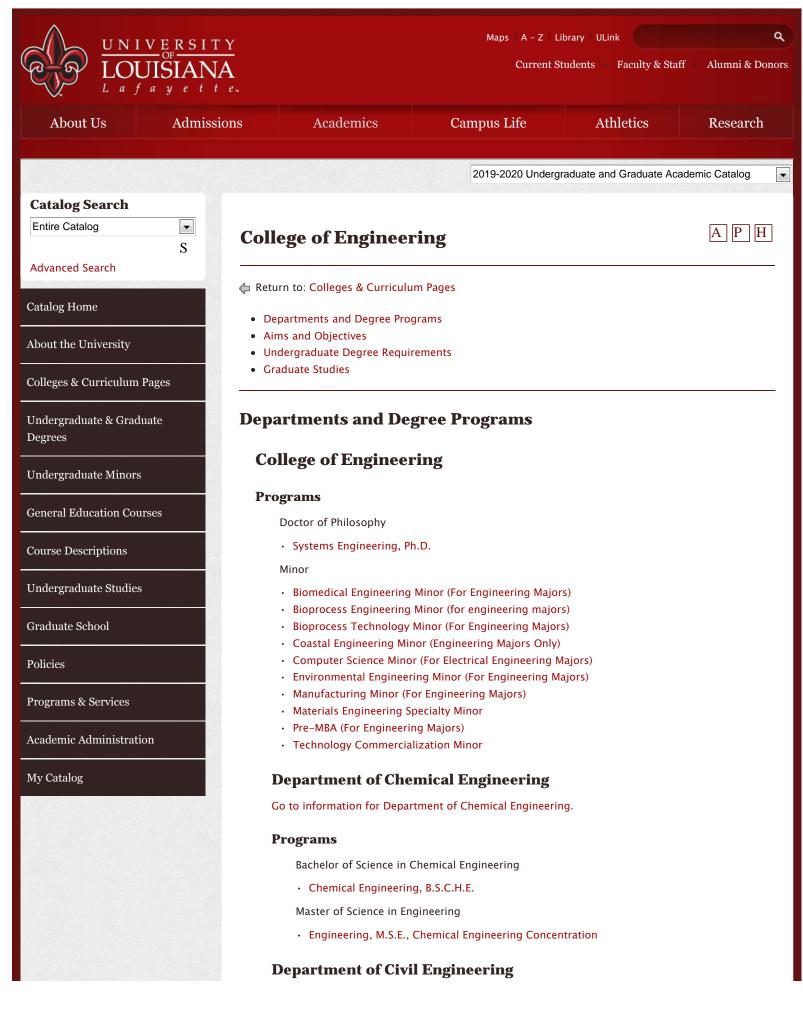
College of Engineering - University of Louisiana Lafayette - Acalog ACMSTM



Go to information for Department of Civil Engineering.

Programs

Bachelor of Science in Civil Engineering

- Civil Engineering, B.S.C.I.E.
- Master of Science in Engineering
- Engineering, M.S.E., Civil Engineering Concentration

William Hansen Hall Department of Electrical and Computer Engineering

Go to information for William Hansen Hall Department of Electrical and Computer Engineering.

Programs

Bachelor of Science in Electrical Engineering

• Electrical Engineering, B.S.E.E.

Master of Science in Engineering

• Engineering, M.S.E., Electrical Engineering Concentration

Master of Science Computer Engineering

Computer Engineering, M.S.C.E.

Doctor of Philosophy

• Computer Engineering, Ph.D.

Department of Industrial Technology

Go to information for Department of Industrial Technology.

Programs

Bachelor of Science in Industrial Technology

• Industrial Technology, B.S.I.T.

Master of Science

• Systems Technology, M.S.

Department of Mechanical Engineering

Go to information for Department of Mechanical Engineering.

Programs

Bachelor of Science in Mechanical Engineering

• Mechanical Engineering, B.S.M.E.

Master of Science in Engineering

• Engineering, M.S.E., Mechanical Engineering Concentration

Department of Petroleum Engineering

Go to information for Department of Petroleum Engineering.

Programs

Bachelor of Science in Petroleum Engineering

• Petroleum Engineering, B.S.P.E.

