

# University of Rochester Biomedical Engineering (BME) Program

Revised  
8/13/18

## First two years - ALL Students

1 <sup>st</sup> Fall	BME 101 Introduction to Biomedical Engineering	*MTH 161 Calculus I	CHM 131 Chemistry I	WRT 105 Primary Writing Social Sci or Humanities
1 <sup>st</sup> Spring	WRT 105 Primary Writing Social Sci or Humanities	MTH 162 Calculus II	CHM 132 Chemistry II	PHY 121 Physics I Mechanics
Soph Fall	PHY 121/113 BME 201 & 201P Biomechanics & MATLAB	MTH 162 #MTH 165 Differential Equations	BIO 110 Biology	PHY 121>C- PHY 122 Physics II Electricity & Magnetism

\*An alternative to the MTH 161 and 162 sequence is the MTH 141, 142, 143 sequence. Careful attention must be paid to the effects of this longer sequence, including the possible need to take a course in the summer following the first year. Students taking the 141-3 series also take PHY 113 instead of PHY 121. MTH 171-4 also fulfills the Math requirements. # MTH 164 may be taken before MTH 165 – both courses are taught Fall & Spring.

★ All students must complete at least **two** additional BASIC SCIENCE Electives (at least 8 credits) in addition to BIO 110, CHM 131/132 and PHY 121/122. Any natural science with a number of 110 or higher (biology, chemistry, microbiology, environmental science, neuroscience, physics, or selected courses from brain & cognitive sciences) may be used to fulfill this requirement. Independent study courses **cannot** be used to satisfy this requirement. **Students in C&T concentration must take either BME 411, BIO 210 or BIO 202 as one of the BSE courses.** See curriculum guide for further information.

⌘ All students need **ONE** Upper Level BME course (listed in Curriculum Guide). These are offered in both fall and spring.

Three of the four required Humanities/Social Science courses must form a CLUSTER.

\*\*WRT 273 (2 cr.) may be taken either Spring sophomore year or fall junior year.

Pre-requisites for each course are noted at the top of each box (underlined courses are co-requisites)

**Flexibility:** Boxes with diagonal splits represent **alternate** choices for that semester. Electives and BSE course may be moved between semesters. Use this flexibility to consider options for study abroad, research, minors, or other interests!

Color Code:	BME CORE	Basic Science & Math	Humanities / Soc Sci / Writing	Basic Science Elective	Concentration	Electives
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## Concentrations:

	ALL Students	Biomechanics	Biosignals & Biosystems	Cell & Tissue Eng	Medical Optics	
Soph Spring	PHY 122 & MTH 165 BME 210 Biosystems & Circuits	MTH 162 #MTH 164 Multidimensional Calculus	Humanities / Social Science & WRT 273 ** Prof Identity	BME 201 ME 226 Solid Mechanics	Humanities / Social Science & WRT 273 ** Prof Identity	PHY 122 & MTH 162 BME 270 Biomedical Microscopy
JR Fall	BME 210 & MTH 165 BME 230 Intro to Signals & Imaging	Elective & WRT 273 ** Prof Identity	Humanities / Social Science	★ Basic Science Elective	Humanities / Social Science & WRT 273 ** Prof Identity	★ Basic Science Elective
JR Spring	BME 201/201P BME 221/099 Lab Biomedical Computation & Statistics	BME 201, PHY 122, CHM 132, BIO 110, MTH 162 BME 245/099 Lab Biomaterials	MTH 162, PHY 121 ME 123 Thermodynamics	★ Basic Science Elective	★ Basic Science Elective	★ Basic Science Elective
SR Fall	BME Senior BME 295 Design Seminar	BME 210 & BME 230 BME 260 Quantitative Physiology	MTH 164, 165, BME 201, ME 123 ME 225 Fluid Dynamics	BME 230 ECE 246 Digital Signal Processing	★ Basic Science Elective	★ Basic Science Elective
SR Spring	BME 295 BME 296 Senior Design Project	Humanities / Social Science	Elective	Elective	Elective	Elective

Name: \_\_\_\_\_

## Check off **YOUR** progress towards the Biomedical Engineering Major!

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### BME Core Courses:

- BME 101: *Intro to Biomedical Engineering*
- BME 201: *Fundamentals of Biomechanics*
- BME 201P: *MATLAB for Biomed Eng.*
- BME 210: *Biosystems & Circuits*
- BME 230: *Biomed Signals, Systems & Imaging*
- BME 221: *Biomed Computation & Statistics*
- BME 245: *Biomaterials*
- BME 260: *Quantitative Physiology*
- BME 295: *BME Design Seminar*
- BME 296: *BME Senior Design*

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### Writing, Humanities and Social Sciences

- WRT 105 (grade of C or better) *Primary Writing*
- WRT 273 *Communicating your Professional Identity*
- 4 cr. Humanities OR Social Science course \_\_\_\_\_

### Cluster in Humanities or Social Science

Cluster Chosen: \_\_\_\_\_

- Cluster Course 1 \_\_\_\_\_
- Cluster Course 2 \_\_\_\_\_
- Cluster Course 3 \_\_\_\_\_

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### Math & Basic Sciences

- MTH 161       MTH 141
- MTH 162 **OR**  MTH 142
- MTH 143
- MTH 164
- MTH 165
- CHM 131
- CHM 132
- BIO 110
- PHY 121 or PHY 113 (*if in MTH 141-3*)
- PHY 122
- Basic Science Elective 1 \_\_\_\_\_
- Basic Science Elective 2 \_\_\_\_\_
- (must include BIO 202 or 210 or BME 411 if choosing C&T Concentration)

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### Concentration Courses

#### Biomechanics

- ME 226
- ME 123
- ME 225
- ULBME
- BME 283 **or**
- BME 212

#### Cell & Tissue

- CHE 243
- CHE 225
- CHE 244
- ULBME
- BME 266 **or**
- BME 262

#### Medical Optics

- BME 270
- OPT 241
- OPT 261
- ULBME
- BME 255 **or**
- OPT 276

#### Biosignals & Biosystems

- ECE 221 **or**  BME 228
- ECE 246
- ECE 230
- ULBME
- BME 251 **or**
- BME 218 **or**
- ECE 452

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### Electives: (12 credits *required*)

- Elective 1 \_\_\_\_\_
- Elective 2 \_\_\_\_\_
- Elective 3 \_\_\_\_\_

Latest date updated: \_\_\_\_\_