

BS in Biochemical Engineering (EBCL)
Major Checklist
2026-2027 Catalog

Name: _____ Student ID: _____

	Course Number & Title (units)	Quarter	Prerequisites†
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English Composition Requirements

Lower Division English Composition (4 units) *Must be completed with a C- or better. A 4 or 5 on AP English exam will also satisfy this requirement.*

☐	ONE (1) of the following: ☐ COM 1: Major Works of the Ancient World (4) ☐ COM 2: Major Works of the Medieval & Early Modern World (4) ☐ COM 3: Major Works of the Modern World (4) ☐ COM 4: Major Works of the Contemporary World (4) ☐ ENL 3 or ENL 3V: Introduction to Literature (4) ☐ NAS 5: Introduction to Native American Literature (4) ☐ UWP 1 or UWP 1V or UWP 1Y: Introduction to Academic Literacies (4)	F	W	S	COM 1: completion of ELWR COM 2: completion of ELWR COM 3: completion of ELWR COM 4: completion of ELWR ENL 3: completion of ELWR NAS 5: completion of Subject A requirement UWP 1: completion of ELWR
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Upper Division English Composition (4 units or exam) *Must be completed with a C- or better.*

☐	ONE (1) of the following: ☐ UWP 102E: Writing in the Disciplines: Engineering (4) ☐ UWP 102F: Writing in the Disciplines: Food Science & Technology (4) ☐ UWP 104A: Writing in the Professions: Business Writing (4) ☐ UWP 104E: Writing in the Professions: Science (4) ☐ UWP 104T: Writing in the Professions: Technical Writing (4) ☐ Upper Division Composition Exam	F	W	S	<i>a 'C-' or better in UWP 1/1V/1Y or COM 1 or COM 2 or COM 3 or COM 4 or ENL 3 or NAS 5; upper division standing</i>
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Complete ALL of the following lower division courses (58-59 units):

☐	MAT 21A: Calculus (4)	F	W	S	<i>must satisfy math readiness assessment (MRA)</i>
☐	MAT 21B: Calculus (4)	F	W	S	<i>a 'B' or better in MAT 17A or 19A, or a 'C-' or better in either MAT 21A or 21AH</i>
☐	MAT 21C: Calculus (4)	F	W	S	<i>a 'B' or better in MAT 17B, or a 'C-' or better in MAT 16C or 17C or 19C or 21B or 21BH</i>
☐	MAT 21D: Vector Analysis (4)	F	W	S	<i>a 'B' or better in MAT 17C, or a 'C-' or better in MAT 21C or 21CH</i>
☐	ONE (1) of the following: ☐ MAT 22A: Linear Algebra (4) ☐ MAT 27A: Linear Algebra with Applications to Biology (4)	F	W	S	MAT 22A: a 'C-' or better in MAT 16C or 17C or 19C or 21C or 21CH MAT 27A: a 'C-' or better in MAT 17C or 19C or 21C or 21CH
☐	ONE (1) of the following: ☐ MAT 22B: Differential Equations (4) ☐ MAT 27B: Differential Equations with Application to Biology (4)	F	W	S	MAT 22B: a 'C-' or better in MAT 22A MAT 27B: a 'C-' or better in MAT 27A or BIS 27A, or a 'C-' or higher in MAT 22A and (a 'C-' or better in MAT 22AL, ENG 006, ECS 32A/AV, ECS 36A, or ECH 60.)
☐	PHY 9A: Classical Physics (5)	F	W	S	<i>a 'C-' or better in MAT 21B</i>
☐	PHY 9B: Classical Physics (5)	F	W	S	<i>a 'C-' or better in PHY 9A, MAT 21C</i>
☐	PHY 9C: Classical Physics (5)	F	W	S	<i>a 'C-' or better in PHY 9A, PHY 9B, and MAT 21D</i>
☐	ONE (1) of the following: ☐ CHE 2A: General Chemistry (5) ☐ CHE 4A: General Chemistry for Physical Sciences & Engineering (5)	F	W	F	CHE 2A: a score of 24 or better on the chemistry placement exam or a 'C-' or better in CHE 1/1V CHE 4A: a score of 28 or better on the chemistry placement exam or CHE 1/1V with 'C-' or better, MAT 21A (may be taken concurrently)
☐	ONE (1) of the following: ☐ CHE 2B: General Chemistry (5) ☐ CHE 4B: General Chemistry for Physical Sciences & Engineering (5)		W	S	CHE 2B: a 'C-' or better in CHE 2A CHE 4B: a 'C-' or better in CHE 4A and MAT 21B
☐	ONE (1) of the following: ☐ CHE 2C: General Chemistry (5) ☐ CHE 4C: General Chemistry for Physical Sciences & Engineering (5)	F		S	CHE 2C: a 'C-' or better in CHE 2B or 'C-' or better in CHE 4B CHE 4C: a 'C-' or better in CHE 4B or 'B' or better in CHE 2B and MAT 21C (may be taken concurrently)
☐	ONE (1) of the following: ☐ BIS 2A: Introduction to Biology (5) ☐ BIO 2: Intro Biology: Molecules to Cells (4)	F	W	S	BIS 2A: CHE 2A or CHE 4A or equivalent recommended BIO 2: BIO 1 NOT Required for Biochemical Engineering majors. Submit prerequisite petition stating your Biochemical Engineering major requires BIO 2.

