such preparation includes two semesters of world history, two semesters of American history, and a semester of American government. Electives can be chosen from areas such as economics, sociology, or psychology.)
2 years of a single world language (Three years or more of a single world language are strongly recommended for students who wish to continue their work in that language. A minimum of three years of a single world language is required to fulfill the world language graduation requirement in the College of Liberal Arts and Sciences.)
3 years of mathematics (Such preparation shall include two semesters of beginning algebra, two semesters of geometry, and two semesters of intermediate algebra. A fourth year of study involving analytic geometry, trigonometry, linear algebra, and/or calculus is strongly recommended for students who will major in mathematical or scientific disciplines.)
3 years of science (At least two years of such preparation shall be chosen from Biology, chemistry, and physics.)
Recommended but not required as a condition of admission to the College of Liberal Arts and Sciences is one semester of computer experience. (Such a course should stress problem-solving with computers and should not substitute for courses in mathematics. In schools where computer use is an integral part of most courses, separate instruction in computers is not necessary.)
Students who transfer from another college or university with at least 24 credits of satisfactory coursework may be exempt from most of these requirements. Students who do not meet the requirements listed here may be admitted with a limited number of deficiencies. Contact the college office for further information about resolving these deficiencies.

## Transfer Students

To graduate from the College of Liberal Arts and Sciences, a transfer student must complete the general requirements of the college as well as those of the university. Students planning to transfer to lowa State University for the purpose of enrolling in the College of Liberal Arts and Sciences are advised to contact the college office for information concerning degree program requirements. Prospective transfer students are urged to learn about the academic programs that are of interest to them well before arriving on campus so that pretransfer courses are appropriate to the planned major and transferable toward graduation from ISU. Additional information concerning transfer credit evaluation may be obtained through the Office of Admissions as well as the department in which a student is interested.
A transfer student in the College of Liberal Arts and Sciences may choose to graduate under the catalog in effect at the time of his or her graduation or under one of the two immediately preceding catalogs, provided that it covers the period of his or her enrollment either at lowa State or any other accredited school. Full requirements of the chosen catalog must be met except that adjustments will be made in instances where courses are no longer available or where programs have been changed. A transfer student is responsible for reviewing his/her transfer credit evaluation with the academic adviser during the first semester of enrollment.

## University Requirements

The university requirements for the bachelor's degree, including statements of academic standards, learning goals, the university residence requirement, the Communication proficiency requirement, U.S. diversity and international perspectives requirement, and the library requirement, appear in the Colleges and Curricula portion at the beginning of this catalog.

## Curriculum in Liberal Arts and Sciences

To obtain a bachelor's degree from the College of Liberal Arts and Sciences, curriculum in liberal arts and sciences, an undergraduate student must earn a minimum of 120 semester credits including a minimum of 32 semester credits earned in residence at lowa State University. In addition, the student must meet general education, communication proficiency, library proficiency, world language, and advanced credit requirements, as well as the requirements of a major. Courses taken on a pass/not pass basis may be counted toward the required total of 120 credits, and may be used to meet the advanced credit requirement, if appropriate, but may not be used to satisfy any other graduation requirement. No more than 9 credits of 490 (Independent Study) courses in a single discipline may be counted toward graduation.

## General Education

## Requirements and Learning Goals

The central importance of a general education is reflected in the learning goals of each of four disciplinary areas. Whereas the courses in a major are designed to develop mastery of a specific field or discipline, courses in general education are designed to establish a strong, intellectual foundation for all specializations. Students earn the minimum credits listed in each of the four general education areas in courses not required by the department of the first major listed on the degree program. Interdisciplinary courses may be used to satisfy requirements in any area for which they have been approved, but a student may not apply the same course to more than one area.

## Credit by Examination Program

Individual departments may use CLEP Subject Tests for testout of specific courses. Students in the College of Liberal Arts and Sciences may use CLEP General Test credits as free electives but not toward any of the general education area requirements.