Master of Science in Engineering

• Engineering, M.S.E., Petroleum Engineering Concentration

Aims and Objectives

The College of Engineering is committed to excellence in education and maintains national accreditation in all of its undergraduate programs. These programs include Chemical Engineering, Civil Engineering, Electrical Engineering, Mechanical Engineering, and Petroleum Engineering, as well as the allied field of Industrial Technology. With a view to integrating its role with the educational mission and the statement of purpose of the University, the College directs its activities towards economic development by integrating research and educational activities with industrial collaboration. At the same time, it acts as a technical resource for the local industrial and business communities by providing technology transfer and technical assistance to small and medium-sized companies. Engineering graduates of the College consistently score well on the Fundamentals of Engineering (F.E.) Exam, and graduates of the College find employment locally, nationally, and internationally upon graduation. The Engineering and Industrial Technology curricula emphasize intensive problem solving, "hands-on" laboratory experience, and enhanced management and business knowledge. The basic natural sciences and mathematics together with the humanities and social sciences provide students with a strong education for highly successful entry into the engineering or industrial professions or for further educational studies leading to advanced degrees.

Undergraduate Degree Requirements

Areas of Specialization

Chemical Engineering

Chemical engineering is concerned with the development and application of manufacturing processes wherein materials undergo a change in composition, energy content, or state of aggregation. The chemical engineering curriculum prepares graduates to meet the challenges of our society. Included is a broad base of engineering and basic sciences. To prepare students for these activities, the curriculum focuses on chemistry, physics and mathematics (including the use of computers), with economics as a background. The department offers elective courses in the specialty areas of materials and bioprocessing. The chemical engineer applies knowledge of new products or procedures gained in the laboratory in basic and applied research to large-scale industrial processes. The chemical engineering curriculum provides a broad background which offers employment in a variety of manufacturing areas. Chemical engineering graduates are found in industries such as oil and gas, refining, petrochemicals, pulp and paper, textiles, materials, environmental, energy conversion, corrosion, medical, bioprocessing, etc.

Civil Engineering

The civil engineer plans, designs, constructs, and operates those physical works and facilities essential to modern life. These include highways and streets connecting cities and neighborhoods, airports for jet planes, pipelines to transport oil and gas, bridges to span rivers and harbors, dams and levees to control floods and conserve water supplies, irrigation works to improve farms, filtration plants and distribution systems for municipal and industrial water supplies, sewage treatment and disposal facilities to maintain health, and a wide variety of concrete, steel, and wooden structures to provide a suitable environment for everyday activities. The civil engineer may become a consulting engineer in private practice, accept employment in industries such as in manufacturing or petroleum, enter the construction field, work with a municipal, state, or federal agency, or engage in teaching and research. This diverse set of activities requires that the student receive a broad basic education in the mathematical, physical, and engineering sciences followed by an intensive application of these fundamentals to the complex problems of man in the land-air-water environment.

Electrical Engineering

The Electrical Engineering curriculum is designed to prepare students for a career in the broad field of electrical engineering. The electrical engineering program builds from a strong foundation of mathematics, physics, and the engineering sciences into a solid core of electrical engineering subjects

that include digital logic, circuits, computers, communications, electronics, and electromagnetics. Graduates of the Electrical Engineering program are well prepared for immediate industrial employment or, if they so choose, to advance their studies in graduate school.

Students of Electrical Engineering are introduced to design very early on. Beginning in the freshman year and continuing through the sophomore year students learn top down design in their computer engineering courses; later, as their engineering reasoning matures, hardware problems of increasing complexity involving digital logic, electrical and electronic circuits, microprocessors, and controls are introduced in their electrical engineering courses. All major course sequences within the Electrical Engineering department include instruction in industry standard CAD and simulation software, and are accompanied by one or more laboratories that serve for instruction and the evaluation of designs. The design experience for Electrical Engineering majors culminates in their senior year with a two-semester course sequence. In these courses students divide into groups of two or three and work with a lead professor on a year long project. Each design team must fully document their project and present their final results orally to a panel of Electrical Engineering department faculty members. These defenses are open to the public and are normally well attended by students and faculty alike. The Electrical Engineering program offers concentrations in Computer Engineering and Communications Engineering.

