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:

<table>
<thead>
<tr>
<th>Required Courses Per Area</th>
<th>Biomechanics</th>
<th>Bioinstrumentation</th>
<th>Biomaterials &amp; Tissue Engineering</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>VIBS 289 (243)</td>
<td>VIBS 289 (243)</td>
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<td>2</td>
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<td>BMEN XXX</td>
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<tr>
<td>BMEN 361*</td>
<td>BMEN 321**</td>
<td>BMEN 343***</td>
<td>3</td>
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<td>BMEN 341</td>
<td>BMEN 420</td>
<td>BMEN 344</td>
<td>3</td>
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<tr>
<td>Biomechanics Elective</td>
<td>Bioinstrumentation Elective</td>
<td>Biomaterials Elective</td>
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<td>3</td>
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</tbody>
</table>

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 289 (243)  Introduction to Histology
BMEN XXX  BMEN 101 Introduction to Biomedical Engineering
          BMEN 253 Medical Device Design 1
          BMEN 450 Case Studies
BMEN 207  Computing for BMEN
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 313, MSEN 310 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.