

Biomedical Engineering

FIRST YEAR		SECOND YEAR		THIRD YEAR		FOURTH YEAR	
FALL	SPRING	FALL	SPRING	FALL	SPRING	FALL	SPRING
BME 101 or GE B 4	BME 101 or GE B 4	BME 202 MATH 126 or 129 4	BISC 220L (GE D) 4	EE 202L PHYS 152L, (MATH 245) 4	TECHNICAL ELECTIVE 4	WRIT 340 WRIT 150 4	BME 415 or BME 416L BME 405L 2-4
WRIT 150 4	GESM (GE A)# 4	GE C 4	BME 210 (MATH 245) 4	BME 423 MATH 245 4	BME 302L EE 202L 4	BISC 320L CHEM 105bL 4	GE B 4
MATH 125 (GE F)* 4	MATH 126 OR MATH 129* MATH 125 4	MATH 226 OR MATH 229 MATH 126 or 129 4	MATH 245 MATH 226 or 229 4	CHEM 322aL CHEM 105bL 4	GE C 4	BME 403L BISC 220L, MATH 245, (EE 202L) or 405L BME 210, EE 202L 4	BME 405L BME 210, EE 202L or 403L BISC 220L, MATH 245 4
CHEM 105aL (GE E)* 4	CHEM 105bL CHEM 105aL 4	PHYS 151L (GE E) MATH 125 or 126 or 226 4	PHYS 152L PHYS 151L, (MATH 226) 4	BME ANCHOR COURSE 4	CHEM 322b or 400-level BME Course 4	BME 413 PHYS 152L 4	BME 410L CHEM 322aL 4
ENGR 102 2	OPTIONAL ELECTIVE 2	OPTIONAL ELECTIVE 2	OPTIONAL ELECTIVE 2	OPTIONAL ELECTIVE 2	OPTIONAL ELECTIVE 2	TECHNICAL ELECTIVE 2	TECHNICAL ELECTIVE (if needed) 2

MATHEMATICS (16 UNITS)

MATH 125: Calculus I*

MATH 126 or 129: Calculus II*

MATH 226 or 229: Calculus III

MATH 245: Mathematics of Phys. and Engr.

PHYSICS (8 UNITS)

PHYS 151L: Mechanics and Thermodynamics

PHYS 152L: Electricity and Magnetism

CHEMISTRY (16 UNITS)

CHEM 105aL: General Chemistry*

CHEM 105bL: General Chemistry

CHEM 322aL: Organic Chemistry

CHEM 322bL: Organic Chemistry or 400-level BME course

BIOLOGY (8 UNITS)

BISC 220L: Cell Biology & Physiology

BISC 320L: Molecular Biology

GENERAL EDUCATION (32 UNITS)

GE A The Arts (1 Course)*

GE B Humanistic Inquiry (2 Courses)

GE C Social Analysis (2 Courses)

GE D Life Sciences (1 Course)*

GE E Physical Sciences (1 Course)*

GE F Quantitative Reasoning (1 Course)*

GE G,H Global Perspectives (2 Courses)*

GESM General Education Seminar (1 Course)

WRITING (8 UNITS)

WRIT 150: Writing and Critical Reasoning

WRIT 340: Advanced Writing

ENGINEERING (55 UNITS)

BME 101: Intro. to Biomedical Engineering

BME 202: Control/Comm. in Nervous System

BME 210: Biomed. Comp. Simulation Methods

BME 302L: Medical Electronics

BME 403L: Physiological Systems

BME 405L: Senior Projects: Meas. and Inst.

BME 410: Intro. to Biomaterials & Tissue Engr.

BME 413: Bioengineering Signals & Systems

BME 415: Regulation of Medical Products or

BME 416L: Development and Regulation of Medical Products

BME 423: Statistical Methods in BME

EE 202L: Linear Circuits

ENGR 102: Engineering Freshman Academy

BME ANCHOR COURSE: BME 404 or BME 430 or BME 451

TECHNICAL ELECTIVES

SPECIAL NOTES

Courses with the * symbol may be satisfied with AP, IB or A-Level exams. See page 16 for more information.

GESM#: GESM can be taken from GE categories: A, B, C, or D. Courses listed in the guide are options for a four-year course plan.

GE: Engineering students are encouraged to satisfy GE-G and GE-H with a course that also satisfies a Core Literacy. GE-H may be satisfied by AP/IB. Additionally, your GESM course should be taken in categories A, B, C, or D only. See page 15 for more information and consult your advisor for detailed assistance.

