

# BIOMEDICAL ENGINEERING MAJOR

Welcome to the Department of Biomedical Engineering at Tulane University in New Orleans, LA. Since 1977, our department has been a leader in engineering science investigations of health and medicine. As you explore this site, you will see that our curriculum and translational studies are targeted and integrated, spanning areas of biomaterials, biomechanics, device development and tissue engineering. Our team of faculty and staff members brings energy and enthusiasm towards educating future generations of biomedical engineers as we solve today's most complex and interesting basic and applied research problems relevant to healthcare. We welcome the opportunity to develop collaborations at all levels.

Tulane's Biomedical Engineering program is accredited by the Engineering Accreditation Commission of ABET ([www.abet.org](http://www.abet.org)).

## Requirements

### Curriculum

| Year 1  |                                   | Credit Hours |
|---|-----------------------------------|--------------|
| <b>Fall</b>                                     |                                   |              |
| MATH 1210                                       | Calculus I                        | 4            |
| CHEM 1070                                       | General Chemistry I               | 3            |
| CHEM 1075                                       | General Chemistry Lab I           | 1            |
| PHYS 1310                                       | General Physics I                 | 4            |
| ENGL 1010                                       | Writing                           | 4            |
| TIDES Tulane Inter. Exp. Sem.                   |                                   | 1            |
| Service Learning (1st or 2nd year) <sup>1</sup> |                                   | 0            |
| <b>Credit Hours</b>                             |                                   | <b>17</b>    |
| <b>Spring</b>                                   |                                   |              |
| MATH 1220                                       | Calculus II                       | 4            |
| CHEM 1080                                       | General Chemistry II              | 3            |
| CHEM 1085                                       | General Chemistry Lab II          | 1            |
| PHYS 1320                                       | General Physics II                | 4            |
| ENGP 1410                                       | Statics                           | 3            |
| NTC Core Elective                               |                                   |              |
| <b>Credit Hours</b>                             |                                   | <b>15</b>    |
| <b>Year 2</b>                                   |                                   |              |
| <b>Fall</b>                                     |                                   |              |
| MATH 2210                                       | Calculus III                      | 4            |
| CELL 1010                                       | Intro to Cell & Molec Biology     | 3            |
| CELL 2115                                       | General Biology Lab               | 1            |
| BMEN 2310                                       | Product & Experimental Design     | 3            |
| ENGP 2010                                       | Electric Circuits                 | 3            |
| ENGP 2011                                       | Electric Circuits Lab             | 1            |
| ENGP 2430                                       | Mechanics of Materials            | 3            |
| <b>Credit Hours</b>                             |                                   | <b>18</b>    |
| <b>Spring</b>                                   |                                   |              |
| MATH 2240                                       | Intro To Applied Math             | 4            |
| BMEN 2020                                       | Comput Concepts & Applic          | 4            |
| BMEN 2600                                       | Intro Organic & Biochem           | 3            |
| BMEN 2730                                       | Biomedical Electronics            | 4            |
| ENGP 3120                                       | Materials Science and Engineering | 3            |
| <b>Credit Hours</b>                             |                                   | <b>18</b>    |
| <b>Year 3</b>                                   |                                   |              |
| <b>Fall</b>                                     |                                   |              |
| BMEN 3030                                       | Anatomy & Physio for Engr         | 3            |
| BMEN 3035                                       | Anat & Phys for Engr Lab          | 1            |

