

Tufts University – School of Engineering
Class of 2024
Bachelor of Science in Biomedical Engineering (BSBME)
Major Requirement
School of Engineering Requirements shown in italics
** Courses that require a letter grade (i.e., no pass/fail)*

The BSBME comprises credit requirements and course requirements as established by the School of Engineering and Department of Biomedical Engineering. Students must satisfy the SOE and ABET-EAC requirements listed in the Credit Requirements box, as well as fulfill all course requirements. SHU values listed for each course requirement reflect those associated with the corresponding Tufts course. Unless otherwise noted, course requirements may be satisfied with transfer courses having SHU values that are different than those shown here. In all cases, students should enter the SHUs received or earned in the correct SOE-Attribute column for a given course requirement to ensure they meet the credit requirements. For planning purposes, students completing the BSBME requirements with Tufts courses will earn at least 131 SHU.

Mathematics & Natural Sciences*	SHU	SOE Attribute						Term
		C	E	M	NS	HASS	None	
MATH 32 Calculus I	3							
MATH 34 Calculus II	3							
MATH 42 Calculus III	4							
MATH 51 Differential Equations	4							
Probability & Statistics (a)	3-5							
CHEM 1 Chem. Fund. w/ lab	5							
CHEM 2 Chem. Principles w/ lab	5							
PHY 11 Gen. Physics I w/ lab	5							
PHY 12 General Physics II w/ lab 5	5							
subtotal	≥37	-	-	-	-	-	-	

Engineering & Computing Fund.	SHU	SOE Attribute						Term
		C	E	M	NS	HASS	None	
<i>EN 1 Applications in Engineering</i>	3							
<i>ES 2 Intro. Comp. in Eng. or COMP 11 Intro. Comp. Sci</i>	4							
subtotal	7			-	-	-	-	

Communication*	SHU	SOE Attribute						Term
		C	E	M	NS	HASS	None	
<i>ENG 1* Expos. Writing or ENG 3</i>	3							
BME 6 Scientific Reading, Writing & Presentations	3							
subtotal	6	-	-	-	-	-	-	

HASS Electives	SHU	SOE Attribute						Term
		C	E	M	NS	HASS	None	
<i>Humanities Elective (b)</i>	≥3							
<i>Social Science Elective (c)</i>	≥3							
<i>≥24 SHU of SOE-HASS are required for the degree. List below courses that do not appear in Communication (see note d).</i>								
subtotal	≥18	-	-	-	-	-	-	

Electrical Systems & Optics*	SHU	SOE Attribute						Term
		C	E	M	NS	HASS	None	
ES 3 Intro. Electrical Systems	5							
ES 15 Mod. Optics & Photonics	3							
subtotal	8	-	-	-	-	-	-	

Biomedical Engineering Core*	SHU	SOE Attribute						Term
		C	E	M	NS	HASS	None	
BME 11 Biomechanics	3							
BME 12 Biothermodynamics	3							
BME 33 Mol. Cell., & Prot. I	5							
BME 34 Mol. Cell., & Prot. II	5							
BME 44 Tis. Org. & Syst. I	5							
BME 45 Tis. Org. & Syst. I	5							
BME 66 Eng. Dsn. Process	3							
BME 100 Dsn. Med. Instrum.	4							
BME 7 Capstone I	3							
BME 8 Capstone II	3							
subtotal	39	-	-	-	-	-	-	

Technical Electives*	SHU	SOE Attribute						Term
		C	E	M	NS	HASS	None	
Technical Elective (e)	3-4							
Technical Elective (e)	3-4							
Technical Elective (e)	3-4							
Technical Elective (f)	3-4							
Technical Elective (f)	3-4							
Technical Elective (g)	1-5							
subtotal	≥16					-		

Abbreviations:
SHU = Semester Hour Unit
SOE = School of Engineering
ABET-EAC = Engineering Accreditation Commission of ABET
C = Courses having attribute SOE-Computing
E = Courses having attribute SOE-Engineering
M = Courses having attribute SOE-Mathematics
NS = Courses having attribute SOE-Natural Sciences
HASS = Course having attribute SOE-HASS (Humanities, Arts, and Social Sciences)
None = Course without SOE attribute