Computer Engineering Concentration

The Communications Engineering concentration is designed to provide professionals who are trained in the field of communications engineering including wireless, optical fiber, satellite, and terrestrial microwave media. They will have exposure to local and long-distance communication networks, the Internet, landline and mobile telephony, etc. In addition to basic principles of modulation, coding, transmission, and switching technologies, they will also have opportunities for additional course work in the economics, finance, management, and regulatory fields. Graduates of the Communications Engineering concentration are well prepared for entry-level positions in the telecommunications industry. Job opportunities in this field fall into four broad areas: (1) providing services (e.g., common carriers), (2) design, manufacture and marketing of products and systems, (3) providing technical expertise for user companies and (4) Policy and regulatory issues.

Communications Engineering Concentration

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Industrial Technology

The Industrial Technology Department offers programs leading to the Bachelor of Science in Industrial Technology Degree. The Bachelor of Science in Industrial Technology Degree program is designed to prepare management oriented technical professionals for employment in industry, business, government, and education. Graduates of this program are prepared to seek technical and managerial careers in a variety of fields such as Computer Integrated Manufacturing, Mechanical and Fluid Power, Electronics and Computers, Information and Imaging Technology, Construction, and Safety. They also are well prepared to keep up with technology and management issues through continuing education and graduate studies.

Mechanical Engineering

The mechanical engineer is primarily a designer, builder, and tester of equipment used in nearly every facet of industry. The training and technical background of a graduate of this program is applicable to the design, manufacturing, and power industries as well as production, sales management, and research. Because the need for mechanical engineers is almost universal in every industry, graduates are able to choose from a wide variety of fields of specialization as well as geographical location of employment. In recent years, the entire field of design and manufacturing has been revolutionized through the use of the digital computer. The mechanical engineer is at the forefront of the development and use of computer

aided design and manufacturing (CAD/CAM) systems and robotic devices. From rockets, robots, nuclear engines, steam and nuclear power plants, and air conditioning and refrigeration systems, to oil platforms, automobiles, trucks, farm equipment, computers and spacecraft, the mechanical engineer is a key player in the design and development of these devices and systems. Truly, mechanical engineering is a major and integral part of today's "hi-tech" revolution. This program prepares students to meet the challenges of a global economy in an increasingly complex and competitive workplace, and to function as team members of an engineering group capable of designing and developing large multidiscipline projects. Effective oral and written communications are emphasized, with emphasis on systems and project engineering.

Petroleum Engineering

Petroleum Engineering is a unique profession. This branch of engineering is not only concerned with the design and use of wells and well systems for producing oil, gas and other natural resources from the earth, but also for conveying fluids into, out of, or through the earth's subsurface for scientific, industrial, and other purposes. The role of the Petroleum Engineer is to manage technology and information in global oil and gas operations. UL Lafayette's Petroleum Engineering students acquire competency in the following areas:

- 1. Design and analysis of well systems and procedures for drilling and completing wells;
- 2. Characterization and evaluation of subsurface geological formations and their resources using geoscientific and engineering methods;
- 3. Design and analysis of systems for producing, injecting, and handling fluids;
- 4. Application of reservoir engineering principles and practices for optimizing resource development and management; and
- 5. Use of project economics and resource valuation methods for design and decision making under risky and uncertain conditions.

In addition, our Petroleum Engineering graduates must demonstrate a working knowledge of mathematics through differential equations, geoscience, fluid flow, engineering mechanics, thermodynamics, economics, and probability and statistics. The Petroleum Engineer is a vital part of our nation's effort to achieve a proper balance with energy needs, the economy, and environmental concerns. The mission of the Petroleum Engineering Program is to educate a diverse population of students to become petroleum engineers, to perform applied research that benefits petroleum exploration and production, and to provide service to the industry and public. The mechanism for achieving this mission is through a strong foundation to prepare students for versatile international careers, continued education, public service, and lifelong learning. The program emphasizes applied and multi-disciplinary teamwork in instruction and in research. The vision of the Petroleum Engineering Program is to provide a curriculum which best prepares the students for immediate work application in all areas of petroleum engineering. This will be accomplished through a balanced core and program specific curricula, emphasizing current technology, multi-disciplinary experience, and extensive integration of industry. The objectives of the Petroleum Engineering Program are to provide its students with: 1) broad education; 2) strong foundation in engineering principles and practices; 3) applied problem solving skills; 4) understanding of ethical, social, health, safety, and environmental issues and professional responsibilities, and 5) multi-disciplinary team skills. The constituents of the Petroleum Engineering Program are: a) students; b) faculty; c) industry; d) Advisory Council; e) alumni; f) professional organizations; g) government agencies; h) community. The Department of Petroleum Engineering at UL Lafayette offers a curriculum leading to a Bachelor of Science Degree. The program is accredited nationally by the Engineering Accreditation Commission of ABET, http://www.abet.org. UL Lafayette's Department of Petroleum Engineering has long shared a unique partnership with the petroleum industry. Situated in the heart of Acadiana, UL Lafayette has fostered a relationship with oil and gas operators, a cooperation that has benefitted both Louisiana's petroleum industry, the University, and the area's economy. UL Lafayette resources and expertise help coordinate training programs for oil and gas companies and personnel through continuing education courses. UL Lafayette prides itself on finding solutions to complex engineering problems through classroom projects and research endeavors. Petroleum Engineering Graduates of UL Lafayette are some of the best in the industry and alumni are highly sought after by major production companies, service industry, as well as smaller, independently owned companies.