TECHNICAL ELECTIVES (6-8 units): Taken from ONE of the following three areas of specialization: Bioelectronics/Computers: (BME 201, BME 204, BME 426, BME 427, BME 430, BME 451, BME 453, CSCI 445, EE 109L, EE 209, EE 338, EE 348L, EE 352L, EE 354L, EE 454L, EE 483, ENGR 345 or ITP 308) or Biomechanics: (AME 201, AME 204, AME 301, AME 302, AME 308 or ITP 308, AME 309, BME 201, BME 204, BME 404, BME 408, BME 412, BME 414, BME 426, BME 427, BME 453 or MASC 310) Molecular-Cellular Engineering: (BME 201, BME 204, BME 406, BME 412, BME 414, BME 430, BME 453, BME 459, CHE 330, CHE 350, CHE 460L, CHE 489, ENGR 305, ITP 308, or MASC 310)

The Organic Chemistry option allows students in BME, BMEL, and BMEN to replace one semester of Organic Chemistry with an additional 4-unit 400-level BME course.

Optional Course Tracks for **Biomedical Engineering**

The Biomedical Engineering (BME) curriculum covers foundational concepts during the first few semesters. Students following the standard program will have the opportunity to take more technical electives, while students pursuing one of the optional specializations will take courses related to that content area.

Electrical

SECOND YEAR		THIRD YEAR		FOURTH YEAR	
FALL	SPRING	FALL	SPRING	FALL	SPRING
BME 202 MATH 126 or 129 4	EE 109L (ITP 165) 4	EE 202L PHYS 152L, (MATH 245) 4	FIRST TRACK COURSE: EE 338 EE 202L, PHYS 152L or EE 354L EE 109L 4	BISC 320L CHEM 105bL 4	CHEM 322aL CHEM 105bL or 400-LEVEL BME COURSE 4
GE C 4	BME 210 (MATH 245) 4	EE 250L EE 109L 4	GE B 4	GE C 4	SECOND TRACK COURSE: EE 349L, EE 338 or EE 454L EE 354 4
MATH 226 or MATH 229 MATH 126 or 129 4	MATH 245 MATH 226 or 229 4	BME 423 MATH 245 4	BISC 220L 4	BME 413 PHYS 152L 4	BME 405L BME 210, EE 202L or 403L BISC 220L, MATH 245, (EE 202L) 4
PHYS 151L (GE E) MATH 125 or 126 or 226 4	PHYS 152L PHYS 151L, (MATH 226) 4	TECHNICAL ELECTIVE 2	TECHNICAL ELECTIVE 4	BME 403L BISC 220L, MATH 245, (EE 202L) or 405L BME 210, EE 202L 4	BME 415 or 416L BME 405L 2-4
ITP 165 2	OPTIONAL ELECTIVE 2	WRIT 340 WRIT 150 4	OPTIONAL ELECTIVE 2	TECHNICAL ELECTIVE 2	TECHNICAL ELECTIVE (if needed) 2

Mechanical

THIRD YEAR		FOURTH YEAR	
FALL	SPRING	FALL	SPRING
EE 202L PHYS 152L, (MATH 245) 4	CHEM 322aL CHEM 105bL or 400-LEVEL BME COURSE 4	BISC 320L CHEM 105bL 4	BME 405L BME 210, EE 202L or 403L, BISC 220L, MATH 245, (EE 202L) 4
ITP 308 3	MASC 310 4	BME 413 PHYS 152L 4	AME 309 AME 201, (MATH 245) 4
BME 423 MATH 245 4	AME 301 AME 201 or CE 205 3	BME 403L BISC 220L, MATH 245, (EE 202L) or 405L BME 210, EE 202L 4	GE C 4
GE C 4	AME 204 AME 201 or CE 205 3	BME 404 PHYS 151L, MATH 245, AME 201 4	BME 415 or BME 416L BME 405L 2-4
AME 201 PHYS 151Lg or 161Lg or 171L 3	WRIT 340 WRIT 150 4	TECHNICAL ELECTIVE 2	TECHNICAL ELECTIVE (if needed) 2

Molecular-Cellular

THIRD YEAR		FOURTH YEAR	
FALL	SPRING	FALL	SPRING
BISC 320L CHEM 105bL 4	GE C 4	THIRD PANEL COURSE 4	GE C 4
BME 413 PHYS 152 4	SECOND PANEL COURSE 4	EE 202L PHYS 152L, (MATH 245) 4	CHE 489 CHE 330, BISC 320Lg 4
CHEM 322aL CHEM 105bL 4	CHEM 322bL CHEM 322aL 4	BME 403L MATH 245, BISC 220Lg 4	BME 405L BME 210, EE 202L 4
BME 423 MATH 245 4	BISC 330L CHEM 322aL 4	BME 413 PHYS 152L 4	BME 415 BME 405L 2
FIRST PANEL COURSE 2	TECHNICAL ELECTIVE (if needed) 2	OPTIONAL ELECTIVE 2	WRIT 340 WRIT 150 4