

# The College of Science and Technology

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The College of Science and Technology is composed of the Department of the Departments of Biological Science, Chemistry and Physics, Computer Science and Industrial Technology, and Mathematics.

## PURPOSE

The College of Science and Technology offers a variety of courses and curricula designed to provide students with an in depth knowledge of modern topics in the sciences, mathematics, and technology. In addition, we aim to develop our students' intellectual and creative abilities, that are necessary for success in the scientific and technological disciplines, by offering challenging out of classroom experiences, such as supervised research. Successful graduates can expect to be competitive nationally for admission to graduate or professional programs, and will also be competitive for employment in the scientific and technical disciplines.

## GRADUATION REQUIREMENTS

In order to obtain a baccalaureate degree in the College of Science and Technology a student must successfully complete three sets of academic requirements: University requirements, College of Science and Technology requirements, and departmental requirements.

**University Requirements:** The University requirements are listed elsewhere in the General Catalogue.

**College of Science and Technology Requirements in Curricula offered in the following departments:** Biological Science, Chemistry and Physics, Computer Science and Industrial Technology, and Mathematics.

## ASSOCIATE DEGREE

The College Requirements are:

1. A minimum of sixty-one (61) semester hours
2. Completion of 15 semester hours of General Education requirements to include:
  - A. Mathematics 155 or 161 and 162 or 241 ..... 6 hours
  - B. English Composition ..... 6 hours
  - C. Social/Behavioral Sciences ..... 3 hours

## BACCALAUREATE DEGREE

The College Requirements are:

1. A minimum of one hundred twenty (120) semester hours
  2. Completion of the following General Education requirements:
    - A. English Composition ..... 6 hours
    - B. Mathematics (must be at a level no less than Mathematics 155) ..... 6 hours
    - C. Science<sup>1</sup> (Eight hours must be in a two-semester sequence)
      - (1) Biological ..... 4-8 hours
      - (2) Physical ..... 4-8 hours
      - (3) Biological or Physical ..... 3 hours
    - D. Humanities<sup>2</sup>:
      - (1) English Literature ..... 3 hours
      - (2) History ..... 3 hours
      - (3) Foreign Language, Communication, or Philosophy ..... 3 hours
    - E. Fine Arts ..... 3 hours
    - F. Social Sciences (must be selected from economics, geography, anthropology, psychology, sociology, or political science)<sup>3</sup> ..... 6 hours
    - G. Computer Literacy ..... 0-3 hours
- Total ..... 41-52 hours

<sup>1</sup> Earth Science 101/103, 102/104 and Physical Science 101/102 may not be used to fulfill this requirement.

<sup>2</sup> Must include at least (3) semester hours at the Sophomore-level or above.

<sup>3</sup> Except for Industrial Technology.

#### DEPARTMENTAL/PROGRAM REQUIREMENTS:

1. Fulfillment of the requirements specified by the department offering the program of study in the student's major. These departmental requirements, including a curriculum outline, are located elsewhere in this section (chapter) of the General Catalogue.
2. Courses listed in each curriculum which will be used in calculating the grade point average in the major are identified by a "+". The following departments require that a grade of "C" be made in each of these courses: Biological Sciences, Computer Science and Mathematics.
3. All departments require that a cumulative or degree grade point average of 2.0 or higher be earned in the major.

#### DEGREES AWARDED

The degree of Bachelor of Science is awarded upon successful completion of any one of the following four-year curricula: Biological Sciences (Three areas of Concentration), Horticulture, Chemistry (Four areas of Concentration), Physics, Computer Science (Two areas of Concentration), Industrial Technology (Four areas of Concentration), and Mathematics.

The degree of Associate of Applied Science is awarded upon the successful completion of the two-year program in Industrial technology (Four areas of Concentration).

#### HONORS DIPLOMA IN THE DISCIPLINE

The college also offers upper-division honors curricula allowing students to earn an honors diploma in a certain discipline at graduation. For information about requirements and honors courses in your major, please contact the department in which you are majoring.

#### THE INSTITUTE OF BIODIVERSITY AND INTERDISCIPLINARY STUDIES

The Institute of Biodiversity and Interdisciplinary Studies (IBIS) was established in 2003 by the Louisiana Board of Regents and is administered through the College of Science and Technology. IBIS has a strong research focus; however, the Institute is unique in the sense that it is committed to the concept of significant interdisciplinary collaboration and the incorporation of educational and outreach components in all of its major research projects. Strong and continual links are maintained between IBIS and several colleges, departments and centers at Southeastern, including the Turtle Cove Environmental Research Station, the Center for Southeastern Louisiana Studies, the College of Education and Human Development, the College of Business, and the College of Arts, Humanities, and Social Sciences.

