

UC 10481 09F

UNIVERSITY OF HOUSTON  
COLLEGE OF TECHNOLOGY  
ENGINEERING TECHNOLOGY DEPARTMENT

MEMORANDUM

RECEIVED OCT 15 2009

APPROVED NOV 18 2009

TO: University Undergraduate Council

FROM: Dr. Heidar Malki ~~\_\_\_\_\_~~  
Chair, Engineering Technology Department

DATE: October 5, 2009

RE: Changes to Biotechnology Degree Plan

**Biotechnology:** In compliance with the coordinating boards move to reduce the number of hours on all degree plans, students on the Biotechnology Degree plans are waived from taking PHIL 3354 Medical Ethics or a substitution. This will drop the required number of hours for students in Biotechnology by 3 hours from 123 to 120.

~~\_\_\_\_\_~~

- 
- [Construction Management Technology](#)
  - [Consumer Science and Merchandising](#)
  - [Digital Media Major](#)
  - [Electrical Power Engineering Technology](#)
  - [Mechanical Engineering Technology](#)
  - [Organizational Leadership and Supervision](#)
  - [Supply Chain and Logistics Technology](#)
  - [Surveying Engineering Technology](#)

---

[Minors](#)

[Certificates & Special Programs](#)

[Academic Information](#)

[Scholarships](#)

[About the College](#)

---

> [Undergraduate Scholars at UH](#)

[Courses](#)

[Programs & Degrees](#)

[University Profile](#)

[Tuition and Fees](#)

[Scholarships and Financial Aid](#)

**SEARCH THE CATALOG**

[Search an older catalog](#)

**ABOUT THE CATALOG**

[How to Read this Catalog](#)

[Comments](#)

[Disclaimer](#)

[Archives](#)

*Produced by the Office of the Senior Vice President for Academic Affairs*

## Biotechnology Major

The Bachelor of Science Program in Biotechnology is intended to provide students with strong core science concepts and an application-oriented undergraduate education. Strongly interdisciplinary, this innovative program draws faculty and courses from the College of Technology and the College of Natural Science and Math. The program's objective is to prepare students for employment opportunities in the critically important and dynamic biotechnology industry. In addition, the curriculum will provide students with knowledge and core set of skills that span across basic sciences, technology, engineering, and mathematics (STEM) education. With

an emphasis on environmental biotechnology, this is the first program in the state of Texas that integrates bioprocessing, nanobiotechnology, bioinformatics and environmental biotechnology into the undergraduate curriculum.

The program recognizes the need for cross-disciplinary training and fosters collaborative interactions that will strengthen undergraduate education.

The program is specifically designed to:

Develop adaptable students with a strong foundation in skills that are relevant to the changing world of biotechnology.

Provide students with practical training in the skills and techniques of biotechnology.

Integrate the laboratory and lecture components of the program through the use of an experimental approach to learning.

Uniquely combine practical, hands-on biotechnology training with cutting-edge biotechnology research and teaching.

Two curriculum tracks: 1) Bioprocessing, and 2) Bioinformatics give students the flexibility to tailor their degree based on their interest, educational background and career goals. These tracks, in combination with core courses, will provide our students with a broad exposure to the field of biotechnology. The presence of the Texas Medical Center in the greater Houston area and a growing biotechnology and pharmaceutical industry, places this program at the forefront of Biotechnology Education.

---

## Biotechnology Major Requirements

BCHS 3304, 3201. General Biochemistry I, Laboratory
BIOL 1362, 1162. Introduction to Biological Science, Laboratory
BIOL 2333, 2133. Elementary Microbiology, Laboratory
BIOL 3301. Genetics
BIOL 4320. Molecular Biology
BTEC 1322. Introduction to Biotechnology
BTEC 2320. Biotechnology Regulatory Environment
BTEC 2321. Good Manufacturing Practices
BTEC 3100. Instrumentation and Measurement Laboratory
BTEC 3301. Principles of Genomics/Proteomics and Bioinformatics
BTEC 4350. Biotechnology Capstone Experience
CHEM 1332, 1112. Fundamentals of Chemistry, Laboratory
CHEM 3331, 3321. Fundamentals of Organic Chemistry, Laboratory

