DEPARTMENT OF CHEMISTRY & BIOCHEMISTRY
UNIVERSITY OF ARIZONA, COLLEGE OF SCIENCE

B.S. IN CHEMISTRY
CATALOG: FALL 2026 to Present

Name: SID:

General Information: Starting in Fall 2024, the Chemistry Degree includes central foundational chemistry courses with in-depth electives associated with 3 optional tracks. Students who wish to pursue a track are advised to consult with their major advisor before their Junior Year for a personalized plan. All CHEMBS degrees are ACS-approved.

GENERAL EDUCATION REQUIREMENTS

English Composition

WRIT 101 or 107	3
WRIT 102 or 108	3
Or	
WRIT 109H	3

Second Language

2nd Semester Proficiency or higher	4-5

Introduction to General Education

UNIV 101	1

Exploring Perspectives

Artist	3
Humanist	3
Natural Scientist *(fulfilled by CHEM 181 or PHYS 141)*	
Social Scientist	3

Building Connections

Course 1	3
Course 2	3

Civic Institutions

Civics Course	3

General Education Portfolio

UNIV 301	1

FOUNDATIONAL MATH & SCIENCE

Chemistry Major's Colloquia

CHEM 195A (F) – *CBC First-Year Colloquium*	1
CHEM 295A (F) – *CHEM Colloquium 2*	1
CHEM 395A (S) – *CHEM Colloquium 3*	1

Mathematics

MATH 122A & B or MATH 125 – *Calculus*	3-5
MATH 129 – *Calculus 2*	3

Physics

PHYS 141, 161H – *Intro Mechanics*	4
PHYS 241, 261H – *Intro Electricity & Magnetism*	4

CHEMISTRY MAJOR REQUIREMENTS *(C or higher required)*

General Chemistry

CHEM 181 (F) – *Major's General Chemistry 1*	4
CHEM 182 (S) – *Major's General Chemistry 2*	4

Foundational Coursework

CHEM 246 – *Principles of Organic Chemistry*	3
CHEM 227 – *Principles of Analytical Chemistry*	3
CHEM 310 – *Principles of Inorganic Chemistry*	3
CHEM 385 – *Principles of Physical Chemistry*	3
BIOC 384 or 462A (S) – *Biochemistry 1*	3-4

Foundational Laboratory Coursework

CHEM 256L – *Synthesis Laboratory*	2
CHEM 330L – *Measurements Laboratory*	2

In-depth Coursework *(Choose two)*

CHEM 401A – *Instrumental Analysis* ⋙	3
CHEM 485 – *Advanced Physical Chemistry* ◆	3
CHEM 410 – *Advanced Inorganic Chemistry* +	3
CHEM 346 – *Advanced Organic Chemistry* +	3
CHEM 423A – *Bioanalytical Chemistry* ⋙	3
CHEM 450 – *Synthetic & Mechanistic O Chem* +	3
CHEM 487 – *Intro to Molecular Spectroscopy* ◆	3

In-depth Laboratory Coursework *(minimum 9 units)*

CHEM 400A – *Chemical Measurements Lab* ⋙	3
CHEM 400B – *Chemical Measurements Lab* ◆	3
CHEM 356L – *Advanced Synthesis Lab* +	3
CHEM 412 – *Inorganic Preparation* +	3
BIOC 463A – *Biochemical Lab Techniques*	4
Can include up to 3 units of:	
CHEM 392(H)/492(H) – *Directed Research*	1-3
CHEM 498(H) – *Senior Capstone/Thesis*	1-3

Advanced Electives *(minimum 9 units)*

Please see page 2 for the complete list

GRADUATION REQUIREMENTS

120 Total Units	42 Upper Division Units
Cumulative GPA: 2.0+	Major GPA: 2.0+
30 Units @ UA	18 UD Units @ UA

Chemistry Electives List A *(6 units minimum)*

Building Molecules track

CHEM 346 – *Advanced Organic Chemistry*	3	CHEM 356L – *Advanced Synthesis Laboratory*	3
CHEM 410/510 – *Advanced Inorganic Chemistry*	3	CHEM 412 – *Inorganic Preparations*	3
CHEM 442B/542B – *Polymer Chemistry*	3	CHEM 446 – *Organic Preparations*	3
CHEM 447 – *Organic Structural Analysis Laboratory*	3	CHEM 449A – *Topics in Chemical Biology*	3
MSE 460 – *Materials Science of Polymers*	3	PCOL 410 – *Medicinal Chemistry*	5
CHEM 450/550 – *Synthetic & Mechanistic Organic Chemistry*	3	PCOL 350 – *ADME: How the Body Changes Drugs*	3