The primary mission of IBIS is: 1) to increase our basic understanding of the biological diversity of the ecosystems that comprise the Gulf Coast, in general and the Lake Pontchartrain drainage basin, in particular; 2) to train a new generation of young scientists who will continue to address the significant environmental problems that confront society and teachers who will disseminate to their students knowledge about sensitive ecosystems and the factors that disrupt them; 3) to foster interdisciplinary activities including research, formal education and outreach components that will provide opportunities for the participants to address environmental and biodiversity issues in a more comprehensive and inclusive manner; and 4) to educate the Louisiana public about the relationship between human activities and the health of the Lake Pontchartrain basin.

#### INTERDISCIPLINARY ENVIRONMENTAL STUDIES PROGRAM

#### A MINOR AVAILABLE THROUGH THE INSTITUTE OF BIODIVERSITY & INTERDISCIPLINARY STUDIES\*

#### PROGRAM DESCRIPTION

The minor in Environmental Studies at Southeastern focuses on a new and innovative interdisciplinary approach to the education of its students. A true understanding of complex environmental issues, such as global climate change, pollution, biodiversity, and the loss of coastal wetlands requires a multi-disciplinary approach. The wide array of natural, socio-economic, and business related sciences offered at the University all play an integral role in the analysis and understanding of the causes, impacts and solutions to environmental problems that are currently of international concern. In order to ensure a multi-disciplinary approach, this program is housed within the Institute for Biodiversity and Interdisciplinary Studies (IBIS). Such a location enables students to access a multitude of courses, faculty, programs and facilities that transverse individual disciplines. Students will also be able to obtain the breadth and depth of knowledge that is needed to satisfy their own specific focus within the field of Environmental Studies.

#### PROGRAM REQUIREMENTS

The minor in Environmental Studies is available to any student enrolled at Southeastern. Individuals participating in the minor are required to take 18 hours of courses that are offered through the program, of which 9 hours are "core" courses and must be taken. The remaining 9 hours are considered to be electives and may be chosen from a wide variety of courses that represent a diverse field of disciplines. Consequently, students may customize their studies to accommodate their specific interests. Individuals interested in pursuing the minor in Environmental Studies should discuss the program with their department head. Students should pay particular attention to pre-requisites that are associated with the three core courses of the program. Examples of specific areas of concentration in Environmental Studies include the following topics:

#### *Natural Science Applications*

Diversity of life/conservation biology

Chemical basis of life  
Population dynamics  
Theory of measurement  
Environmental issues in marine science

#### *Socio-Economic Applications*

Environmental history and ethics  
Tools for environmental management  
Environmental law, economics, and policy  
Environmental impact assessment  
Land use policy and planning

#### CORE COURSES FOR THE MINOR (9 hours required)

GBIO 281 Environmental Awareness  
SOC 360 Environmental Sociology  
ECON 328 Environmental & Resource Economics

#### APPROVED ELECTIVES (9 hours required)

OSH 251 Environmental Health/Safety  
GEOG 322 Geography of Louisiana  
GBIO 395 General Ecology  
GBIO 406 Wetlands Ecology  
SOC 401 Population  
GEOG 401 Historical Geography of the U.S.  
GEOG 410 Cultural Geography  
MIC 422 Microbiology of Water/Wastewater  
GBIO 439 Fresh Water and Estuarine Biology  
POLI 446 Politics and the Environment  
GBIO 481 Biogeography  
GBIO 442/542 Marine Biology

**\*Administered through the College of Science & Technology**

### **PRE-PROFESSIONAL**

#### **PRE-AGRICULTURE** Department of Biological Sciences

Students who wish to complete a B.S. degree in agriculture or agri-business should plan to transfer after one or possibly two years at Southeastern. Students who earn a B.S. degree at Southeastern, in such studies as biology or chemistry, may apply for admission to graduate programs in agriculture. Consult advisor for specific course recommendations.

#### **PRE-DENTISTRY** Department of Biological Sciences or Department of Chemistry and Physics

Students should plan to spend at least three years in pre-professional work or complete a B.S. degree in biology or chemistry. A typical freshman program includes Chemistry 121/123; GBIO 151/BIOL 152; GBIO 153/BIOL 154; Mathematics 161/162 or 165/200; English 101 and 102. Consult advisor for further recommendations.

NOTE: The Dental Admission Test must be taken prior to applying for admission to dental school, preferably during the first semester of the junior year.