Credit Requirements	SOE Attribute						Total
	E	C	M	NS	HASS	None	
<i>SOE Requirements</i>	≥30		≥30	≥24	-		≥120
<i>ABET-EAC Requirements</i>	≥45		≥30	-	-		≥120
Student Totals							

Student and Advisor Notes:

BSBME Notes

(a) Probability & Statistics Elective

Select from:

BIO 132(4,-), BME 141(3,SoE-Math), CH 99-02(Intermediate Statistics) (3,-), CSHD 140/DLS 273(3,-), CEE 156(4,SoE-Math), EE 24(3,SoE-Math), EE 104(3,SoE-Math), ES 56(4,SoE-Math), MATH 166(4,SoE-Math), PSY 31(5,-).

(b) Humanities Elective

At least 3 SHU of Humanities are required. Requirement may not be satisfied with pre-matriculation credits, ENG 1, or ENG 3.

Select From:

Any course having attribute SOE-HASS-Humanities

(c) Social Sciences Elective

At least 3 SHU of Social Sciences are required. Requirement may not be satisfied with pre-matriculation credits.

Select From:

Any course having attribute SOE-HASS-Social Sciences

(d) Humanities, Arts or Social Sciences Electives

Select From:

Any course having attribute SOE-HASS

Any course having attribute SOE-HASS-Humanities

Any course having attribute SOE-HASS-Arts

Any course having attribute SOE-HASS-Social Sciences

(e) Technical Elective

Select any course from the following thematic groups:

Tissue Engineering and Regenerative Medicine: BIO 41(4,SoE-NatSci), BIO 46(3,SoE-NatSci), BIO 104 (3, SoE-NatSci), BIO 105 (3, SoE-NatSci), BIO 152(3,SoE-NatSci), BIO 171(4,SoE-NatSci), CHBE 102(3,SoE-Engr), CHEM 51(4,SoE-NatSci), CHEM 52(4,SoE-NatSci).

Biomaterials: BIO 46, BIO 171(4, SoE-NatSci), CHEM 31(4,SoE-NatSci), CHEM 32(3,SoE-NatSci), CHEM 51(4,SoE-NatSci), CHEM 52(4,SoE-NatSci).

Biomedical Devices and Imaging: EE 21(4,SoE-Engr), EE125(3,SoE-Engr), EE 133(3,SoE-Engr), ES 4(4,SoE-Engr), ES 55(3,SoE-Math), COMP 15 (4, SoE-Engr), PHYS 31(4,SoE-NatSci).

(f) Technical elective

Select From:

Any BME course

Any course from the following thematic groups:

Tissue Engineering and Regenerative Medicine: BME 56(4,SoE-Engr), BME 57(3,SoE-Engr), BME 122(4,SoE-Engr), BME 143(3,SoE-Engr), BME 154(3,SoE-Engr), BME 163(3,SoE-NatSci), BME 165(3,SoE-Engr), BME 168(3,SoE-Engr), BME 169(3,SoE-Engr), BME 175(3,SoE-Engr)

Biomaterials: BME 56(4,SoE-Engr), BME 57(3,SoE-Engr), BME155(3,SoE-Engr), BME 153(3,SoE-Engr), BME 165(3,SoE-Engr), BME 168(3,SoE-Engr), BME 185(3,SoE-Engr), CHBE 121(3,SoE-Engr), CHBE 122(3,SoE-Engr), ME 123(3,SoE-Engr)

Biomedical Devices and Imaging: BME 25(3,SoE-NatSci), BME 51(4,SoE-Engr), BME 56(4,SoE-Engr), BME 57(3,SoE-Engr), BME 61(3,SoE-Engr), BME 122(3,SoE-Engr), BME 131(3,SoE-Engr), BME 149(3,-), BME155(3,SoE-Engr), BME 160(3,-), BME 161(3,SoE-Engr), BME164(3,SoE-Engr), BME 166(3,SoE-Engr), BME 180(3,SoE-Engr)

(g) Technical Elective

Selected course may not be used to fulfill any other course requirement.