|   |                                       |            |
|---|---------------------------------------|------------|
| BMEN 3440                                 | Biofluid Mechanics                    | 3          |
| BMEN 4900                                 | Art of Professional Eng               | 1          |
| BMEN 3xxx                                 | "Domain" class                        | 3          |
| PELECT Professional Elective <sup>2</sup> |                                       | 3          |
| Free Elective - Any Tulane Course         |                                       | 3          |
| <b>Credit Hours</b>                       |                                       | <b>17</b>  |
| <b>Spring</b>                             |                                       |            |
| BMEN 3070                                 | Quantitative Physiology               | 3          |
| BMEN 3075                                 | Quat. Physiology Lab                  | 1          |
| BMEN 3820                                 | Math Analysis Bio Systms              | 3          |
| BMEN 4902                                 | SR Research Prof Experience I         | 2          |
| BMEN 3xxx                                 | "Domain" class                        | 3          |
| NTC Core Elective                         |                                       | 3          |
| <b>Credit Hours</b>                       |                                       | <b>15</b>  |
| <b>Year 4</b>                             |                                       |            |
| <b>Fall</b>                               |                                       |            |
| BMEN 4030                                 | BMEN Team Dsgn Project I              | 2          |
| BMEN 4890                                 | Service Learning                      | 1          |
| BMEN 6710                                 | Departmental Seminar                  | 1          |
| BMEN 4912                                 | SR Research Prof Experience II        | 2          |
| NTC Core Elective                         |                                       | 3          |
| Professional Elective                     |                                       | 3          |
| Professional Elective                     |                                       | 3          |
| <b>Credit Hours</b>                       |                                       | <b>15</b>  |
| <b>Spring</b>                             |                                       |            |
| BMEN 4040                                 | BMEN Team Dsgn Proj II                | 3          |
| BMEN 4920                                 | Senior Research and Design Conference | 0          |
| NTC Core Elective                         |                                       | 3          |
| NTC Core Elective                         |                                       | 3          |
| Professional Elective                     |                                       | 3          |
| <b>Credit Hours</b>                       |                                       | <b>12</b>  |
| <b>Total Credit Hours</b>                 |                                       | <b>127</b> |

<sup>1</sup> Students are required to take a 1-hour "service learning" course before the end of the Sophomore year.

<sup>2</sup> One Professional Elective must be a BMEN6xxx advanced class, following up on a BMEN3xxx domain class.

## Pre-Med Students

Those students who are declared pre-med are to make the following adjustments to the BME curriculum:

1. Substitute CHEM 2410 Organic Chemistry I (3 c.h.) & CHEM 2415 Organic Chemistry Lab I (1 c.h.) for BMEN 2600 Intro Organic & Biochem (3 c.h.)
2. Count CHEM 2420 Organic Chemistry II (3 c.h.) & CHEM 2425 Organic Chemistry Lab II (1 c.h.) as one Professional Elective
3. Count CELL 4010 Cellular Biochemistry (3 c.h.) as a second Professional Elective
4. Count EBIO 1010 Diversity of Life (3 c.h.) & EBIO 1015 Diversity of Life Lab (1 c.h.) as the third Professional Elective

No additional Professional Electives are required, except the BMEN 6xxx upper level elective. Note that this adjustment will increase the total required credits toward a BME bachelor's degree by 3 credits due to the additional required laboratories

If after you have completed CHEM 2410 Organic Chemistry I (3 c.h.)/ CHEM 2415 Organic Chemistry Lab I (1 c.h.); or if after you have completed CHEM 2410 Organic Chemistry I (3 c.h.)/ CHEM 2415 Organic Chemistry Lab I (1 c.h.) and CHEM 2420 Organic Chemistry II (3 c.h.)/CHEM 2425 Organic Chemistry Lab II (1 c.h.), you decide to not pursue pre-med, you will be required to take either BMEN 2600 Intro Organic & Biochem (3 c.h.) or CELL 4010 Cellular Biochemistry (3 c.h.) as an appropriate substitute. In this case, CHEM 2410 Organic Chemistry I (3 c.h.)/ CHEM 2415 Organic

Chemistry Lab I (1 c.h.), and/or CHEM 2420 Organic Chemistry II (3 c.h.)/CHEM 2425 Organic Chemistry Lab II (1 c.h.) will be counted as one and/or two of your required three, non-6xxx level Professional Electives, respectively