

COLLEGE OF ARTS & SCIENCES

UNIVERSITY OF SOUTH FLORIDA 2017-2018 UNDERGRADUATE CATALOG

Accelerated B.S. in Chemistry and M.S.B.E. in Biomedical Engineering

Description

This program intends for students to complete a B.S. in Chemistry and M.S.B.E. in Biomedical Engineering over the span of five years. Completion of this program allows students to complete nine (9) credit hours toward the M.S.B.E. during their junior or senior year in the Chemistry (B.S.) major.

Target Students and Expected Outcomes

The accelerated program is an attractive and viable path for students seeking to expedite their entry to the workforce as an engineer, obtain a leadership position, or to pursue M.D. or Ph.D. studies. Students who complete this program will maximize: department and professional resources, obtaining an industry position in the rapidly growing field of biomedical engineering, and opportunities for research and technology transfer for medical devices, systems or drug development.

Admission Requirements

For consideration of admission to the program, a student must:

1. Have completed 15 credit hours in the B.S. Chemistry major, upon applying;
2. Have a minimum 3.33 GPA overall;
3. Have a minimum undergraduate 3.5 GPA in the major;
4. Have met with the Undergraduate Advisor and Graduate Director and/or Graduate Advisor to discuss a plan of study

Shared Courses (9 credit hours)

Students choose three (3) of the following five (5) courses to be shared between the two degrees:

- BME 6000 Biomedical Engineering I
- BME 6931 Biomedical Engineering II
- GMS 6440 Basic Medical Physiology or BME 6410 Engineering Physiology
- GMS 6605 Basic Medical Anatomy
- PHC 6051 Biostatistics II

Undergraduate Degree Requirements for the B. S. in Chemistry (54 credit hours)

***Please see Undergraduate Catalog for major-specific requirements**

Required Supporting Courses for the Major (22 credit hours)

The following courses are prerequisite and supporting courses for this major. They are required for the major, but are not counted in the total hours for this major. The degree will not be awarded if these courses have not been taken by the end of the student's final semester.

- MAC 2311 Calculus I **and** MAC 2312 Calculus II **or** MAC 2281 Engineering Calculus I **and** MAC 2282 Engineering Calculus II
- PHY 2048 General Physics I-Calculus Based and PHY 2048L General Physics I-Calculus Based Laboratory **and** PHY 2049 General Physics II-Calculus Based and PHY 2049L General Physics II-Calculus Based Laboratory
- BSC 2010 Cellular Processes
- One 3000-level Natural Science or Engineering course (PHY 3101 suggested) **or**
- One 2000-level Natural Science course (BSC 2011, GLY 2010, GLY 2100, EVR 2001)

Major Core (54 credit hours)

- CHM 2045 General Chemistry I
- CHM 2045L General Chemistry I Laboratory
- CHM 2046 General Chemistry II
- CHM 2046L General Chemistry II Laboratory
- CHM 2210 Organic Chemistry I
- CHM 2210L Organic Chemistry I Laboratory
- CHM 2211 Organic Chemistry II
- CHM 2211L Organic Chemistry II Laboratory
- BCH 4033 Advanced Biochemistry I
- CHM 3120C Elementary Analytical Chemistry
- CHM 3415C Physical Chemistry Methods
- CHM 3610 Intermediate Inorganic Chemistry
- CHM 3610L Intermediate Inorganic Chemistry Laboratory

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CHM 4060 Use of Chemical Literature
CHM 4130C Methods of Instrument Analysis
CHM 4131C Methods of Chemical Investigation II
CHM 4410 Physical Chemistry I
CHM 4410L Physical Chemistry Laboratory
CHM 4411 Physical Chemistry II
CHM 4611 Advanced Inorganic Chemistry

Shared Courses (9 credit hours)

Students choose three (3) of the following five (5) courses to be shared between the two degrees:

BME 6000 Biomedical Engineering I
BME 6931 Biomedical Engineering II
GMS 6440 Basic Medical Physiology or BME 6410 Engineering Physiology
GMS 6605 Basic Medical Anatomy
PHC 6051 Biostatistics II

Graduate Degree Requirements for the M.S.B.E. in Biomedical Engineering (30 credit hours)

***Please see Graduate Catalog for major-specific requirements**

Students must take the following five (5) courses in Engineering:

EGN 3433 Modeling and analysis of engineering systems
Students must complete 12 credit hours from the following courses:

ECH 3702 Instrument Systems I
EGN 3311 Statics*
EGN 3321 Dynamics
EGN 3331 Mechanics of Materials
EGN 3343 Thermodynamics*
EGN 3365 Materials Engineering I
EGN 3373 Electrical Systems I*
EML 3701 Fluid Systems

*Indicates most highly recommended courses

Major Core (15 credit hours)

GMS 6440 Basic Medical Physiology or BME 6410 Engineering Physiology
GMS 6605 Basic Medical Anatomy
PHC 6051 Biostatistics II
BME 6000 Biomedical Engineering I
BME 6931 Biomedical Engineering II

Major Electives (15 credit hours)

Students select from additional approved courses to complete the 30 credit hour requirement. A minimum of 16 credit hours must be at the 6000-level. In addition, all of the elective courses must consist of engineering-prefix courses, although the Thesis Committee (thesis option) or the BME Program Advisor (non-thesis option) may approve courses in relevant areas such as chemistry, physics, pharmacy, communication sciences and disorders, public health, or medicine, in their place.

Thesis Option

Thesis option students can count up to six (6) credit hours of thesis research towards the elective requirements.

Comprehensive Exam

Students in the non-thesis track will complete a comprehensive exam. For students in the thesis track, the thesis and oral defense serve as the comprehensive exam.