

**ALABAMA STATE UNIVERSITY BACHELOR OF SCIENCE IN BIOMEDICAL
ENGINEERING CURRICULUM GUIDE**

**Total Number of Credits: 129 Semester Hours (SH)
BIOMEDICAL ENGINEERING UNDERGRADUATE CURRICULUM**

A) CORE CURRICULUM (31 HRS)

ENGLISH COMPOSITION (6 HRS)

English Composition I	ENG	131	3	
English Composition II	ENG	132	3	
Or				
English Composition (Honors) I	ENG	140	3	
English Composition (Honors) II	ENG	141	3	6 Credit Hrs.

HUMANITIES and FINE ARTS (12 HRS)

Humanities	HUM	103	3	
Introduction to Literature I	ENG	209	3	
Introduction to Literature II	ENG	210	3	
Introduction to Theatre Arts	THE	111	3	
Or				
Music Appreciation	MUS	121	3	
Or Art Appreciation	ART	131	3	
Interdisciplinary Humanities	HUM	101	3	
Or				
Interdisciplinary Humanities	HUM	101	3	
Or				
Voice and Diction	CMS	200	3	
Or				
Public Speaking	CMS	205	3	
Or				
Logical Reasoning	PHL	210	3	12 credit Hrs.

HISTORY, SOCIAL AND BEHAVIORAL SCIENCES (12 HRS)

World Geography	GEO	206	3	
World History I	HIS	131	3	
World History II	HIS	132	3	
Societies around the World	ANT	113	3	
Or				
Principles of Economics I	ECO	251	3	
Or				
Introduction of Economics	ECO	254	3	
Or				
American Government	POS	207	3	
Or				
General Psychology	PSY	251	3	
Or				
Introduction to Sociology	SOC	110	3	12 credit Hrs.

ORIENTATION (1 HR)

Freshman Orientation	ORI	100	1	1 Credit Hr.
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B) PRE-PROFESSIONAL STUDIES (46 HRS)

	<u>COURSE#</u>	<u>CRS</u>	
Calculus & Analytical Geometry I	MAT 265	4	
Calculus & Analytical Geometry II	MAT 266	4	
Mathematical Tools for Eng. Prob. Sol	MAT 350	3	
General Biology I	BIO 127	4	
General Biology II	BIO 128	4	
General College Chemistry I	CHE 141	4	
General College Chemistry II	CHE 142	4	
General Physics I	PHY 210	4	
General Physics II	PHY 211	4	
Intro to Biomedical Engineering	BME 110	3	
Introduction to Computer for Engineers	BME 210	3	
Thermodynamics for Engineers	BME 250	2	
Introduction to Materials	BME 290	3	46 Credit Hrs.

C) REQUIRED PROFESSIONAL – MAJOR FIELD CURRICULUM (52 HRS)**(Includes Core Courses, Required Track Courses and Required Support Courses)****Core Courses Hours (38 HRS.)**

Statics	BME 200	3	
Introduction to Biomechanics	BME 220	3	
Introduction to Biomechanics Lab	BME 221	1	
Developmental Systems Biology	BME 322	3	
Developmental Systems Biology Lab	BME 323	1	
Biological Transport Phenomena	BME 325	3	
Biomedical Devices and Systems	BME 370	3	
Biomedical Devices and Systems Lab	BME 371	1	
Undergraduate Research/Internship	BME 400	1	
Biomaterials	BME 410	3	
Tissue Engineering	BME 412	3	
Human Physiology	BME 440	3	
Human Physiology Lab	BME 441	1	
BioImaging	BME 450	3	
Senior Design I Lecture/Projects	BME 490	3	
Senior Design II Lecture/Projects	BME 491	3	38 Credit Hrs.

Required Track Hours (6 HRS.)**Choose one of the following tracks. Additional courses will be added to each track.****Track I Tissue Engineering**

Instrumental Analysis	CHE 343	4
Organic Chemistry II	CHE 212	5
Computational System Biology	BME 230	3

Molecular Pathways and Signaling	BME 337	3	
Implant Tissue Interactions	BME 420	3	
Biomaterials and Tissue Engineering	BME 425	3	
Biomedical Polymeric Materials	BME 430	3	
Physical Materials	BME 431	3	
Nanobiotechnology	BME 433	3	
Track II Biomechanics and Rehabilitation Bioengineering			
Biofluid Mechanics	BME 212	3	
Computational System Biology	BME 230	3	
Mechanics of Materials	BME 312	3	
Track III Biomedical Imaging and Instrumentation			
Computational System Biology	BME 230	3	
Biomedical Bioelectric Systems	BME 452	3	
Biomedical Image Analysis	BME 451	3	6 Credit Hrs.
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Required Support Courses (8HRS.)			
Organic Chemistry I & Lab	CHE 211	5	
Probability and Statistics I	MAT 472	3	
Or			
Probability and Statistics for Engineers	BME 375	3	
Or			
Biostatistics	BIO 340	3	8 Credit Hrs.
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TOTAL SEMESTER HOURS REQUIREMENTS		*****129 Credits Hrs.	

In the undergraduate biomedical engineering curriculum, students are required to take 31 credit hours of core curriculum courses comprising of 6 credit hours of English Composition, 12 credit hours of Humanities and Fine Arts courses, 12 credit hours of History, Social and Behavioral Sciences and 1 credit hour of Orientation. In the pre-professional studies area, a total of 46 credit hours of courses are required. The student is expected to complete 52 credit hours of major professional courses which include 38 credit hours of major required courses, 6 credit hours from any of the three tracks of the student's choice and 8 credit hours from the required support courses. A total of 129 credit hours are required to obtain the B.S. degree in biomedical engineering for the B.S. degree.

A summary is as follows:

(A) Core Curriculum.....	31 Credit Hrs.
a. English Composition.....	6 Credit Hrs.
b. Humanities and Fine Arts.....	12 Credit Hrs.
c. History, Social and Behavioral Science.....	12 Credit Hrs.
d. Orientation	1 Credit Hr.
(B) Pre-Professional Studies.....	6 Credit Hrs.
(C) Professional-Major Field Curriculum.....	52 Credit Hrs.
a. Required Major Courses.....	38 Credit Hrs.
b. Track Required Courses.....	6 Credit Hrs.
c. Required Support Courses.....	8 Credit Hrs.
Overall Total Required for B.S. Degree	129 Credit Hrs.

REVISED August 2020