

Sample schedule for CEE/BME Additional Majors in the BMEC Track

Updated 7/19/2019

Civil Engineering

First Year

Fall		Units
12-100	Intro. to Civil & Environmental Engineering	12
21-120	Differential & Integral Calculus	10
33-141	Physics I for Engineers	12
99-101	Computing@Carnegie Mellon	3
xx-xxx	General Education Course	9
Total:		46

Spring		Units
xx-xxx	Introduction to Engineering	12
21-122	Integration & Approximation	10
33-142	Physics II for Engineers	12
09-101	Introduction to Experimental Chemistry	3
xx-xxx	General Education Course	9
Total:		46

Civil Engineering and BME

First Year

Fall		Units
12-100	Intro to Civil & Environmental Engineering	12
21-120	Differential & Integral Calculus	10
33-141	Physics I for Engineers	12
99-101	Computing@Carnegie Mellon	3
xx-xxx	General Education Course	9
Total:		46

Spring		Units
42-101	Intro. to Biomedical Engineering	12
21-122	Integration & Approximation	10
33-142	Physics II for Engineers	12
03-121	Modern Biology	9
xx-xxx	General Education Course	9
Total:		52

Second Year

Fall		Units
12-200	CEE Challenges	9
12-212	Statics	9
15-110	Principles of Computing	10
21-259	Calculus in Three Dimensions	9
39-210	Experiential Learning I	0
xx-xxx	General Education Course	9
Total:		46

Spring		Units
12-231	Solid Mechanics	9
12-232	Solid Mechanics Lab	3
12-271	Introduction to Computer Application in Civil & Environmental Engineering	9
21-260	Differential Equations	9
39-220	Experiential Learning II	0
xx-xxx	General Education Course	9
09-105	Introduction to Modern Chemistry	10
Total:		49

Second Year

Fall		Units
12-200	CEE Challenges	9
12-212	Statics	9
15-110	Principles of Computing	10
21-259	Calculus in Three Dimensions	9
42-202	Physiology	9
-or-		
42-203	BME Laboratory	
42-201	Professional Issues in BME	3
39-210	Experiential Learning I	0
Total:		49

Spring		Units
12-231	Solid Mechanics	9
12-232	Solid Mechanics Lab	3
09-101	Intro to Experimental Chemistry	3
21-260	Differential Equations	9
12-271	Introduction to Computer Application in Civil & Environmental Engineering	9
09-105	Introduction to Modern Chemistry	10
42-202	Physiology	9
-or-		
42-203	BME Laboratory	
39-220	Experiential Learning II	0
Total:		52

Third Year

Fall		Units
12-301	CEE Projects	9
12-335	Soil Mechanics	9
12-336	Soil Mechanics & Materials Lab	3
12-355	Fluid Mechanics	9
12-356	Fluid Mechanics Lab	3
39-310	Experiential Learning III	0
36-220	Engineering Statistics and Quality Control	9
xx-xxx	Elective 1	9
Total:		51

Spring		Units
12-351	Environmental Engineering	9
12-352	Environmental Engineering Lab	3
27-357	Introduction to Materials Selection	6
12-358	Materials Lab	3
36-220	Elective 2	9
xx-xxx	Elective 3	9
xx-xxx	General Education Course	9
Total:		48

Third Year

Fall		Units
12-301	CEE Projects	9
12-335	Soil Mechanics	9
12-336	Soil Mechanics & Materials Lab	3
12-355	Fluid Mechanics	9
12-356	Fluid Mechanics Lab	3
36-220	Engineering Statistics and Quality Control	9
BMEC Elective or 42-302 Biomedical		
42-XXX	Engineering Systems Modeling and Analysis	9
39-310	Experiential Learning III	0
Total:		51

Spring		Units
12-351	Environmental Engineering	9
12-352	Environmental Engineering Lab	3
27-357	Introduction to Materials Selection	6
12-358	Materials Lab	3
36-220	Engineering Statistics and Quality Control	9
BMEC Elective or 42-302 Biomedical		
42-XXX	Engineering Systems Modeling and Analysis	9
xx-xxx	General Education Course	9
Total:		48

Fourth Year			Fourth Year		
	Fall	Units		Fall	Units
12-401	Civil & Environmental Engineering Design	12	12-401	Civil & Environmental Engineering Design	12
12-411	Project Management for Construction	9	12-411	Project Management for Construction	9
12-421	Engineering Economics	6	12-421	Engineering Economics	6
xx-xxx	General Education Course	9	xx-xxx	General Education Course	9
xx-xxx	Elective 4	9	42-401	Foundations of BME Design	6
			xx-xxx	Elective	9
		Total: 48			Total: 54
Spring			Spring		
		Units			Units
xx-xxx	General Education Course	9	xx-xxx	General Education Course	9
xx-xxx	General Education Course	9	xx-xxx	General Education Course	9
xx-xxx	Elective 5	9	xx-xxx	General Education Course	9
xx-xxx	Elective 6	9	xx-xxx	General Education Course	9
xx-xxx	Elective 7	9	42-xxx	BMEC Elective	9
xx-xxx	Elective 8	9	42-402	BME Design	9
		Total: 54			Total: 54

Minimum no. of units to graduate: 385 (CEE), 406 (BME/CEE)

Core courses (All Required)

- 42-101 Introduction to Biomedical Engineering - Fall and Spring
- 42-201 Professional Issues in Biomedical Engineering - Fall and Spring
- 42-202 Physiology - Fall and Spring
- 42-203 Biomedical Engineering Laboratory# - Fall and Spring
- 42-302 Biomedical Engineering Systems Modeling and Analysis – Fall and Spring
- 03-121 Modern Biology - Fall and Spring
- 42-401 Foundations of BME Design* - Fall
- 42-402 BME Design Project– Spring

Also known as 03-206 for pre-med students.

*42-401 serves as the precursor/pre-requisite for 42-402 BME Design.

For the Biomechanics track, you must take the following combination of courses:

- One (1) BMEC **Required** Elective
- Two (2) BMEC Electives (either **Required** or **Additional**)

Required BMEC Electives (must take at least one of the following)

- 42-341 Introduction to Biomechanics
- 42-441 Cardiovascular Biomechanics
- 42-645/24-655 Cellular Biomechanics
- 42-646/06-646/24-657 Molecular Biomechanics

Additional BMEC Electives

- 33-441/03-439 Introduction to BioPhysics
- 42-444 Medical Devices
- 42-447 Rehabilitation Engineering
- 42-640/24-658 Image-Based Computational Modeling and Analysis
- 42-641/24-676 Bio-Inspired Robotics
- 42-643/24-615/06-623 Microfluidics
- 42-X00 BME Research* OR 39-500 CIT Honors Thesis* OR 42-6XX Clinical Course (Surgery for Engineers/ Precision Medicine/ICU Medicine)

* The 42-X00 research project (42-200/300/400 Sophomore/Junior/Senior Biomedical Engineering Research Project OR 39-500 Honors Research Project) must be on a BME topic that is aligned to the track, supervised or co-supervised by a BME faculty member, and conducted for 9 or more units of credit.**

Some Special Topics and newly offered or intermittently offered courses may be acceptable as BMEC track electives. Students should consult with their BME advisors and petition the BME Undergraduate Affairs Committee for permission to include such courses as BMEC track electives.