Engineering Lower Division (16 units)

☐	ECH 5: Introduction to Analysis & Design (3)		W		MAT 21A
☐	ECH 51: Material Balances (4)	F			<i>a 'C-' or better in MAT 21B</i>
☐	ONE (1) of the following: ☐ ECH 60: Chemical Engineering Problem Solving (4) ☐ ECS 32A or ECS 32AV: Introduction to Programming (4)	F	W	S	ECH 60: MAT 21C ECS 32A: None
☐	ECH 80: Chemical Engineering Profession (1)	F			None
☐	ONE (1) of the following: ☐ ENG 17 or ENG 17V: Circuits I (4) ☐ ENG 35: Statics (4) ☐ ENG 45 or ENG 45Y: Properties of Materials (4)	F	W	S	ENG 17: a 'C-' or better in MAT 21C ENG 35: a 'C-' or better in PHY 9A or PHY 9AH; 'C-' or better in MAT 21D (may be taken concurrently) ENG 45: a 'C-' or better in all the following: MAT 21C, (CHE 2B or CHE 4A), PHY 9A

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Upper Division Major Requirements

Chemistry and Biological Science (16 units)

☐	CHE 128A: Organic Chemistry (3)	F	W	a 'C' or better in CHE 2C or 'C-' or better in CHE 4C
☐	CHE 129A: Organic Chemistry Lab (2)	F	W	a 'C' or better in CHE 2C or 'C-' or better in CHE 4C; CHE 128A (may be taken concurrently)
☐	CHE 128B: Organic Chemistry (3)		W	S CHE 128A or may be taken with consent of instructor
☐	BIS 102 or BIS 102V: Structure & Function of Biomolecules (3)	F	W	S BIS 2A or BIO 2; CHE 8B or CHE 118B or CHE 128B
☐	MMG 102: Introduction to Microbiology (3)	F	W	S BIS 2A or BIO 2; CHE 2B (may be taken concurrently)
☐	MMG 103L: Introduction to Microbiology Lab (2)	F	W	S a 'C-' or better in MMG 102; CHE 2B

Engineering Core Courses (60 units)