---

## Biomanufacturing Track (13 SH Minimum)

BIOL 4319. Microbial Genetics
BTEC 3320. Introduction to Quality Control/Quality Assurance
BTEC 4101. Principles of Bioprocessing Laboratory

BTEC 4301. Principles of Bioprocessing
Approved Electives (3 SH)

## Bioinformatics Track (12 SH Minimum)

BTEC 4300. Principles of Bioinformatics
ITEC 3343. Information Systems Analysis and Design
ITEC 3365. Database Management
Approved Elective (3 SH):
BCHS 4306: Nucleic Acid
BIOL 4323: Immunology
BIOL 4374: Cell Biology
TELS 4350: Industrial & Environmental Safety

## College Requirements

<b>Mathematics</b>
(10 semester hours which includes university core)
Students are required to have credit for College Algebra through Math Placement Exam, CLEP, or completion of course.
MATH 1330. Precalculus
MATH 1431. Calculus I
TMTH 3360. Applied Technical Statistics or PSYC 3301. Introduction to Psychological Statistics
<b>Natural Sciences</b>
(12 semester hours which includes university core)
BIOL 1361, 1161. Introduction to Biological Science, Laboratory
CHEM 1331, 1111. Fundamentals of Chemistry, Laboratory
PHYS 1301, 1101. Introductory General Physics I, Laboratory
<b>Social Sciences</b>
(3 semester hours) selected from core approved list.
COMM 1302. Introduction to Communication Theory or <del>HDCS 1300</del>
<b>Deleted:</b> , preferred
<b>Humanities</b>
PHIL 1305. Ethics

## Program Requirements

ELET 2300. Introduction to C++ Language Programming
---

ITEC 2334. Information Systems Applications

Deleted: PHIL 3354. Medical Ethics

TELS 3340. Organizational Decisions in Technology

or

HDCS 3300. Organizational Decisions in Technology

TELS 3363. Technical Communications

Degree awarded: Bachelor of Science

Major: Biotechnology

*Catalog Publish Date: August 15, 2009*

*This Page Last Updated: August 27, 2009*

©2009 The University of Houston, 4800 Calhoun Road, Houston, Texas 77004 Get Driving Directions 713.743.2255

[Jobs at UH](#)

[UH System](#)

[State of Texas](#)

[Policies](#)

[Copyright](#)

[Emergency Site](#)

[Feedback](#)

## BIOTECHNOLOGY (BTEC)

UNIVERSITY OF HOUSTON  
COLLEGE OF TECHNOLOGY

ENGINEERING TECHNOLOGY DEPARTMENT  
BACHELOR OF SCIENCE

NAME \_\_\_\_\_ UHID \_\_\_\_\_

### UNIVERSITY CORE REQUIREMENTS (42 SH)

	GR	SH	AH
<b>Communication (6 SH)</b>			
ENGL 1303 English Composition I	_____	_____	_____
ENGL 1304 English Composition II	_____	_____	_____

#### Writing in the Discipline\* (3 SH)

COMM 1302	_____	_____	_____
-----------	-------	-------	-------

#### History/Government (12 SH)

HIST 1377 US History to 1867	_____	_____	_____
HIST 1379 US History since 1867	_____	_____	_____
POLS 1336 US & TX Const/Politics	_____	_____	_____
POLS 1337 US Government	_____	_____	_____

#### Humanities\* (3 SH)

Phil 1305 Ethics	_____	_____	_____
------------------	-------	-------	-------

#### Visual/Performing Arts\* (3 SH)

_____	_____	_____	_____
-------	-------	-------	-------

#### Social/Behavioral Science\* (3 SH)

_____	_____	_____	_____
-------	-------	-------	-------

#### Math Reasoning (9 SH)\*\*

MATH 1330 Precalculus	_____	_____	_____
MATH 1431 Elements of Calculus	_____	_____	_____
TMTH 3360 Applied Tech Statistics or PSYC 3301	_____	_____	_____

\*\* Students are required to have credit for College Algebra through the Math Placement Exam, CLEP or completion of the course.