Procedures

Admissions Requirements

The University regulations on admissions apply to all entering students. Admission to the University does

not constitute or guarantee acceptance into the College of Engineering or into any particular department within the College. In any area where enrollment may exceed the facilities of the department, it may be necessary to limit the enrollment and the size of classes in that department. In such cases, the department establishes supplemental criteria for admission with the approval of the University administration. Students applying to transfer to a department in the College of Engineering from other departments within the University or from another university must satisfy the departmental admission criteria and the minimum continuing requirements as listed in this section and must receive permission from the Department Head and the Dean of Engineering.

Career Guidance - High School

The various fields of engineering all depend heavily on knowledge of mathematics and physical sciences. Students are urged to take as many mathematics and science courses in high school as possible. A thorough knowledge of English is important to succeed in any profession. It is recommended that students planning to study engineering complete the following high school courses: Mathematics: Four years (including algebra, geometry and trigonometry); Science: Three to four years (including chemistry and physics); English: Four years.

Placement Policies

Every effort is made to place an entering student in the appropriate courses, depending on the student's achievement and ability, to allow the maximum opportunity for success in engineering or technology. ACT scores and, in some cases, placement examinations are used for initial placement in mathematics, chemistry, physics and English. First-time freshmen who have special competence may take advanced placement examinations and earn placement credits in several academic areas. Qualified students are encouraged to participate in the University Honors Program.

Current University placement policies are found at: https://orienation.louisiana.edu/resource-center/placement-testing

Transfer Credit

The Admissions Office determines which transfer courses are acceptable to the University; then the appropriate Department Head with the approval of the Dean determines which of these courses are acceptable towards a degree in the College of Engineering. Transfer courses are evaluated on the same basis as courses taken in residence. Courses taken prior to attending UL Lafayette at regionally accredited institutions of higher learning will be accepted toward a degree at the level in which they were completed if they are comparable in time and content with the courses in the student's curriculum. Generally, technical courses leading to a two-year associate degree or to a four-year technology degree are accepted only by the Department of Industrial Technology in the College of Engineering. Engineering courses at or above the 300 level will be accepted toward a degree only if they are taken in an engineering program accredited by the Engineering Accreditation Commission of ABET, http://www.abet.org, or at an institution with a formal articulation agreement with UL Lafayette which governs the transfer of those credits. Engineering Technology coursework is not equivalent to Engineering coursework.

Once a student is admitted to the College of Engineering, no further transfer credit will be accepted toward a degree unless written permission to take specific courses is obtained from the student's department head and dean prior to enrolling in courses off campus. Courses in which the student makes less than a "C" grade may not be acceptable but will be evaluated on the same basis as for resident students. Any coursework that resulted in a grade of "D" or less while in residence, and needs to be repeated, must be repeated at UL Lafayette.

Distance Learning Courses: No engineering, mathematics, or science courses taken, outside the University of Louisiana at Lafayette, by distance learning or other non-traditional means are accepted towards a degree once admitted to the College of Engineering. Up to twelve hours of other distance learning courses taken through an accredited college may be accepted if they are recommended by the Department Head concerned and approved by the Dean of Engineering in writing.