☐	ECH 140: Mathematical Methods (4)	F		MAT 22B or MAT 27B; (ECH 60 or ECS 32A or ECS 32AV or equivalent); only open to Chemical, Biochemical, & Materials Science Engineering majors
☐	ECH 141: Fluid Mechanics (4)	F		ECH 51 (may be taken concurrently); ECH 140 (may be taken concurrently); only open to Chemical, Biochemical, & Materials Science Engineering majors
☐	ECH 142: Heat Transfer (4)		W	ECH 51; ECH 140
☐	ECH 143: Mass Transfer (4)			S ECH 142
☐	ECH 145A: Chemical Engineering Thermodynamics Lab (3)		W	ECH 140; ECH 152A (may be taken concurrently), UWP 102E (may be taken concurrently); only open to Chemical, Biochemical, & Materials Science Engineering majors
☐	ECH 145B: Chemical Engineering Transport Lab (3)			S ECH 142, ECH 145A, UWP 102E; only open to Chemical, Biochemical, & Materials Science Engineering majors
☐	ECH 148A: Chemical Kinetics and Reaction Engineering (3)	F		ECH 143, ECH 152B
☐	ECH 152A: Thermodynamics (3)		W	ECH 51; MAT 21C
☐	ECH 152B: Thermodynamics (4)			S ECH 152A
☐	ECH 157: Process Dynamics and Control (4)	F		ECH 140
☐	ECH 158BN: Process Economics and Green Design (4)		W	ECH 158AN or ECH 161AN
☐	ECH 158C: Plant Design Project (4)			S (ECH 158AN or ECH 161C); ECH 158BN
☐	ECH 161AN: Bioseparations (4)	F		ECH 143, ECH 152B; Pass 1 restricted to Biochemical Engineering majors
☐	ECH 161BN: Biochemical Fundamentals (4)/EBS 161: Kinetics & Bioreactor Design (4)		W	ECH 148A; Pass 1 restricted to Biochemical Engineering majors
☐	ECH 161C: Biotechnology Facility Design & Regulatory Compliance (4)		W	(ECH 158BN (may be taken concurrently), ECH 161AN, ECH 161BN (may be taken concurrently)); or DEB 263 (may be taken concurrently)
☐	ECH 161L: Bioprocess Engineering Lab (4)			S (ECH 145B, ECH 161AN, ECH 161BN) or VEN 186 or (BIS 103 & MCB 120L); Pass 1 restricted to Chemical & Biochemical Engineering majors

Biochemical Engineering Technical Electives (8 units)

1. Complete at least 3 units in any upper division engineering course(s) ¹ not numbered 190C .
2. Remainder of units, for a total of 8 units , may be completed in any upper division engineering ¹ and/or science course(s) ² not numbered 190C .
3. Units completed in satisfaction of this technical elective requirement are subject to the following:
a. A maximum of 4 units may be completed in satisfaction of this requirement in courses numbered ECH 192, 198, 199. <i>Courses numbered 192, 198, 199 from outside the department require a petition (see major advisor).</i>
4. Courses used to satisfy other major requirements cannot be used to satisfy the technical elective requirements.

List your courses for Biochemical Engineering Technical Electives below

				Depended on the course chosen
				Depended on the course chosen
				Depended on the course chosen
				Depended on the course chosen

¹College of Engineering Subject Designations:

BIM - Biomedical Engineering	ECS - Computer Science Engineering
EAE - Aerospace Science & Engineering	EEC - Electrical & Computer Engineering
EBS - Biological Systems Engineering	EME - Mechanical Engineering
ECH - Chemical Engineering	EMS - Materials Science & Engineering
ECI - Civil & Environmental Engineering	ENG - Engineering

²Acceptable science courses must carry one of the following subject designations:

ATM - Atmospheric Science	FPS - Fiber & Polymer Science	MMG - Microbiology & Molecular Genetics
BIS - Biological Sciences	FST - Food Science & Technology	PHY - Physics
BIT - Biotechnology	MAT - Mathematics	STA - Statistics
CHE - Chemistry	MCB - Molecular & Cellular Biology	VEN - Viticulture & Enology

†Prerequisites are subject to change; consult the University Catalog (<https://catalog.ucdavis.edu/>) for the most recent updates

*Course not regularly offered

This program is accredited by the Engineering Accreditation Commission of ABET, (<http://www.abet.org>)

✓Total units required for Biochemical Engineering major: 162-167

Course Tips:

Science and business courses may require lower division courses as prerequisites.

- BIM - Biomedical Engineering – Most require BIS 2A or BIS 2B
- EAE - Aerospace Science & Engineering – Most courses require upper-division ENG courses
- EBS - Biological Systems Engineering – Most require EBS 75 and upper-division ENG courses
- ECH - Chemical Engineering – Most non-required ECH courses will have their pre-reqs already satisfied
- ECI - Civil & Environmental Engineering – Most upper-division courses require ENG 35
- ECS - Computer Science Engineering – Most require a programming course/series
- EEC - Electrical & Computer Engineering – Most upper-division courses require ENG 17
- EME - Mechanical Engineering – Most upper-division courses require upper-division ENG courses.
- EMS - Materials Science & Engineering – most upper-division courses require ENG 45
- ENG - Engineering – Most upper-division courses require ENG 35