جامعة الفيصل
Alfaisal University

Undergraduate Curriculum Committee

College of Engineering and Advanced Computing

Study Plan

Bachelor of Biomedical Engineering

February 2026

Program Study Plan

Students must complete a total of **135 credit hours** to earn a Bachelor of Biomedical Engineering degree.

The required coursework is distributed across the following credit hour categories:

University Requirements (18 credit hours):

Arts & Humanities (9 credit hours) *:

1. ENG 101 University Writing *(Required)*
2. ENG 222: Technical Writing *(Required)*
3. Elective 1 (to be selected from the courses listed under the Arts and Humanities list)

Social Sciences (6 credit hours) *:

1. Elective 1 (to be selected from the courses listed under the Social Sciences list)
2. Elective 2 (to be selected from the courses listed under the Social Sciences list)

Sciences (3 credit hours) *:

1. AI 102 AI Foundations for Everyone *(Required)*

College Requirements (41 Credit Hours):

MAT 101 Calculus I (3 CRHs)
MAT 112 Calculus II (3 CRHs)
MAT 211 Calculus III (3 CRHs)
MAT 212 Linear Algebra (3 CRHs)
MAT 213 Differential Equations (3 CRHs)
MAT 224 Numerical Methods (3 CRHs)
STA 212 Probability and Statistics (3 CRHs)

CHM 101 General Chemistry I (3 CRHs)
CHM 101 L General Chemistry I Lab (1 CRHs)
PHU 103 Physics I (3 CRHs)
PHU 103 L Physics I Lab (1 CRH)
PHU 124 Physics II (3 CRHs)
PHU 124 L Physics II (1 CRH)

COE 100 Student Orientation and Academic Success (1 CRH)
SE 100 Programming for Engineers (3 CRHs)
SE 100 L Programming for Engineers Lab (1 CRH)
EE 209 Applied Electromagnetics (3 CRHs)

Major Requirements (64 CRHs)

BME 100 Introduction to Biomedical Engineering (3 CRHs)
BME 102 Foundations of Biomaterials Engineering (3 CRHs)
BME 102 L Foundations of Biomaterials Engineering Lab (1 CRHs)

BME 200 Human Anatomy (3 CRHs)
BME 200 L Human Anatomy Lab (1 CRHs)
BME 201 Electrical Circuits for Biomedical Applications (3 CRHs)
BME 201 L Electrical Circuits for Biomedical Applications Lab (1 CRHs)
BME 202 Biomechanics (3 CRHs)
BME 210 Human Physiology (3 CRHs)

BME 301 Biomedical Signals and Systems (3 CRHs)
BME 301 L Biomedical Signals and Systems Lab (1 CRHs)
BME 302 Modelling and Control of Biomedical Systems (3 CRHs)
BME 302 L Modelling and Control of Biomedical Systems Lab (1 CRHs)
BME 303 Biomedical Electronics (3 CRHs)
BME 303 L Biomedical Electronics Lab (1 CRHs)
BME 304 Biomedical Image Processing (3 CRHs)
BME 304 L Biomedical Image Processing Lab (1 CRHs)
BME 305 Biomedical Imaging Systems (3 CRHs)
BME 306 Biomedical Instrumentation (3 CRHs)
BME 306 L Biomedical Instrumentation Lab (1 CRHs)
BME 307 Bio Fluid Dynamics (3 CRHs)
BME 307 L Bio Fluid Dynamics Lab (1 CRHs)
BME 308 Healthcare Management Systems (3 CRHs)

BME 402 Medical Device Quality & Regulatory Affairs (3 CRHs)
BME 405 Artificial Intelligence in Biomedical Engineering (3 CRHs)
BME 495 Capstone Project I (3 CRHs)
BME 496 Capstone Project II (3 CRHs)
BME 499 Ethics and Professional Development (1 CRH)

Major Electives (12 CRHs)