## World Language Requirement

The faculty of the College of Liberal Arts and Sciences believes that undergraduate students should acquire elementary practical experience in a second language, should be introduced to the theoretical study of language structure, and should begin to develop an understanding of a second culture through study of that culture's language.
As a means of achieving this objective, a student must satisfy a graduation requirement equivalent to the first year of university-level study in one world language (normally, completion of a two-semester sequence in any one world language). Students who have completed three or more years of high-school world language study are deemed to have completed the LAS World Language Requirement. These students may not enroll in or receive credit for 101 or 102 in those languages; test-out credit may be obtained by passing an appropriate examination or by completing an advanced sequence (200-level or higher) in that language. 101 or 102 may not be taken on a remedial basis.
Students who have completed more than one year but less than three years of high-school world language study may not enroll in 101 in the same language. These students may enroll in either a 102 course in that language, or in the case of Spanish, SPAN 097 Accelerated Spanish Review. Before enrolling in either SPAN 097 Accelerated Spanish Review or a 102 language course, students are advised to take the on-line placement test available at www.language.iastate.edu SPAN 097 Accelerated Spanish Review is designed for students who need additional remedial work in the language at the first-year level (101-102) and are not planning to continue their language study at the second-year 201-202 level. Students who complete SPAN 097 Accelerated Spanish Review with a passing grade will have fulfilled the LAS World Language Requirement. Students who have completed SPAN 097 Accelerated Spanish Review and wish to pursue further study in Spanish at the 201-202 level may enroll in 102.
Students who have completed more than one year but less than three years of high-school world language study may satisfy the World Language Requirement by (a) passing the exam for credit at the 102 level, (b) receiving a passing grade in a 102 world language course, or (c) receiving a passing grade in a world language course at the 200-level or higher. For more information see Department of World Languages and Cultures. (Courses taught in English do not satisfy the World Language Requirement). Iowa State University accepts a record of academic performance in American Sign Language or certification of proficiency in American

Sign Language as fulfillment of entrance or graduation requirements in world language for a baccalaureate degree.
Questions about the World Language Requirement and how to meet it should be directed to the Department of World Languages and Cultures. Credits applied toward the World Language Requirement cannot be used to satisfy the general education requirements, but students who have fulfilled the World Language Requirement may apply additional courses in world languages toward the appropriate general education areas. Majors in any world language are deemed to have fulfilled the college World Language Requirement. International students for whom English is a second language may satisfy the World Language Requirement by completion of ENGL 150 Critical Thinking and Communication and ENGL 250 Written, Oral, Visual, and Electronic Composition at ISU with an average grade of C - or better. See World Languages and Cultures for additional information on international students.

## Advanced Communication Skills

The continued development of communication skills following the sophomore year is the responsibility of the student's major department. The department promotes this development by adopting measures to certify the writing proficiency of its own majors. Certification occurs upon satisfactory completion of a designated course in which writing is evaluated and is a significant component. This designated course may be be either a course required in the student's program or an advanced writing course offered by the Department of English ex:

| ENGL 302 | Business Communication | 3 |
| :--- | :--- | :--- |
| ENGL 305 | Creative Writing--Nonfiction | 3 |

ENGL 314 Technical Communication 3

## General Education Areas

The central importance of a general education is reflected in the learning goals of each of three disciplinary areas. Whereas the courses in a major are designed to develop mastery of a specific field or discipline, courses in general education are designed to establish a strong, intellectual foundation for all specializations. The general education areas with their minimum credit requirements for the College of Liberal Arts and Sciences are:

- Arts and Humanities-(Minimum 12 credits). The student should develop an understanding of human cultural heritage and history, and an appreciation of reasoning and the aesthetic value of human creativity.
- Natural Sciences and Mathematical Disciplines-(Minimum 11 credits, including 3 in the mathematical disciplines and 8 in the natural sciences). The student should experience science as a rational search for understanding the structure and behavior of the natural world, and should appreciate mathematics as a valuable tool of the sciences and as an intrinsically important way of thinking.
- Social Sciences-(Minimum 9 credits). The student should develop an appreciation of the principal methods of studying human behavior and an understanding of the structure and functioning of institutions.
Because students fulfill, in part, the learning goals of the area of their first major by taking courses in their programs of study, the minimum number of general education credits required in the area of the first major is reduced from that listed above by 3 credits. Students in Liberal Studies or Interdisciplinary Studies majors must complete the minimum requirements in all three areas. The list of majors falling within each area is available from the Office of the Dean, College of Liberal Arts and Sciences, and is posted on the web site of the College of Liberal Arts and Sciences.
Courses from the department of the first major may not be applied to general education requirements. Courses cross-listed with a course in the student's first major may be used to satisfy either major requirements or general education requirements, but may not be used more than once. Interdisciplinary courses may be used to satisfy requirements in any area for which they have been approved, but a student may not apply the same course more than once.
Lists of approved courses are available from the LAS College website.


## Advanced Credit Requirements

To obtain a baccalaureate degree from the College of Liberal Arts and Sciences, curriculum in liberal arts and sciences, a student must earn at least 45 credits at the 300 level or above taken at a four-year college. All such credits, including courses taken on a pass/not pass basis, may be used to meet this requirement.