#### Natural Sciences\* (12 SH)

BIOL 1361/1161 Intro to Biological Science	_____	_____	_____
CHEM 1331/1111 Fund of Chem & Lab	_____	_____	_____
PHYS 1301/1121 Intro to General Phy & Lab	_____	_____	_____

### COLLEGE AND DEPARTMENT REQUIREMENTS (15 SH)

ELET 2300 Intro to C++ programming	_____	_____	_____
ITEC 2334 Information Systems Apps	_____	_____	_____
PHIL 3354 Medical Ethics	_____	_____	_____
TELS 3340 Org Leadership & Suprv or HDCS 3300 Org Decisions in Tech	_____	_____	_____
TELS 3363 Technical Communication	_____	_____	_____

\*Refer to class schedule for lists of courses which satisfy University requirements.

36 advanced (3000- or 4000-level) semester hours must be completed.

Total hours required: 122-123 semester hours

Texas Success Initiative requirements must be met.

For graduation with Honors, see Undergraduate Catalog.

### MAJOR CORE REQUIREMENTS (42 SH)

	GR	SH	AH
BIOL 1362 Intro to Biological Science	_____	_____	_____
BIOL 1162 Intro to Biological Science Lab	_____	_____	_____
CHEM 1332 Fund of Chem	_____	_____	_____
CHEM 1112 Fund of Chem Lab	_____	_____	_____
BIOL 2333 Elem Microbiology	_____	_____	_____
BIOL 2133 Elem Microbiology lab	_____	_____	_____
BTEC 1322 Intro to Biotechnology	_____	_____	_____
BTEC 2320 Biotechnology Regulatory Env	_____	_____	_____
BTEC 2321 Good Manufacturing Practices	_____	_____	_____
BCHS 3304 Gen Biochemistry	_____	_____	_____
BCHS 3201 Gen Biochemistry Lab	_____	_____	_____
BIOL 3301 Genetics	_____	_____	_____
BTEC 3100 Biotech Research Methods/Apps	_____	_____	_____
BTEC 3301 Prin of Bioinform/Geon/Proteom	_____	_____	_____
CHEM 3221 Organic Chemistry Lab	_____	_____	_____
CHEM 3331 Fund of Organic Chemistry	_____	_____	_____
BIOL 4320 Molecular Biology	_____	_____	_____
BTEC 4350 Capstone Experience	_____	_____	_____

Choose either the **Biomufacturing** or **Bioinformatics** Track.

#### Biomufacturing Track (13 SH Minimum)

BTEC 3320 Intro QA/QC Drugs & Biologics	_____	_____	_____
BIOL 4319 Microbial Genetics	_____	_____	_____
BTEC 4301 Principles of Bioprocessing	_____	_____	_____
BTEC 4101 Principles of Bioprocessing Lab	_____	_____	_____
**Approved Elective(3SH)	_____	_____	_____

#### Bioinformatics Track (12 SH Minimum)

ITEC 3343 System Analysis & Design	_____	_____	_____
ITEC 3365 Database Design	_____	_____	_____
BTEC 4300 Prin of Bioinformatics	_____	_____	_____
**Approved Elective (3SH)	_____	_____	_____

\*\*Electives to be chosen from approved list.

#### Approved Electives:

BCHS 4306 Nucleic Acid	_____
BIOL 4323 Immunology	_____
BIOL 4374 Cell Biology	_____
TELS 4350 Industrial & Environmental Safety	_____

#### **APPROVALS:**

\_\_\_\_\_  
Student Signature Date

\_\_\_\_\_  
Advisor Date

\_\_\_\_\_  
Department Chair Date

## BIOTECHNOLOGY (BTEC)

UNIVERSITY OF HOUSTON  
COLLEGE OF TECHNOLOGY

ENGINEERING TECHNOLOGY DEPARTMENT  
BACHELOR OF SCIENCE

NAME \_\_\_\_\_ PS \_\_\_\_\_

### UNIVERSITY CORE REQUIREMENTS (42 SH)

	GR	SH	AH
<b><u>Communication (6 SH)</u></b>			
ENGL 1303 English Composition I	___	___	___
ENGL 1304 English Composition II	___	___	___

#### **Writing in the Discipline\* (3 SH)**

COMM 1302 or HDCS 1300 \_\_\_\_\_

#### **History/Government (12 SH)**

HIST 1377 US History to 1867 \_\_\_\_\_  
 HIST 1379 US History since 1867 \_\_\_\_\_  
 POLS 1336 US & TX Const/Politics \_\_\_\_\_  
 POLS 1337 US Government \_\_\_\_\_

