

GEP

Chemical Biology Major Requirements

Degree Requirements: 40 courses are required for graduation. These 40 courses are comprised of: A) GEP Signature Core, B) GEP Variable courses, C) free electives, D) GEP Integrative Learning Course, E) Major Requirements, and F) Overlays.

A. GEP Signature Core Courses All non-transfer students must take these 6 Courses at SJU.	Semester completed
1. PHL 154 – Moral Foundations	
2. THE 154 – Faith, Justice & the Catholic Tradition	
3. ENG 102 – Texts and Contexts (pre-req: ENG 101)	
4. HIS 154 – Forging the Modern World	
5. First Year Seminar	
6. Faith and Reason Course (pre-reqs: PHL 154 & THE 154) <i>See reverse side for an additional note on this requirement</i>	

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B. GEP Variable Course (Maximum 9 courses)	Course(s) required/taken Please note students may earn AP credit and/or use transfer credits to meet these requirements	Semester Completed
Fine & Performing Arts or Literature	One course	
Mathematics (Beauty)	Math 155 Fundamentals of Calculus or Math 161 Calculus I	
Natural Science	PHY 102/102L General Physics II + Lab or PHY 106/106L University Physics II+Lab	
Non-native Language	1-2 courses at placement level; AP credit may be given. Please Note: only one course is required if placed at the 301 level (or higher). If placed lower than 301, two courses are required.	
Social/Behavioral Science	One course	
Philosophy (Philosophical Anthropology)	One course	
Theology (Religious Difference)	One course - cannot also be used to satisfy the diversity/globalization/non-Western area studies overlay requirement	
Writing	ENG 101 Craft of Language May also be satisfied by earning a 4 or a 5 on the English Literature or Language AP test.	

C. Free Electives (Minimum 8 courses; may be combined with overlays) The number of free electives may vary depending on AP credits earned and number of courses required for the non-native language requirement.	Semester completed
1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	

D. GEP Integrative Learning Courses for Chemical Biology (3 courses)	Semester Completed
1. BIO 101 Biology I: Cells	
2. CHM 120 General Chemistry I (or CHM 121 Gen Chemistry Honors) + Lab	
3. PHY 101/101L General Physics I + Lab or PHY 105/105L University Physics I + Lab	

E. Chemical Biology Major Requirements (14 courses)			
Course	Semester completed	Course	Semester completed
1. BIO102 Biology II: Genetic and Evolutionary Biology		10. CHM 330/330L Instrumental Analysis + Lab	
2. BIO 201 Biology III: Organismic Biology		11. CHM 320 Physical Chemistry for Chemical Biology I	
3-5. Any 3 of the following Biology courses: BIO 402 Advanced Cell Biology BIO 410 Light and Electron Microscopy BIO 411 Molecular Genetics BIO 412 Neurobiology BIO 415 Immunology BIO 416 Microbiology BIO 421 Molecular and Cellular Biophysics BIO 422 Applied and Env. Microbiology BIO 424 Biotechnology		12. One in-depth chemistry course: CHM 400 Biogeochemistry CHM 420 Environmental Chemistry CHM 430 Mechanisms in Organic Chemistry CHM 440 Organometallic Chemistry CHM 480 Advanced Biochemistry: Inorganic Biochemistry CHM 490 Spectroscopy	
6. MAT 156 Applied Calc II or MAT 162 Calc II or MAT 128 Applied Statistics		13. One Course from the following: BIO 404 or CHM 340 Biochemistry plus CHM 340L Biochemistry Lab	
7. CHM 125/125L General Chemistry II + Lab ¹		14. One course from the following: BIO 493 or 494 Undergraduate Research or CHM 493 senior Research I or CHM 494 Senior Research II	
8. CHM 210/210L Organic Chemistry I + Lab			
9. CHM 215/215L Organic Chemistry II + Lab			

1. Honors students may alternatively take General Chemistry Honors (CHM 126) to fulfill this requirement

BIO 390 Biology Seminar or CHM 390 Chemistry Seminar. In addition to the courses listed above, a chemical biology major must register for a BIO seminar or CHM seminar each semester for as a junior and a senior. Please note that this is a non-credit bearing course.

F. Overlays 3 overlays that may be combined with other GEP requirements [unless otherwise noted], major courses, or electives	Semester Completed
1. Writing-Intensive	
2. Ethics-Intensive (pre-req: PHL 154)	
3. diversity/ globalization/non-Western	

Change in Overlay/Faith & Reason Requirement for the Class of 2014, 2015, & 2016:

Of the four GEP requirements—Faith Reason and the three overlay requirement

- Students in the **Class of 2014** need to satisfy two of the four requirements: (1) a Faith & Reason course and one overlay requirement OR (2) two overlay requirements.
- Students in the **Class of 2015** need to satisfy three of the four: (1) a Faith and Reason course and two overlay requirements OR (2) all three overlay requirements.
- Students in the **Class of 2016** must complete (1) Faith & Reason and (2) two of three overlay requirements.



Chemical Biology Major – Typical Course Sequence

See page 1-2 for Additional information on Major Requirements

FIRST-YEAR	Fall	Spring
	CHM 120/120L General Chemistry I + Lab MAT 128 Applied Statistics BIO 101 Cells Non-Native Language I First Year Seminar	CHM 125/125L General Chemistry II + Lab MAT 155 Fundamentals of Calculus BIO 102 Genetic & Evolutionary Biology Non-Native Language II THE 154 Faith, Justice, and Catholic Tradition
SOPHOMORE YEAR	Fall	Spring
	CHM 210/210L Organic Chemistry I + Lab BIO 201 Organismic Biology ENG 101 Craft of Language PHL 154 Moral Foundations Social/Behavioral Science	CHM 215/215L Organic Chemistry II + Lab Biology Elective ¹ ENG 102 Texts and Contexts Religious Difference HIS 154 Forging the Modern World
JUNIOR YEAR ³	Fall	Spring
	BIO 404 or CHM 340 Biochemistry CHM 340L Biochemistry Lab PHY 101/101L or PHY 105/105L Philosophical Anthropology Elective Elective	Biology Elective ¹ PHY 102/102L or PHY 106/106L Faith and Reason Elective Elective
SENIOR YEAR ³	Fall	Spring
	Biology Elective ¹ CHM 320 Physical Chemistry for ChemBIO Elective Elective BIO 493 Undergraduate Research OR CHM 493 Senior Research Studies I	CHM 330/330L Instrumental Analysis + lab Chemistry Elective ² Fine Arts or Literature Elective Elective

1. Chemical Biology majors must take any 3 of the following Biology elective courses: BIO 402 Advanced Cell Biology, BIO 410 Light and Electron Microscopy, BIO 411 Molecular Genetics, BIO 412 Neurobiology, BIO 415 Immunology, or BIO 416 Microbiology.
2. Chemical Biology majors must take one of the following chemistry courses: CHM 400 Biogeochemistry, CHM 420 Environmental Chemistry, CHM 430 Mechanics in Organic Chemistry, CHM 440 Organometallic Chemistry, CHM 480 Role of Metal Ions in Biology, or CHM 490 Spectroscopy.
3. BIO 390 Biology Seminar or CHM 390 Chemistry Seminar. In addition to the courses listed above, a chemical biology major must register for a BIO seminar or CHM seminar each semester for as a junior and a senior. Please note that this is a non-credit bearing course.