<u>Major GPA</u>

Engineering major GPA is a cumulative average on all courses attempted in the major department and engineering courses, at all colleges and universities, that apply to the major degree.

Minimum Continuing Requirements

All University regulations on academic status apply to all students in the College of Engineering.

Grades and Grade Point Averages: The College of Engineering requires a "C" or higher in all major department and engineering courses that apply to the degree. A degree program may have other vital courses for which a minimum grade of "C" must be achieved. In addition, where these courses are prerequisite to other courses, the student will not be permitted to register in the next course until a grade of "C" or higher is attained.

Students who fail to maintain any of the following minimum continuing requirements will be dismissed from the College of Engineering:

- 1. At least a 2.00 adjusted cumulative average on all work pursued at all colleges and universities.
- 2. At least a 2.0 cumulative average (major GPA) on 24 or more semester hours attempted in the major department and engineering courses that apply to the major degree.

Students dismissed from a major in the College of Engineering for cause cannot be re-admitted into the College in the same major, but they may be re-admitted into another major in the College of Engineering by presenting evidence of having improved their background for the new major including completing 30 semester hours of academic work with at least a 2.0 cumulative grade point average for the new major. A student dismissed from the College of Engineering twice will not be readmitted to the College of Engineering.

Courses in the College of Engineering in which a student has earned a grade higher than a "C" may be repeated only with permission of the Dean of Engineering. A student who is ineligible for admission to the College, or who has been dismissed from the College, may schedule courses in the College only with permission of the Dean of Engineering.

Electives: Electives must be approved by the student's department head. Lists of University courses which qualify in various elective categories are available in each departmental office and posted on the College of Engineering web page. Courses which are prerequisite to, or which contain subject material on a more elementary level than the basic courses required in the curriculum, cannot be applied toward a degree in the College of Engineering.

Course Sequence: Students are cautioned to schedule courses in the order listed in their curriculum and to pay careful attention to prerequisites required. Some courses are offered only once each year. Dropping a required course, or failing to complete a prerequisite course, may delay a student's graduation. All courses listed in the freshman year of the major curriculum must be successfully completed before a student will be permitted to register for any junior year course in the major curriculum. All courses listed in the sophomore year of the major curriculum must be successfully completed before a student will be permitted to register for any senior year course in the major curriculum. All courses listed in the sophomore year of the major curriculum must be successfully completed before a student will be permitted to register for any senior year course in the major curriculum. A student must be in the Upper Division in order to enroll in any 400 level course.

Auditors: Students may audit courses in the College of Engineering only with permission of the Dean of Engineering.

Specific Degree Requirements of the College of Engineering

It is the student's responsibility to qualify for the bachelor's degree by meeting the College of Engineering specific degree requirements.

To be eligible for a Bachelor of Science Degree in the College of Engineering, a student must:

- 1. Earn at least a 2.0 adjusted cumulative average on all hours attempted at all colleges and universities.
- 2. Earn at least a 2.0 cumulative average (major GPA) on all hours attempted, at all colleges and universities, in the major department and engineering courses that apply to the major degree. A degree program may require a major GPA higher than 2.0, which is the college minimum.
- 3. Satisfy all quantitative and qualitative requirements of the degree program.
- 4. Be registered in the major department and must earn in residence a minimum of 24 semester hours in courses in the College of Engineering of which 15 semester hours must be senior level courses in the major.

Programs and Facilities

Accreditation: In addition to the University's regional accreditation, the engineering baccalaureate programs are accredited by the Engineering Accreditation Commission of ABET, http://www.abet.org. The baccalaureate program in Industrial Technology is accredited by the Association of Technology, Management, and Applied Engineering (ATMAE), www.atmae.org.

Professional Examinations: The examination in Fundamentals in Engineering (F.E.), leading to certification as an Engineering Intern (E.I.), is offered on campus twice each school year to engineering seniors and graduates. Successful completion of this examination, while not a requirement for graduation, is required in Louisiana and most other states for professional registration in engineering. Engineering students are urged to take this examination prior to graduation.