#### **Humanities\* (3 SH)**

Phil 1305 Ethics \_\_\_\_\_

#### **Visual/Performing Arts\* (3 SH)**

\_\_\_\_\_

#### **Social/Behavioral Science\* (3 SH)**

\_\_\_\_\_

#### **Math Reasoning (10 SH)\*\***

MATH 1330 Precalculus \_\_\_\_\_  
 MATH 1431 Elements of Calculus \_\_\_\_\_  
 TMTH 3360 Applied Tech Statistics \_\_\_\_\_  
 or PSYC 3301 \_\_\_\_\_

\*\* Students are required to have credit for College Algebra through the Math Placement Exam, CLEP or completion of the course.

#### **Natural Sciences\* (8 SH)**

BIOL 1361/1161 Intro to Biological Science \_\_\_\_\_  
 CHEM 1331/1111 Fund of Chem & Lab \_\_\_\_\_

### COLLEGE AND DEPARTMENT REQUIREMENTS (16 SH)

ELET 2300 Intro to C++ programming \_\_\_\_\_  
 ITEC 2334 Information Systems Apps \_\_\_\_\_  
 PHYS 1301/1121 Intro to General Phy & Lab \_\_\_\_\_  
 TELS 3340 Org Leadership & Suprv or \_\_\_\_\_  
 HDCS 3300 Org Decisions in Tech \_\_\_\_\_  
 TELS 3363 Technical Communication \_\_\_\_\_

\*Refer to class schedule for lists of courses which satisfy University requirements.

36 advanced (3000- or 4000-level) semester hours must be completed.

Total hours required: 120-121 semester hours

Texas Success Initiative requirements must be met.

For graduation with Honors, see Undergraduate Catalog.

### MAJOR CORE REQUIREMENTS (42 SH)

	GR	SH	AH
BIOL 1362 Intro to Biological Science	___	___	___
BIOL 1162 Intro to Biological Science Lab	___	___	___
CHEM 1332 Fund of Chem	___	___	___
CHEM 1112 Fund of Chem Lab	___	___	___
BIOL 2333 Elem Microbiology	___	___	___
BIOL 2133 Elem Microbiology lab	___	___	___
BTEC 1322 Intro to Biotechnology	___	___	___
BTEC 2320 Biotechnology Regulatory Env	___	___	___
BTEC 2321 Good Manufacturing Practices	___	___	___
BCHS 3304 Gen Biochemistry	___	___	___
BCHS 3201 Gen Biochemistry Lab	___	___	___
BIOL 3301 Genetics	___	___	___
BTEC 3100 Biotech Research Methods/Apps	___	___	___
BTEC 3301 Prin of Bioinform/Geon/Proteom	___	___	___
CHEM 3221 Organic Chemistry Lab	___	___	___
CHEM 3331 Fund of Organic Chemistry	___	___	___
BIOL 4320 Molecular Biology	___	___	___
BTEC 4350 Capstone Experience	___	___	___

Choose either the **Biomufacturing** or **Bioinformatics** Track.

#### **Biomufacturing Track (13 SH Minimum)**

BTEC 3320 Intro QA/QC Drugs & Biologics \_\_\_\_\_  
 BIOL 4319 Microbial Genetics \_\_\_\_\_  
 BTEC 4301 Principles of Bioprocessing \_\_\_\_\_  
 BTEC 4101 Principles of Bioprocessing Lab \_\_\_\_\_  
 \*\*Approved Elective(3SH) \_\_\_\_\_

#### **Bioinformatics Track (12 SH Minimum)**

ITEC 3343 System Analysis & Design \_\_\_\_\_  
 ITEC 3365 Database Design \_\_\_\_\_  
 BTEC 4300 Prin of Bioinformatics \_\_\_\_\_  
 \*\*Approved Elective (3SH) \_\_\_\_\_

\*\*Electives to be chosen from approved list.

#### **Approved Electives:**

BCHS 4306 Nucleic Acid  
 BIOL 4323 Immunology  
 BIOL 4374 Cell Biology  
 TELS 4350 Industrial & Environmental Safety

#### **APPROVALS:**

\_\_\_\_\_  
Student Signature Date

\_\_\_\_\_  
Advisor Date

\_\_\_\_\_  
Department Chair Date