CAL POLY
SAN LUIS OBISPO

B.S. in BIOMEDICAL ENGINEERING
(Mechanical Design Concentration)
Suggested 4-Year Academic Flowchart

2022-2026 Catalog

Updated 5/9/2022

FRESHMAN			SOPHOMORE			JUNIOR			SENIOR		
Fall	Winter	Spring	Fall	Winter	Spring	Fall	Winter	Spring	Fall	Winter	Spring
Introduction to the Biomedical Engineering Major **BMED 101 (1)**	*Introduction to Biomedical Engineering Analysis* **BMED 102 (1)** (BMED 101)		*Introduction to Cell & Molecular Biology* **BIO 161 (4)** (Recom: CHEM 110, 124, or 127) [B2 & B3]	*Introduction to Biomedical Engineering Design* **BMED 212 (3)** (MATH 143)	*Mechanics of Materials I* **CE 204 (3)[4]** (ME 211)	*Biomedical Engineering Measurement and Analysis* **BMED 310 (4)** (EE 201; CPE/CSC 101, CSC 231, 232, or 234)	*Biomechanics* **BMED 410 (4)** (CE 204 or 208; ME 212; BMED 310†)	*Principles of Biomaterials Design* **BMED 420 (4)** (CE 204 or 208; MATE 210; BMED 310†)	*Biomedical Engineering Transport* **BMED 425 (4)** (ME 302; ME 341)	*Biomedical Modeling and Simulation* **BMED 430 (2)** (BMED 310)	
Calculus I **MATH 141 (4)** * [B4]	*Calculus II* **MATH 142 (4)** (MATH 141 w/min C- or Instr. Consent) [B4]	*Calculus III* **MATH 143 (4)** (MATH 142 w/min C- or Instr. Consent) [Area B Elective]	*Calculus IV* **MATH 241 (4)** (MATH 143)	*Linear Analysis I* **MATH 244 (4)** (MATH 143)	*Electric Circuit Theory* **EE 201 (3)** MATH 244; PHYS 143	**Choose one:** *Human Anatomy & Physiology I or II* **BIO 231 (5)*** **OR** **BIO 232 (5)*** (BIO 111 or 161; CHEM 110, 111, 124, 127, or PSC 102)	*Engineering Physiology* **BMED 460 (4)** (BMED 310; BIO 231 or 232; or graduate standing)	*Fluid Mechanics I* **ME 341 (3)** (MATH 242 or 244; ME 212)	*Bioelectronics and Instrumentation* **BMED 440 (4)** (BMED 310; EE 201)	*Biomedical Engineering Design I* **BMED 455 (4)[1]** (BMED 410)	*Biomedical Engineering Design II: Senior Project* **BMED 456 (4)[1]** (BMED 455)
	General Physics I **PHYS 141 (4)** (MATH 141 w/min C-; MATH 142† or 182†) [Area B Elective]	*General Physics II* **PHYS 142 (4)** (PHYS 141; MATH 142 or 182)	*General Physics III* **PHYS 143 (4)** (PHYS 141; MATH 142. Recom: MATH 241)	*Engineering Statics* **ME 211 (3)** (MATH 241†, PHYS 131 or 141)	*Engineering Dynamics* **ME 212 (3)** (MATH 241; ME 211 or ARCE 211)	*Linear Analysis II* **MATH 344 (4)** (Jr Standing; GE Areas A & B4 w/min C-; MATH 206 & 242, or MATH 241 & 244)	*Thermodynamics I* **ME 302 (3)** (ME 212; PHYS 142)	*Introduction to Design* **ME 328 (4)** (BMED 212 or ME 234; CE 207 or 208; MATE 210; ME 212. Coreq: CPE/CSC 101 or 231 or 234; ME 251)	*Contemporary Issues in BMED* **BMED 450 (4)** (Sr Standing)		**Choose one:** *Intermediate Biomed Design* **BMED 330 (4)*** **OR** *Mechanical Systems Design* **BMED 329 (4)***
General Chem for Physical Science and Engineering I **CHEM 124 (4)** * [B1 & B3]	*General Chem for Physical Science and Engineering II* **CHEM 125 (4)** (CHEM 124)		*Engineering Design Communication* **ME 228 (2)**	*Programming for Engineering Students* **CSC 231 (2)** (MATH 142; PHYS 121 or 131 or 141)	*Materials Engineering* **MATE 210 (3)** (CHEM 111 or 124 or 127. Recom: Concur MATE 215)	*Mechanics of Materials II* **CE 207 (2)[4]** (CE 204)	*Statistical Methods for Engineers* **STAT 312 (4)** * [Upper-Division B]	*Manufacturing Processes: Net Shape* **IME 141 (1)**		**Approved Concentration *Technical* Elective (4)[3]**	**Approved Concentration *Technical* Elective (3-4)[3]**
Oral Communication **COMS 101 or 102 (4)**** [A1] Can be taken anytime during Freshman Year				**GE (4)** **	**GE (4)** **	*Introduction to Detailed Design With Solid Modeling* **ME 251 (2)** (ME 130 or 228. Recom: IME 143 or 146)		**Approved Concentration Elective (3-5)[2]**	**GE (4)** **	**GE (4)** **	**GE (4)** **
Expository Writing **ENGL 133 or 134 (4)**** [A2] Can be taken anytime during Freshman Year										**GE (4)** **	
	Writing Arguments About STEM **ENGL 147 (4)** [A3] (Completion of GE A2 with a C- or better) Can be taken anytime between Winter of Freshman and Winter of Sophomore Years										
GE (4) **		**GE (4)** **				**Graduation Writing Requirement GWR*** (Students can attempt to fulfill the requirement after 90 earned units; students should complete the requirement before senior year)					
17	17	16	14	16	16	17	15	15-17	16	18	15-16

TOTAL: 192 - 195

Notes:

MOST GENERAL EDUCATION COURSES CAN BE TAKEN IN ANY ORDER AS LONG AS PREREQUISITES ARE MET

* Refer to current catalog for prerequisites.

**One course from each of the following GE areas must be completed: A1, A2, C1, C2, Lower-Division C Elective, Upper-Division C, D1, Area D Elective, Lower-Division E, & F. Upper-Division C should be taken only after Junior standing is reached (90 units).

Refer to online catalog for GE course selection, United States Cultural Pluralism (USCP) and Graduation Writing Requirement (GWR).

USCP requirement can be satisfied by some (but not all) courses within GE categories: C1, Upper-Division C, D1, D2, Upper-Division D, or E.

† Course can be taken previously or concurrently.

[1] ENGR 459, 460, 461, and BMED 400 (8 units) or ENGR 463, 464, 465, and BMED 400 (8) may substitute for BMED 455 and BMED 456 (8).

[2] Select from the following: BIO 232, BIO 302, BIO 303, CHEM 312, or CHEM/MATE 446. Support electives must total 3-5 units in this category.

[3] Select from the following: BMED/CE/ME 404; BMED 525; IME 418, 430, 435, 527; ME 318, 326, 401, 402, 403, 410, 412. Technical electives must total 7-8 units in this category.

[4] CE 208 (5) may substitute for both CE 204 (3) and CE 207 (2)

Legend:

Course Title
Course # (Units)
(Prerequisite)
[GE Area]

- **Major (43)**
- **Support (80)**
- **General Curriculum (29-32)**
- **General Ed. (40)**