2024 - 2025 Major Map

Biomedical Engineering (Biomedical Devices), BSE

School/College: Ira A. Fulton Schools of Engineering
ESBMEMDBSE

Term 1 0 - 16 Credit Hours Critical course signified by ⬥	Hours	Minimum Grade	Notes
⬥ ASU 101-BME: The ASU Experience	1	C	• ASU 101 or college-specific equivalent First-Year Seminar required of all students.
⬥ CHM 114: General Chemistry for Engineers (SCIT OR SQ)	4	C	
⬥ MAT 265: Calculus for Engineers I (MATH OR MA)	3	C	
ENG 101 or ENG 102: First-Year Composition OR ENG 105: Advanced First-Year Composition OR ENG 107 or ENG 108: First-Year Composition	3	C	• If ENG 105 is taken, a three credit hour applicable elective must also be taken prior to graduation. See advisor.
FSE 100: Introduction to Engineering	2	C	• Prep for success using the First-Year Student Guide.
STP 226: Elements of Statistics (QTRS OR CS) OR STP 231: Statistics for Life Science (QTRS OR CS)	3	C	• Join a Fulton community.
⬥ Minimum 2.00 GPA ASU Cumulative.			• Explore engineering and technical professions.
Term hours subtotal:	16		

Term 2 16 - 30 Credit Hours Critical course signified by ⬥	Hours	Minimum Grade	Notes
⬥ BIO 181: General Biology I (SCIT OR SQ)	4	C	• Create a Handshake profile.
⬥ MAT 266: Calculus for Engineers II (MATH OR MA)	3	C	• Get involved with EPICS, the Generator Labs, and the Fulton Start-Up Center.
⬥ PHY 121: University Physics I: Mechanics (SCIT OR SQ)	3	C	
⬥ PHY 122: University Physics Laboratory I (SCIT OR SQ)	1	C	
ENG 101 or ENG 102: First-Year Composition OR ENG 105: Advanced First-Year Composition OR ENG 107 or ENG 108: First-Year Composition	3	C	
⬥ Complete ENG 101 OR ENG 105 OR ENG 107 course(s).			
⬥ Complete FSE 100 course(s).			
⬥ Minimum 2.00 GPA ASU Cumulative.			
Term hours subtotal:	14		

Term 3 30 - 45 Credit Hours Critical course signified by ⬥	Hours	Minimum Grade	Notes
⬥ MAT 242: Elementary Linear Algebra	2	C	• Prep for success using the Sophomore Guide.
⬥ MAT 267: Calculus for Engineers III (MATH OR MA)	3	C	
⬥ PHY 131: University Physics II: Electricity and Magnetism (SCIT OR SQ)	3	C	
⬥ PHY 132: University Physics Laboratory II (SCIT OR SQ)	1	C	
CSE 101: Introduction to Computer Science and Programming for Non-Computer Science Majors (QTRS)	3	C	
Humanities, Arts and Design (HUAD)	3		
⬥ Minimum 2.00 GPA ASU Cumulative.			

Complete Mathematics (MATH) requirement.

	Term hours subtotal:	15

Term 4 45 - 62 Credit Hours **Critical course signified by** ◆	Hours	Minimum Grade	Notes
◆ BME 200: Conservation Principles in Biomedical Engineering	3	C	• Pursue an undergraduate research experience. • Apply for internships. • Attend career fairs and events.
◆ MAT 275: Modern Differential Equations (MATH OR MA)	3	C	
BME 235: Physiology for Engineers	4	C	
EEE 202: Circuits I	4	C	
Sustainability (SUST)	3		
Term hours subtotal:	17		

Term 5 62 - 76 Credit Hours **Necessary course signified by** ⭐	Hours	Minimum Grade	Notes
⭐ BME 350: Signals and Systems for Bioengineers	3	C	• Plan for success using the Junior Guide. • Network at student organization competitions or professional societies.
BME 213: Biomedical and Bioengineering Ethics (HUAD)	3	C	
BME 301: Numerical Methods in Biomedical Engineering	2	C	
BME 316: Biomechanics for Biomedical Engineers	3	C	
BME 331: Transport Phenomena for Biomedical Engineering	3	C	
Term hours subtotal:	14		