BME 401 Undergraduate Research in Biomedical Engineering (3 CRHs)
BME 408 Lasers and Coherent Optics (3 CRHs)
BME 410 Clinical Imaging Block (3 CRHs)
BME 412 Deep Learning in Biomedical Imaging (3 CRHs)
BME 414 Radiation Therapy (3 CRHs)
BME 420 Prosthetics and Orthotics (3 CRHs)
BME 421 Advanced Biomedical Instrumentation (3 CRHs)
BME 422 Medical Device Innovation and Entrepreneurship (3 CRHs)
BME 423 Biomedical Mechatronic Systems (3 CRHs)
BME 424 Biomedical Sensors (3 CRHs)
BME 425 Perfusion & Pumping Engineering (3 CRHs)
BME 426 Tissue Engineering (3 CRHs)
BME 427 Cardiovascular Instrumentation (3 CRHs)
BME 428 Fundamentals of BioMEMS and Medical Microdevices (3 CRHs)
BME 429 Biomechanics of Movement (3 CRHs)
BME 430 Special Topics in Biomedical Engineering (3 CRHs)
BME 431 Genetics & Molecular Biology (3 CRHs)
BME 433 Biomedical Data Analytics (3 CRHs)
BME 434 Bioinformatics (3 CRHs)
BME 435 Cognitive Neuroscience (3 CRHs)
BME 436 Photonic Information Processing (3 CRHs)
BME 438 Nanotechnology (3 CRHs)

Summer Internship (0 CRHs)

BME 390 Biomedical Engineering Internship

Track Requirements

i. **Biomedical Imaging Track (18 CRHs)**

Core courses (15 CRHs)

BME 402 Medical Device Quality & Regulatory Affairs (3 CRHs)
BME 405 Artificial Intelligence in Biomedical Engineering (3 CRHs)
BME 410 Clinical Imaging Block (3 CRHs)
BME 412 Deep Learning in Biomedical Imaging (3 CRHs)
BME 414 Radiation Therapy (3 CRHs)

Elective course (select 3 CRHs)

BME 401 Undergraduate Research in Biomedical Engineering (3 CRHs)
BME 408 Lasers and Coherent Optics (3 CRHs)
BME 420 Prosthetics and Orthotics (3 CRHs)
BME 421 Advanced Biomedical Instrumentation (3 CRHs)
BME 422 Medical Device Innovation and Entrepreneurship (3 CRHs)
BME 423 Biomedical Mechatronic Systems (3 CRHs)
BME 424 Biomedical Sensors (3 CRHs)
BME 425 Perfusion & Pumping Engineering (3 CRHs)
BME 426 Tissue Engineering (3 CRHs)
BME 427 Cardiovascular Instrumentation (3 CRHs)
BME 428 Fundamentals of BioMEMS and Medical Microdevices (3 CRHs)
BME 429 Biomechanics of Movement (3 CRHs)
BME 430 Special Topics in Biomedical Engineering (3 CRHs)
BME 431 Genetics & Molecular Biology (3 CRHs)
BME 433 Biomedical Data Analytics (3 CRHs)
BME 434 Bioinformatics (3 CRHs)
BME 435 Cognitive Neuroscience (3 CRHs)
BME 436 Photonic Information Processing (3 CRHs)
BME 438 Nanotechnology (3 CRHs)

ii. **Biomedical Devices & Instrumentation Track (18 CRHs)**

Core courses (15 CRHs)

BME 402 Medical Device Quality & Regulatory Affairs (3 CRHs)
BME 405 Artificial Intelligence in Biomedical Engineering (3 CRHs)
BME 420 Prosthetics & Orthotics (3 CRHs)
BME 421 Advanced Biomedical Instrumentation (3 CRHs)
BME 423 Biomedical Mechatronic Systems (3 CRHs)

Elective course (select 3 CRHs)

BME 401 Undergraduate Research in Biomedical Engineering (3 CRHs)
BME 408 Lasers and Coherent Optics (3 CRHs)
BME 412 Deep Learning in Biomedical Imaging (3 CRHs)
BME 414 Radiation Therapy (3 CRHs)
BME 422 Medical Device Innovation and Entrepreneurship (3 CRHs)
BME 424 Biomedical Sensors (3 CRHs)
BME 425 Perfusion & Pumping Engineering (3 CRHs)
BME 426 Tissue Engineering (3 CRHs)
BME 427 Cardiovascular Instrumentation (3 CRHs)
BME 428 Fundamentals of BioMEMS and Medical Microdevices (3 CRHs)
BME 429 Biomechanics of Movement (3 CRHs)
BME 430 Special Topics in Biomedical Engineering (3 CRHs)
BME 431 Genetics & Molecular Biology (3 CRHs)
BME 433 Biomedical Data Analytics (3 CRHs)
BME 434 Bioinformatics (3 CRHs)
BME 435 Cognitive Neuroscience (3 CRHs)
BME 436 Photonic Information Processing (3 CRHs)
BME 438 Nanotechnology (3 CRHs)

Minor in Biomedical Engineering Requirements (15 CRHs)

No Minor (Not applicable)

Double Major in Biomedical Engineering Requirements (30 CRHs)

No Major (Not applicable)