Student Engineering Societies

The following engineering societies are maintained by students of the College:

Engineering: Tau Beta Pi National Engineering Honor Society Louisiana Engineering Society National Society of Black Engineers Society of Women Engineers

Chemical Engineering: Omega Chi Epsilon Honor Society American Institute of Chemical Engineers National Association of Corrosion Engineers

Civil Engineering: Chi Epsilon Honor Society American Society of Civil Engineers American Concrete Institute Institution of Transportation Engineers

Electrical Engineering: Eta Kappa Nu Honor Society Institute of Electrical and Electronic Engineers

Industrial Technology: Association of Technology, Management, and Applied Engineering American Society of Safety Engineers National Association of Home Builders

Mechanical Engineering: Pi Tau Sigma Honor Society American Society of Mechanical Engineers Society of Automotive Engineers International

Petroleum Engineering: Pi Epsilon Tau Honor Society Society of Petroleum Engineers American Association of Drilling Engineers

Specialty Minors

The College of Engineering offers Specialty Minors that allow undergraduate College of Engineering majors to acquire 18 extra hours of specialized expertise while completing their undergraduate program. There are six Specialty Minors available to engineering majors. These are: bioprocess engineering, environmental engineering, materials engineering, technology commercialization, coastal engineering, and manufacturing. There are three Specialty minors available to ITEC majors. These are: bioprocess technology, technology commercialization, and manufacturing. Up to six hours may be double counted toward both the Specialty Minor and the student's major, depending on the major and minor selected. A computer science minor is only available to the Electrical and Computer Engineering major. A pre–MBA Specialty Minor is available for all majors in the College of Engineering.

Leadership Development Programs

The College of Engineering is very intentional about developing the leadership skills of it students. In addition to the leadership opportunities available for officers in the various student organizations listed above, the following leadership development programs are available.

Engineering Ambassadors

Engineering Ambassadors is a service-based organization sponsored by the College of Engineering that

trains highly motivated engineering students to educate the public about the University, the College of Engineering, and the importance of engineering and technology in meeting the ever-changing needs of the modern world. Engineering Ambassadors are carefully selected through an audition process and are trained to make presentations at high schools and to participate in recruitment and enhancement initiatives at both the College and University levels. Participation in Engineering Ambassadors provides students with the tools and training to become confident speakers, better leaders, and to present their ideas clearly and professionally.

Designing Leaders

Designing Leaders is a formal leadership training program designed to train future engineering leaders in the specific leadership skills they will need to rapidly advance their career in the business world. Participation in this innovative and challenging program is determined through an application and selection process. Participants take part in discussions, presentations, and off campus visits which provide a solid foundation for honing leadership skills. The sessions include presentations and open discussions with industry and government experts regarding a wide variety of skills commonly associated with being a successful leader. Topics covered include: defining leadership and learning to lead, communication skills, business procedures, professional development, overview of the political and legal systems, social, cultural, and ecological awareness, the history of technology and its impact on society, and serving as an ambassador for the engineering profession and the university.

Undergraduate Research Apprentice Program

The Undergraduate Research Apprentice Program is a competitive scholarship program for in-coming freshmen, in which eligible students are employed 10 hours/week performing undergraduate research. Students are paired with caring faculty mentors, who tutor the students and involve them in their research program. Participation in the Undergraduate Research Apprentice Program can be renewed from year-to-year as long as scholarship qualification criteria are met.

Scholarships

In addition to the financial aid mentioned elsewhere in this catalog, departmental scholarships are available. Department Heads should be contacted for information regarding this funding.

Engineering Professional Standards

Students in the College of Engineering are preparing to enter a profession which demands high ethical standards and practices of its members. The faculty and students of the College of Engineering are required to abide by the "Code of Ethics" of the Louisiana Engineering Society which contains the following statements: "The engineer, to uphold and advance the honor and dignity of the engineering profession and in keeping with high standards of ethical conduct will be honest will be guided by the highest standards of integrity...will not compete unfairly with another engineer will give credit for engineering work to those to whom credit is due." Honesty and high ethical standards are demanded of students who are enrolled in the College of Engineering, and it is the student's right and responsibility to discourage unethical conduct. Unethical acts may result in penalties and even dismissal from the University.

Graduate Studies

The College of Engineering offers Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) degrees with concentrations available in Chemical, Civil, Electrical, Mechanical, and Petroleum Engineering. The Master of Science Degree and the Doctor of Philosophy Degree are offered in Computer Engineering. Information on these programs is presented in the University's Graduate Catalog.

A Return to: Colleges & Curriculum Pages

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