Term 6 76 - 92 Credit Hours **Necessary course signified by** ⭐	Hours	Minimum Grade	Notes
⭐ BME 370: Microcomputer Applications in Biomedical Engineering	3	C	• Select an Upper Division Technical Elective from the approved list found at the bottom of the major map. • Research and prepare for graduate school. • Apply for an engineering 4+1 program. • Develop a professional profile online.
BME 300: Bioengineering Product Design	3	C	
BME 318: Biomaterials	4	C	
Upper Division Technical Elective	3	C	
Social and Behavioral Sciences (SOBE)	3		
Term hours subtotal:	16		

Term 7 92 - 106 Credit Hours **Necessary course signified by** ⭐	Hours	Minimum Grade	Notes
⭐ BME 417: Biomedical Engineering Capstone Design I (L)	4	C	• Select your Upper Division Technical Elective and Upper Division CIVI Track Course from the approved lists found at the bottom of the major map. • Plan for success using the Senior Guide. • Use Handshake to apply for full-time positions. • Complete an in person or virtual practice interview.
BME 413: Biomedical Instrumentation (L)	3	C	
BME 423: Biomedical Instrumentation Laboratory (L)	1	C	
Upper Division Technical Elective	3	C	
Upper Division CIVI Track Course	3		
Term hours subtotal:	14		

Term 8 106 - 120 Credit Hours **Necessary course signified by** ⭐	Hours	Minimum Grade	Notes
⭐ BME 490: Biomedical Engineering Capstone Design II (L)	4	C	• Select your Upper Division Technical Elective from the approved list found at the bottom of the major map.
Upper Division Technical Elective	4	C	
American Institutions (AMIT)	3		
Global Communities, Societies and Individuals (GCSI)	3		
Term hours subtotal:	14		

Hide Course List(s)/Track Group(s)

Upper Division Technical Electives	Upper Division CIVI Track Course
BME 494: Applied Computational Behavioral Science	ASB 305: Poverty and Global Health (CIVI OR (L or SB) & C)
BME 494: Approaches for Innov Healthcare Tech	FAS 370: Family Ethnic and Cultural Diversity (CIVI OR SB & C) or AFR 370: Family Ethnic and Cultural Diversity (CIVI OR SB & C)
BME 494: Bioenergy and Microbial Biotechnology	
BME 494: Biomechanics/Human Physical Capability	HCD 330: Health Care Systems in the U.S. (CIVI)
BME 494: Biomedical Business Fundamentals	JUS 352: The Global Politics of Human Rights (CIVI OR SB & G) or SOC 354: The Global Politics of Human Rights (CIVI OR SB & G)
BME 494: Biomedical Device Design	
BME 494: Chimeras and Recombinant Organisms in Medicine	PHI 306: Applied Ethics (CIVI OR HU)
BME 494: Clinical Neuroscience	POS 370: Law and Society (CIVI OR SB)
BME 494: Finite Element Modeling for Biomedical Application	
BME 494: Fundamentals in Scientific Proposal Writing	
BME 494: Global Persp on Tech Innovation in Neuroscience	
BME 494: Industrial Immersions	
BME 494: Introduction to Cellular Mechanobiology	
BME 494: iOS Programming for Biomedical Applications	
BME 494: IoTG for Medical Devices and Health Care	
BME 494: Medical Imaging Instrumentation	
BME 494: Molecular Medicine	
BME 494: Molecular Synthetic Biology	
BME 494: Multisensory Integration	
BME 494: Nanoscale Science and Detection Methods	
BME 494: Neural Bases of Motor Control	
BME 494: Neural Plasticity and Neurorehabilitation	
BME 494: Polymeric Drug Delivery	
BME 494: Principles of Stem Cell Technology	
BME 494: Principles of Stem Cell Technology Lab	
BME 494: Re-engineering the US Healthcare Delivery System	
BME 494: Regression Methods in R	

BME 494: Safety and Health Engineering

BME 494: Science-based Approach: Optimize Human Performance

BME 494: Synthetic Biology: iGEM for BME

BME 494: Systems Biology of Disease

BME 494: Technology for Global Health

BME 494: Terminology & App of Medical Models of Disability

BME 494: Thermodynamics for Biomedical Engineers

BME 494: Wearable Devices for Sport, Health, and Wellness

- **Total Hours:** 120
- **Upper Division Hours:** 45 minimum
- University Undergraduate Graduation Requirements

Notes:

Mathematics Placement Assessment score determines placement in first mathematics course.

General Studies designations listed next to courses on the major map were valid for the 2024 - 2025 academic year. Please refer to the course catalog for current General Studies designations at time of class registration. General Studies credit is applied according to the designation the course carries at the time the class is taken.