The major must contain at least 8 credits in courses taken at lowa State University that are numbered 300 or above and in which the student's grade is C or higher. In addition, the average grade of all courses in the major (those courses listed under major on the degree audit) must be 2.0 or higher. Courses from the
department of the first major listed on the degree program may not be counted in the general education areas.

## The Major

Students must show they have achieved depth in a specialized area by completing successfully the requirements and learning goals of a major. A major is comprised of 24 to 48 credits in a specific discipline as determined by the faculty. Tracks within a major must have a common 24 credit core. Some courses outside the major discipline may also be required as supporting work for the major. (See Index for page reference to individual department and program requirements.)
The major must contain at least 8 credits in courses taken at lowa State University that are numbered 300 or above and in which the student's grade is C or higher. In addition, the average grade of all courses in the major (those courses listed under major on the degree audit) must be 2.0 or higher. Courses in the first major listed on the degree program may not be counted in the general education groups.

Courses meeting the requirement of additional majors may be counted in the general education groups. When choosing an additional major, students must confirm that the additional major is allowable (see list under "Double Majors").
The major is chosen from the following list, which also indicates the degree(s) offered in the respective majors.

## Advertising, B.A.

Anthropology, B.A., B.S.
Biochemistry, B.S.
Bioinformatics and Computational Biology, B.S.
Biological/Pre-Medical Illustration, B.A.
Biology, B.S.
Biophysics, B.S.
Chemistry, B.A., B.S.
Communication Studies, B.A.
Computer Science, B.S.
Earth Science, B.A., B.S.
Economics, B.S.
English, B.A., B.S.
Environmental Science, B.S.
Environmental Studies (may be taken as a second major with the degree to be determined by the first major)
Genetics, B.S.
Geology, B.S.
History, B.A., B.S.
Interdisciplinary Studies, B.A., B.S.
International Studies (may be taken as a second major with the degree to be determined by the first major)
Journalism and Mass Communication, B.S.
Linguistics, B.A.
Mathematics, B.S.
Meteorology, B.S.
Music, B.A., B. Mus.
Performing Arts, B.A.
Philosophy, B.A.
Physics, B.S.
Political Science, B.A.
Psychology, B.A., B.S.
Religious Studies, B.A.
Sociology, B.A., B.S.
Software Engineering, B.S.
Speech Communication, B.A.
Statistics, B.S.
Technical Communication, B.S.
Women's Studies, B.A., B.S.
World Languages and Cultures, B.A. French, German, Spanish

The major in interdisciplinary studies (B.A., B.S.) is available for undergraduate students who have unique interdisciplinary educational goals. Such a major is designed by the faculty and the student and is approved only when the educational goals cannot be met by a reasonable combination of existing majors, minors, and electives. (See Index, Interdisciplinary Studies.)
A curriculum in liberal studies leading to a bachelor of liberal studies degree (B.L.S.) is also available. (See Index, Liberal Studies.)

The LAS College offers certificate programs available for students seeking documentation of additional study in specialized academic topics. At present, certificates are available in Latin American Studies and in Community Leadership and Public Service. Information about the specific course requirements in these certificate programs may be found in their respective entries in the Courses and Programs section of this catalog.

## Double Majors

Students may elect a second major from the departments and program areas listed above, or from a major field offered for the bachelor's degree in another college of the university. Double majors between the following are not allowed: Chemistry with Biochemistry and Agricultural Biochemistry; Biology with Animal Ecology, Agricultural Biochemistry, Biochemistry, Genetics, and Microbiology.
The major departments must then approve the degree program, and if those majors involve two colleges, both deans must approve. Such programs must fulfill the general education requirements of the college of the primary major. If one major leads to the B.A. degree and the other to the B.S. degree, the degree awarded will be the one offered by the department of the primary major.
If the primary major may lead to either a B.A. or a B.S., a student may choose to receive either degree. In all cases, the student must satisfy the requirements of each major and of the degree that is chosen for the primary major. Students with a primary major in another college who wish to take a second major in the College of Liberal Arts and Sciences are not required to meet the Liberal Arts and Sciences General Education and World Language Requirements.
A student may earn two degrees in the Liberal Arts and Sciences curriculum with two appropriate majors and at least 30 additional credits. Either the B.A. or the B.S. in this curriculum may be earned with the Bachelor of Music. A major in Liberal Arts and Sciences may not be added to a Bachelor of Liberal Studies or a Bachelor of Music degree. Any degree offered by this college may be earned together with a degree with a major in any other college of the university. For the requirements for two degrees, see Index, Bachelor's Degree Requirements.