Bioanalytical track

CHEM 400A – *Chemical Measurements Laboratory*	3	CHEM 427 – *Separations*	3
CHEM 522 – *Electroanalytical Chemistry*	3	CHEM 401A – *Instrumental Analysis*	3
CHEM 525A – *Mass Spectrometry*	3	CHEM 423A – *Bioanalytical Chemistry*	3
CHEM 526B – *Analytical Molecular Spectroscopy*	3	BE/BME 447 – *Sensors & Controls*	3
CHEM 528B – *Advance Analytical Chemistry Laboratory*	3	IMB 401 – *Medical Microbiology & Immunology*	4
BME/ OPTI 420 – *Biophotonics*	3	ENVS 410 – *Microbial Biogeochemistry & Global Change*	3
BME 485 – *Nanoscience & Nanotech for Biomed Engineers*	3	ENVS 425 – *Environmental Microbiology*	3
IMB 406 – *Human Immunobiology*	3		

Quantum Universe track

ASTR 488A – *Astrochemistry*	3	CHEE/MSE 432 – *Organic Electronic Materials & Devices*	3
CHEM 400B – *Chemical Measurements Laboratory*	3	CHEM 380 – *Mathematical Physics for Chemistry*	3
CHEM 487 – *Intro to Molecular Spectroscopy*	3	CHEM 485 – *Advanced Physical Chemistry*	3
PHYS 426 – *Thermal Physics*	3	CHEM 418 – *Computational Chemistry*	3
PHYS 484 – *Nuclear Magnetic Resonance Spectroscopy*	3	PHYS 431 – *Molecular Biophysics*	3
	3	PTYS 407 – *Chemistry of the Solar System*	3
		PTYS 416 – *Asteroids, Comets, and Kuiper Belt Objects*	3

General/non-track

BIOC 385 – *Metabolic Biochemistry*	3	ECOL 448A – *Plant Biochemistry & Metabolic Engineering*	3
BIOC 462B (S) – *Biochemistry II*	4	BIOC 463A – *Biochemical Laboratory Techniques*	3
ENVS 340 – *Environmental Chemistry*	3	ENVS 462 – *Environmental Soil & Water Chemistry*	3
ENVS 464 – Environmental Organic Geochemistry	3	GEOS 400 – *Introduction to Geochemistry*	3

CHEMISTRY ELECTIVES LIST B *(3 units maximum)*

CHEM 392(H), CHEM 492(H) – *Directed Research*	1-3	CHEM 399(H)/CHEM 499(H) – *Independent Study*	1-3
CHEM 405A (S) – *Basic Laboratory Safety*	1	CHEM 493 – *Internship*	1-3
CHEM 405B (S) – *Advanced Laboratory Safety*	1	CHEM 491(H) – *Preceptorship*	1-3
CHEM 405C (S) – *Chemical Hygiene & Regulations*	1	CHEM 496D – *Chemistry Discovery*	1
CHEM 498(H) – *Senior Capstone/Thesis*	3		

Course offerings per semester are subject to change. Please check the Schedule of Classes for the most updated course information.
Students are responsible for completing any pre-requisites or contacting the offering department if permission is required.

ACS Certification

This degree is approved by the American Chemical Society, and students will earn ACS certification with completion of the Bachelor of Science in Chemistry regardless of track. Please read more about ACS certification here.

Description of Tracks

Building Molecules (In-depth coursework associated with this track is labeled with +)

Suitable for those interested in organic or inorganic chemistry. Students who pursue this track could work in fields such as medicine, pharmaceuticals, fuel technology, cosmetic development, materials science, chemical biology, and polymers chemistry.

Bioanalytical (In-depth coursework associated with this track is labeled with »)

Suitable for those interested in (bio)analytical chemistry, potentially combining molecular science with biological, medical, and bioengineering studies. Students who pursue this track could work in the biomedical, biotechnology, or science education fields.

Quantum Universe (In-depth coursework associated with this track is labeled with ◆)

Suitable for those interested in studying atomic and molecular chemistry, including a focus on spectroscopy. Students who pursue this track could work in fields such as planetary science and astronomy, computational chemistry, material development, and medicine.