#### **PRE-ENGINEERING** Department of Chemistry and Physics

Students should plan to transfer after two years at Southeastern. Required courses include, but are not limited to, Chemistry 121/122, English 101/102, General Biology 151, Mathematics 200/201/350; and Physics 221/222 (many curricula require laboratories as well). Students should be aware that they must meet the transfer admissions requirements of the school of engineering at which they plan to complete their Bachelor of Science degree. Consult pre-engineering advisor, since specific course requirements vary among engineering fields and schools of engineering. Students must be Physics majors. A dual-degree program (B.S. in Engineering and Physics or Engineering and Chemistry) exists. Please see the entry under "Department of Chemistry and Physics" in this section of the Catalogue for further details.

NOTE: High school preparation should include as much algebra, trigonometry, and advanced mathematics as possible as well as courses in chemistry and physics. Students must be Physics majors.

#### **PRE-FORESTRY** Department of Biological Sciences

Students should plan to transfer after one or two years at Southeastern. Typical first-semester courses include: GBIO 151/BIOL 152, GBIO 153/BIOL 154, Chemistry 121/123, English 101, and Mathematics 161. Consult advisor for further recommendations.

#### **PRE-MEDICINE** Department of Biological Sciences or Department of Chemistry and Physics

Most medical schools recommend that a student complete four years of college before applying for admission. Traditionally, the majority of students accepted at Louisiana State University and Tulane Medical Schools have held the baccalaureate degree upon registering. Students should follow the curriculum outlined for a Bachelor in Science in Organismal/Integrated Biology or Chemistry (Biochemistry concentration). Typical freshman courses include English 101/102; GBIO 151/BIOL 152; GBIO 153/BIOL 154; Chemistry 121/CLAB123 and CHEM122/CLAB124; Math 161/162; or 165/200. Consult a pre-medical advisor in the Biological Sciences department or Chemistry and Physics department for specific recommendations and to find out more about the Delta Omega Alpha ( $\Delta$ OA) pre-professional student organization.

NOTE: Entry into medical schools is based on (1) the student's academic record, (2) the results of the Medical College Admissions Test, which should be taken in the spring of the junior year or fall of the senior year, and (3) recommendation and interviews. Students should also have a recommendation from Southeastern's MEC Board prior to application to any medical program. The degree programs outlined above will provide students with options for alternative career choices in the event that acceptance into medical school is not secured.

**PRE-OCCUPATIONAL THERAPY** Department of Biological Sciences

Most Occupational Therapy Programs are now at the Masters level so the Pre-Occupational Therapy student should complete the requirements for a baccalaureate degree in Biology or another major before applying. The student should consult with the Occupational Therapy School and their advisor to determine what additional courses are required.

**PRE-OPTOMETRY** Department of Biological Sciences or Department of Chemistry and Physics

Students should plan to spend at least two years in undergraduate study; the majority of successful applicants have three or four years of college work. A typical first-semester program includes English 101, GBIO 151/BIOL 152, Chemistry 121/123, and Mathematics 161, 165, or 200. Consult advisor for further recommendations.

NOTE: The Optometry College Admission Test must be taken before or during the semester in which the student applies for acceptance into a school of optometry. Because of competition for the available places, students are urged to plan programs that will permit alternative career choices if acceptance into an optometry school is not secured.

**PRE-PHARMACY** Department of Biological Sciences or Department of Chemistry and Physics

Although application may be made early, students should plan to complete a baccalaureate degree in Biological Sciences or Chemistry prior to admission into a Pharmacy program. A typical freshman program includes CHEM 121/CLAB123, MATH 165 or MATH 200, ENGL 101/102, GBIO 151/BIOL 152, ECON 201. Interested students should consult a Pre-Pharmacy advisor in the Biological Sciences department or Chemistry and Physics department for specific recommendations.

NOTE: Since requirements for pharmacy school vary by program, it is advisable that interested students check the general catalogue for the particular Pharmacy School they wish to attend.

**PRE-PHYSICAL THERAPY** Department of Biological Sciences

Students should plan to spend at least three years in pre-professional work; a majority of the Louisiana applicants accepted have completed a baccalaureate degree. A typical freshman program includes GBIO 151/BIOL152, GBIO 153/BIOL 154 Chemistry 121/123 and 122/124, English 101 and 102, Mathematics 162, 163, (or higher). Consult advisor for further recommendations.

**PRE-VETERINARY MEDICINE** Department of Biological Sciences

Most schools of veterinary medicine require extensive experience with food animals, such as that gained through a farm background or working as an assistant to a veterinarian, as well as the completion of the Graduate Record Examination. Some schools in veterinary medicine may require courses (such as animal science and/or animal nutrition) which are not available at Southeastern. Because of competition for the available places, students are urged to plan programs that will permit alternative career choices if acceptance into a school of veterinary medicine is not secured.