## Minor

A minor, which is optional, must consist of at least 15 credits, with at least 6 credits in courses numbered 300 and above taken at ISU with a grade of $C$ or higher. The minor must include at least 9 credits that are not used to meet any other department, college, or university requirement. (See Index, Minors.)
The following minors are offered by the college of Liberal Arts and Sciences:
Advertising
African American Studies
American Indian Studies
Anthropology
Astronomy
Biochemistry
Biological Illustration
Biology
Chemistry
Chinese Studies
Classical Studies
Communication Studies
Computer Science
Criminal Justice Studies
Economics
Emerging Global Disease
English
Entrepreneurial Studies
Environmental Studies
French

Genetics
Geology
German
Gerontology
History
International Studies
Journalism and Mass Communication
Latin
Linguistics
Mathematics
Meteorology
Military Studies (Army Reserve Officers' Training Corps)
Music
Music Technology
Performing Arts
Philosophy
Physics
Political Science
Psychology
Religious Studies
Russian Studies
Sociology
Spanish
Speech Communication

## Statistics

Sustainability (http://www.las.iastate.edu/sustainability)
Technical Communication
Technology and Social Change
U.S. Latino/a Studies

World Film Studies
Women's Studies
Courses applied toward the general education groups may be used to meet the requirements of a minor. (For restrictions, see Index, Minors.)
If a student declares a minor and completes the requirements specified by the offering department/program, the minor will be recorded on the transcript.

## Certificate Programs

The LAS College also administers certificate programs in Community Leadership and Public Service and in Latin American Studies. Students interested in pursuing these certificates are advised to consult with their academic adviser and with the relevant program that administers the certificate. Further information may also be obtained at: http://catalog.iastate.edu/interdisciplinaryprograms/certificates/

## Electives

Students will take additional courses, freely elected, sufficient to accumulate a total of 120 credits. These additional courses together with the general education courses may be used to meet the requirements of a minor or of another major, provided that they are taken on a graded basis.

## Planning the Program of Study

Careful, comprehensive planning is important for meeting graduation requirements and taking advantage of the resources offered by the university. Each student is encouraged to work with his or her academic adviser in developing a four year plan as soon as possible after declaration of the major. A degree audit listing all completed courses and those remaining to be taken for fulfillment of the degree requirements in the student's chosen major is provided to the student and the adviser each semester. The student should review the audit each semester and consult with the adviser when changes are required. Any changes to the audit must be approved by the academic adviser and by the dean's office. It is essential that the audit be reviewed and updated in a timely fashion in order to avoid delay in the student's graduation.

Students should meet proficiency requirements in English and in library. They should also make progress toward meeting the general education requirements, a large part of which should be completed by the end of the second year. The third and fourth years should emphasize completion of the major (and minor, if elected) and of general education requirements, and should give the student an opportunity to take electives.

## Academic Advising Learning Outcomes

Through their experience with academic advising, students will:
Develop an understanding of the structure, application, and goals of a liberal arts education in relation to their academic development.
Be able to formulate appropriate questions, seek information, and evaluate and apply academic advice.
Know the requirements, policies and protocol of the university, college, and department as they relate to their educational experience.
Understand how degree programs can be enhanced by study and experiences tailored to their intellectual and personal goals.
Be able to identify and utilize university resources effectively to:

- Satisfy degree requirements
- Plan programs of study, including selection of appropriate courses and registration
- Discover how interests, skills and goals connect to fields of study and careers
- Link curricular and co-curricular activities
- Research and prepare for advanced study and/or careers Share responsibility for a mentor-mentee relationship between advisee and adviser.


## The Open Option

Many students entering lowa State University are not ready to declare a major. They want time to become familiar with the academic opportunities that the university offers and to determine the best match between their academic interests and abilities. These students enter lowa State University as Open Option majors.
The Open Option experience is designed to help students explore majors and careers, become acquainted with the entire university, and make successful adjustments to the academic expectations of lowa State. Open Option students are assigned academic advisers in the Liberal Arts and Sciences Student Academic Services Office. These advisers help students with academic and career development.
During the first year, an orientation class introduces them to all of the colleges and majors on campus. A career development class in the second semester guides students in selecting a major and career that match their academic and personal goals. Open Option majors also have the opportunity to be members of a learning community with other Open Option students.
Aided by their adviser, Open Option students select courses that allow them to sample their academic interests before committing to a specific university major. Open Option students typically declare a major during their second or third semester. In addition, students who may have started in a specific field and have discovered it is not meeting their needs may transfer into Open Option for a semester or two while they decide on a new major.

## Honors Program

For information on the Honors Program in the College of Liberal Arts and Sciences, see Index, Liberal Arts and Sciences, Cross-Disciplinary Programs, Honors Program.

