University of Rochester Biomedical Engineering (BME) Program

First 1 ½ yrs - ALL Students

1st Fall	BME 101 Introduction to Biomedical Engineering	*MTH 161 Calculus I	CHM 131 Chemistry I	WRT 105 Primary Writing / Social Sci or Humanities
1st Spring	WRT 105 Primary Writing / Social Sci or Humanities	☐ MTH 161≥C- MTH 162 Calculus II	☐ CHM 131≥C- CHM 132 Chemistry II	☐ MTH 161≥C- 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 211, 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

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	★ Basic Science Elective	Humanities / Social Science _____ & WRT 273** Prof Identity	CHE 243 Fluid Dynamics	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	☐ BME 210 / BME 228 Phys Cont Sys ECE 221 Elec Devs & Ckts / ☐ BME 230	BME 210, MTH 164,165 ECE 230 Electromagnetic Waves	★ Basic Science Elective	☐ CHE 243, PHY 121, MTH165 CHE 244 Heat & Mass Transfer	☐ PHY 121 & MTH 162 OPT 241 Geometrical Optics	★ 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, PHY121 ME 123 Thermo-dynamics	★ Basic Science Elective	Humanities / Social Science	★ Basic Science Elective	Basic Sci Elec. / Elective	Humanities / Social Science	Humanities / Social Science	☐ PHY 122 & MTH 164 OPT 261 Interference & Diffraction
SR Fall	☐ BME Senior BME 295 Design Seminar	☐ BME 210 BME 260 Quantitative Physiology	☐ MTH 164, 165, BME 201, ME 123 ME 225 Fluid Dynamics	⌘ UL BME BME 283 / Elective	☐ BME 230 ECE 246 Digital Signal Processing	⌘ UL BME BME218 or 253 / Elective	☐ Junior standing CHE 225 Thermo-dynamics	⌘ UL BME BME 266 / Basic Sci. Elective	★ Basic Science Elective	⌘ UL BME BME 255 / Elective
SR Spring	☐ BME 295 BME 296 Senior Design Project	Humanities / Social Science	Elective	⌘ UL BME BME 212 / Elective	Elective	⌘ UL BME BME 251 / Elective	Elective	⌘ UL BME BME 262 / Elective	Elective	⌘ UL BME BME 272 / Elective