Select From:

Any BME course

Any course having attribute SOE-Engineering

Any course having attribute SOE-Mathematics

Any course having attribute SOE-Natural Sciences

BSBME Course Selection Guidance

Fall Semester, First Year

Course	SHU	SOE Attribute
<i>EN 1 Introduction to Engineering</i>	3	Engineering
MATH 32 Calculus I	3	Mathematics
PHY 11 General Physics I with laboratory	5	Natural Sciences
<i>ENG 1 Expository Writing</i>	3	HASS
Semester Total SHU	14	

Spring Semester, First Year

Course	SHU	SOE Attribute
<i>ES 2 Introduction to Computing in Engineering or COMP 11 Introduction to Computer Science</i>	4	Computing
MATH 34 Calculus II	3	Mathematics
PHY 12 General Physics II with laboratory or CHEM 1 Chemical Fundamentals with laboratory	5	Natural Sciences
<i>HASS Elective</i>	3-5	HASS
Semester Total SHU	15-17	

Fall Semester, Second Year

Course	SHU	SOE Attribute
MATH 42 Calculus III	4	Mathematics
CHEM 1 Chemical Fundamentals with laboratory or CHEM 2 Chemical Principles with laboratory or PHY 12 General Physics II with laboratory	5	Natural Sciences
BME 11 Biomechanics: Solids & Fluids	3	Engineering
BME 33 Biomedical Concepts at the Molecular, Protein & Cellular Scales I	5	Natural Sciences
<i>HASS Elective</i>	3-4	HASS
(ES 85 Professional Preparation for Co-op Education [for students interested in pursuing cooperative education])	1	-
Semester Total SHU	20-21	

Spring Semester, Second Year

Course	SHU	SOE Attribute
MATH 51 Differential Equations	4	Mathematics
CHEM 2 Chemical Principles with laboratory or PHY 12 General Physics II with laboratory	5	Natural Sciences
BME 34 Biomedical Concepts at the Molecular, Protein & Cellular Scales II	5	Natural Sciences
BME 44 Biomedical Concepts at the Tissue, Organ & System Scales I	5	Engineering
Semester Total SHU	19	

Fall Semester, Third Year

Course	SHU	SOE Attribute
Probability & Statistics (a)	3-5	varies with selection
ES 3 Introduction to Electrical Systems with laboratory	5	Engineering
ES15 Modern Optics & Photonics	3	Engineering
BME 66 Engineering Design Process	3	Engineering
BME 45 Biomedical Concepts at the Tissue, Organ & System Scales II	5	Engineering
Semester Total SHU	19-21	

Spring Semester, Third Year

Course	SHU	SOE Attribute
<i>HASS Elective</i>	3-5	HASS
BME 12 Biothermodynamics	3	Engineering
BME 100 Design of Medical Instrumentation	4	Engineering
Technical Elective (e)	3-4	varies with selection
BME 6 Scientific Reading, Writing & Presentations	3	HASS
Semester Total SHU	16-19	

Fall Semester, Fourth Year

Course	SHU	SOE Attribute
<i>HASS Elective</i>	3-5	HASS
Technical Elective (e)	3-4	varies with selection
Technical Elective (e)	3-4	varies with selection
Technical Elective (f)	3-4	varies with selection
BME 7 Capstone I	3	Engineering
Semester Total SHU	15-20	

Spring Semester, Fourth Year

Course	SHU	SOE Attribute
<i>HASS Elective</i>	3-5	HASS
<i>HASS Elective</i>	3-4	HASS
Technical Elective (f)	3-4	varies with selection
Technical Elective (g)	1-5	varies with selection
BME 8 Capstone II	3	
Semester Total SHU	13-21	