## Reserve Officers’ Training Corps Programs (ROTC)

The College of Liberal Arts and Sciences also offers students the opportunity to combine their academic programs with ROTC programs in the Military Science (Army), Naval Science, and Air Force Aerospace Studies).

## Teacher Licensure

Teaching licenses are issued by the lowa Board of Educational Examiners. The Recommending Officer for the ISU University Teacher Education Program submits each candidate file after that candidate is determined to be eligible for licensure. Teaching licenses are issued for a specific teaching level, e.g., K-6 or 7-12. A
subject area endorsement is listed on the candidate's license. The licensee may have multiple subject area endorsements listed.
Students in the College of Liberal Arts and Sciences who complete the approved licensure program in music education (BM degree with Vocal K-12 option or Instrumental K-12 option) may apply for a teaching license that allows them to teach music in grades K-12. Students who plan to teach in secondary schools (grades 7-12) may qualify for a license by completing an approved licensure program in one of the following LAS majors:

## Biology

Chemistry
Earth Science
English
French
German
History
Spanish (Latin \& Russian endorsements)
Mathematics
Physics
World Languages and Cultures
Students may also add these additional endorsements to their primary license:
English as a Second Language
General Science
Physical Science
Social Studies
Speech Communication
For further information, see Index, Teacher Education.

## Preprofessional Programs

Students in the College of Liberal Arts and Sciences may participate in preprofessional programs in human health-related fields, law, and theology by taking the courses required for admission to professional schools. Students may enter the college with the designation Premed, Prelaw, or Preprofessional Health Programs. Most will earn a bachelor's degree by choosing a major and meeting the requirements for the major while taking the preprofessional courses.
Others will spend one to three years as students in the college before transferring to a professional school to which they have applied and been accepted. For further information, see Index, Preprofessional Study.

## Experiential Learning (Internship/Coop Program)

The Experiential Learning (Internship/Co-op) Program assists students in gaining career-related experience while going to school. Internships/Co-ops provide students with the opportunity to gain specific skills, apply academic knowledge in practical situations, pretest their career choice, earn a salary, and establish a network of professional contacts.
Most internships are full-time and last for a semester or a summer, but a parttime experience is possible. Students wishing to receive academic credit for their internship must make arrangements with relevant faculty in advance of their internship experience. In contrast, co-op students work full-time on an extended basis (work two semesters) or on an alternating basis (work, school, work, etc.) during any semester (fall, spring, summer).
It may take students participating in the Experiential Learning (Internship/Co-op) Program an additional semester or more to complete their academic curriculum requirements. For additional information, contact Liberal Arts and Sciences Career Services.

## Curriculum for Bachelor of Music

The Department of Music offers a Bachelor of Music degree (B.Mus.) as well as a Bachelor of Arts degree in music. For information about both degrees, see Music, Courses and Programs.
In order to receive teacher certification in music, students must earn the bachelor of music degree.
Candidates for the bachelor of music will complete the following requirements.
Credits:
38.5-46.5 General education

47 Music core
31-52.5 Music option
(Students must select one of the following options: music education [vocal or instrumental], performance [voice, piano, organ, string instruments, wind or percussion instrument], or composition.)

## Curriculum for Bachelor of Liberal Studies

The LAS College administers a bachelors degree program in Liberal Studies. This degree, the bachelor of liberal studies (B.L.S.), was established by the three lowa Regent universities to meet the needs of lowans who want to earn a college degree but whose circumstances present obstacles to completing a traditional oncampus degree program. The B.L.S. is a general studies degree in the liberal arts. There is no traditional major. Instead, students take coursework in three areas of distribution. These areas may be focused in a single discipline or diversified over several disciplines. With the assistance of a B.L.S. adviser, students can structure a program that meets their individual educational, vocational or personal goals.
For specific degree requirements, see Liberal Studies .

## Curriculum for Software Engineering

A bachelor of science degree in software engineering is jointly administered by the Department of Electrical and Computer Engineering (College of Engineering) and the Department of Computer Science (College of Liberal Arts and Sciences). The program is aimed at creating high-quality software in a systematic, controlled, and efficient manner. The specific objective of the program is to educate students on principles, processes, techniques, and tools for producing, analyzing, specifying, designing and evolving software. A broader objective is to cultivate among students intellectual curiosity, problem solving skills, good learning habits, effective communication skills, leadership, and teamwork.
This interdepartmental program enables students to take a range of Software Engineering courses, as well as elective courses from both Computer Science and Computer Engineering as part of their degree program.
For specific degree requirements, see Software Engineering, Courses and Programs.

