



Biomedical Engineering Application for Minor

Name: _____ UIN: _____ Date: _____

Major: _____ Email: _____

Catalog: _____ TAMU Overall GPA: _____ Expected Graduation Date: _____

Select one BMEN Minor Track: Biomechanics Bioinstrumentation Biomaterials & Tissue Engineering

Requirements: Students must meet and adhere to the following requirements and guidelines in order to earn a minor in Biomedical Engineering:

- Admitted into a College of Engineering major.
- In good academic standing within major department (GPA of 2.5 or higher).
- Maintain a cumulative 2.0 GPA in minor courses.
- Complete the courses listed for the selected BMEN minor track.
- Following acceptance into a particular track, change of BMEN minor track will not be permitted unless by petition and review by the Director of Undergraduate Programs.

Application steps:

1. Complete this application form and write maximum half page essay on why you want a Biomedical Engineering minor.
2. Discuss this minor with your major advisor to determine if this minor will postpone graduation.
3. Once you receive approval from your major advisor to apply for this minor, turn the signed form and essay in to the BMEN Office at ETB 5042. The deadline for fall semesters is May 1. The deadline for spring semesters is November 1.
4. Applications will be reviewed and decisions will be announced after grades of the current semester are posted. Enrollment into BMEN courses will not be granted until decisions have been made.

BMEN Minor Tracks & Courses:

| | Biomechanics | Bioinstrumentation | Biomaterials & Tissue Engineering | Hours |
|---------------------------|-----------------------|-----------------------------|-----------------------------------|-----------|
| Required Courses Per Area | VIBS 243 | VIBS 243 | VIBS 243 | 2 |
| | BMEN XXX | BMEN XXX | BMEN XXX | 1 |
| | BMEN 361* | BMEN 321** | BMEN 343*** | 3 |
| | BMEN 341 | BMEN 420 | BMEN 344 | 3 |
| | Biomechanics Elective | Bioinstrumentation Elective | Biomaterials Elective | 3 |
| | Biomechanics Elective | Bioinstrumentation Elective | Biomaterials Elective | 3 |
| | | | Total Hours | 15 |

Track descriptions, course titles, elective options, and approved substitutions can be found on page 2.

Student Signature

Date

Major Department Authorization

Date

MAJOR ADVISORS: Please do not add this minor to the student's record until you receive notification from a BMEN minor that the application was approved!

| | | | |
|----------------------|-----------------|-----------------|---------------|
| BMEN OFFICE USE ONLY | | | |
| Date received: _____ | Decision: _____ | Notified: _____ | Cohort: _____ |

Course Numbers and Names

No more than two courses from outside BMEN (other than VIBS) may be applied to the BMEN minor.

| | |
|-------------|---|
| VIBS 243 | Introduction to Histology |
| BMEN XXX | BMEN 253 Medical Device Design 1 BMEN 450 Case Studies |
| BMEN 321** | Biomedical Electronics |
| BMEN 341 | Biofluid Mechanics |
| BMEN 361* | Biosolid Mechanics |
| BMEN 343*** | Introduction to Biomaterials |
| BMEN 344 | Biological Responses to Medical Devices |
| BMEN 420 | Medical Imaging |
| Electives | Listed in the corresponding tracks below. |

* Can be replaced by CVEN 305, MEEN 368 or equivalent course approved by BMEN academic advisor and director.

**Can be replaced by ECEN 214 or equivalent course approved by BMEN academic advisor and director.

***Can be replaced by MEEN 222, CHEN 322, MSEN 260 or equivalent course approved by BMEN academic advisor and director.

Descriptions of Tracks:

Biomechanics Track

This track is designed to educate students in the diverse field of biomechanics that includes small-scale applications in molecular and cellular mechanics, tissue-scale applications such as cardiovascular and orthopedic implants, and whole body-scale applications for studying injury prevention and developing assistive devices. This track will provide students with an educational foundation in solid and fluid mechanics, followed by two electives on topics of interest within biomechanics. Students will gain experience applying mechanics principles to biomedical systems to help understand the function of the human body, and to help in the development of medical devices.

Elective course options include: BMEN 432, 457, 458, 461, 468, & 471 and MEEN 363, 368, 440, 441, 442, & 444.

Bioinstrumentation Track

This track is designed to educate students in the medical device and imaging instrumentation field, which covers clinical and lab instrumentation from the nanoscale to the whole body. This track equips students with focus in either imaging or instrumentation, and provides guidance to select coursework in several application areas for each of the focus topics. Students will gain an understanding of medical device design, underlying physics and instrumentation for measuring physiological parameters and forming medical images, signal/image processing and control systems.

Elective course options include: BMEN 322, 401, 422, 425, 427, 428, & 448 and ECEN 411, 412, 414, and 447.

Biomaterials and Tissue Engineering Track

This track is designed to educate students for the rapidly developing field at the multi-disciplinary interface of engineering, material science, biology, chemistry, and medicine. This track will provide students with a broad educational foundation with an emphasis on the principles and applications of biomaterials, particularly tissue engineering. Students will gain an understanding of biomaterial preparation and characterization, structure/property relationships, as well as cellular, blood, and tissue interactions with biomaterials. Selection and design of biomaterials for tissue engineering, artificial organs, drug delivery, and implanted devices is presented.

Elective course options include: BMEN 480, 482, 483, 486 & 487, CHEM 466, CHEN 451, MEEN 458, and MSEN 410 & 420