

Name _____
Clarion ID _____
Entrance Date _____
Program Entry Date _____
Advisor _____

Transfer:* _____
** _____
CUP: _____

GENERAL EDUCATION REQUIREMENTS - 48 CREDITS
Consult the Gen. Ed. Requirements for your Catalog Year for more specifics. (e.g. <http://www.clarion.edu/academics/registrar-office/for-students/index.html>)

I. LIBERAL EDUCATION SKILLS - 12 CREDITS CR. GR.
A. English Composition (3 credits)
Eng 111: Writing II _____
B. Mathematics Requirement (3 credits)
: _____
C. Credits to total 12 in Category I, selected from at least two of the following: Academic Enrichment, MMAJ 140 or 340, Computer Information Science, CSD 465, Elementary Foreign Language, English Composition, Hon 128, Logic, Mathematics, & CMST
: _____
: _____

II. LIBERAL KNOWLEDGE - 27 CREDITS
A. **Physical & Biological Science** (9 credits) selected from at least two of the following: Biology, Chemistry, Earth Sci., ENVR275, GS411, HON230, Mathematics, Phys. Sci. & Physics.
: _____
: _____
B. **Social & Behavioral Science** (9 credits) selected from at least two of the following: Anthropology, CSD125, CSD 257, Economics, Geography, GS 140, History, HON240, NURS320, Pol. Sci., Psychology, Social Work, Sociology & Women & Gender Studies.
: _____
: _____
C. **Arts & Humanities** (9 credits) selected from at least two of the following: English Language and Literature, HON 130, Humanities, Intermediate Foreign Language and Cultures, Music, Philosophy, Speech and Theater.
: _____
: _____

III. HEALTH AND PERSONAL PERFORMANCE - 3 CREDITS
A. Health and Wellness (2 credits)
: _____ 2 _____
B. Personal Performance (1 course and 1 credit)
: _____

IV. GEN. ED. ELECTIVES - CREDITS TO TOTAL 48 FROM GEN. ED.
Up to 1 credit from III.B.
: _____
: _____
: _____

FLAGS - Record below: (see link above for info)
_____ 1st Year Values (V) _____ 2nd Year Values (S)
_____ Quant. Reas. (Q) _____ Info. Lit. (I)
_____ Writing Int. (W) _____ Writing Int. (W)

V. REQUIREMENTS IN MAJOR: 56-57 CREDITS CR. GR.
A. **Required in Chemistry (41-42 credits)**
CHEM 151: Chemical Principles I _____ 3 _____
CHEM 161: Chemical Principles I (Lab) _____ 1 _____
CHEM 152: Chemical Principles II _____ 3 _____
CHEM 162: Chemical Principles II (Lab) _____ 1 _____
CHEM 251: Organic Chemistry I _____ 3 _____
CHEM 261: Organic Chemistry I (Lab) _____ 1 _____
CHEM 252: Organic Chemistry II _____ 3 _____
CHEM 262: Organic Chemistry II (Lab) _____ 1 _____
CHEM 353: Analytical Chemistry I _____ 3 _____
CHEM 363: Analytical Chemistry I (Lab) _____ 1 _____
CHEM 358: Analytical Chemistry II _____ 3 _____
CHEM 368: Analytical Chemistry II (Lab) _____ 1 _____
CHEM 354: Physical Chemistry I _____ 3 _____
CHEM 364: Physical Chemistry I (Lab) _____ 1 _____
BCHM 453: Biochemistry I _____ 3 _____
BCHM 463: Biochemistry I (Lab) _____ 1 _____
BCHM 454: Biochemistry II _____ 3 _____
CHEM 470: Chemistry Seminar _____ 3 _____

Select one of the following choices

CHEM 265: Inorganic Chemistry I	3	_____
CHEM 266: Inorganic Chemistry I (Lab)	1	_____
or		
Additional upper level Biochemistry (BCHM)	3	_____

B. Required Credits in Biology (15 credits)

BIOL 155: Principles of Biology I _____ 3 _____
BIOL 165: Principles of Biology I (Lab) _____ 1 _____

Select one of the following choices

BIOL 201: Genetics	3	_____
or		
BIOL 203: Cell Biology	3	_____
BIOL 341: General Microbiology	4	_____
BIOL 483: Molecular Biology	4	_____

VI. FREE ELECTIVES (to bring total to ≥ 120 credits)
: _____
: _____
: _____
: _____
: _____

PROGRAM NOTES:

- 1) Chemistry majors with a Biochemistry concentration are required to take MATH 270, 271, and Physics 251, 252, and may elect to place these courses under I. Liberal Education Skills or II. Liberal Knowledge.
- 2) An American Chemical Society certified degree requires (1) foundational courses in the 5 subdisciplines; (2) in-depth courses in 4 of 5 subdisciplines; and (3) sufficient laboratory work to bring the total, post-introductory chemistry laboratory hours to 400 (9 total labs). These lab hours are achieved with CHEM labs, CHEM 257, BIOL 483, or courses consisting entirely of research that culminates in a comprehensive written report.

No changes since Spring 2015

SUGGESTED SCHEDULE OF COURSES and COURSE PLANNING GUIDE

DEGREE PROGRAM: B.S. CHEMISTRY: Biochemistry Concentration

FRESHMAN YEAR

<i>Fall Semester</i>	<i>Spring Semester</i>
CHEM 151 Chemical Prin. I (Lec); 3 CR	CHEM 152 Chemical Prin. II (Lec); 3 CR
CHEM 161 Chemical Prin. I Lab; 1 CR	CHEM 162 Chemical Prin. II Lab; 1 CR
MATH 171 Precalculus; 4 CR	MATH 270 Calculus I; 4 CR
BIOL 155 Prin. Bio. I (Lec); 3 CR	
BIOL 165 Prin. Bio. I Lab; 1 CR	

Other courses/electives to consider for your Freshman year: **(1)** ENG 111- Writing II; **(2)** First Year Values Flag Course [Go here for Gen. Ed. information <http://www.clarion.edu/academics/registrars-office/for-students/index.html>] If you're considering pharmacy school, select prerequisite courses (PSYC or SOC, ECON, ENG, and MATH 221); **(3)** Health and/or Personal Performance; **(4)** If you're considering pursuing a health-related career, consider BIOL 156/166 in the spring.

SOPHOMORE YEAR

<i>Fall Semester</i>	<i>Spring Semester</i>
CHEM 251 Organic Chemistry I (Lec); 3 CR	CHEM 252 Organic Chemistry II (Lec); 3 CR
CHEM 261 Organic Chemistry I Lab; 1 CR ‡	CHEM 262 Organic Chemistry II Lab; 1 CR ‡
MATH 271 Calculus II; 4 CR	BIOL 203 Cell Bio; 3 CR OR BIOL 201 Genetics; 3 CR
PH 251 General Physics I; 4 CR	PH 252 General Physics II; 4 CR

In addition to completing your Physics and Math requirements, other courses/electives to consider for your Sophomore year: **(1)** Liberal Knowledge Gen. Ed. requirements: If you're considering pharmacy school, select prerequisite courses (PSYC or SOC, ECON, ENG, and MATH 221); **(2)** Second Values Flag Course; **(3)** Health and/or Personal Performance.

JUNIOR YEAR

<i>Fall Semester</i>	<i>Spring Semester</i>
CHEM 353 Analytical Chemistry I (Lec); 3 CR	CHEM 358 Analytical Chemistry II (Lec); 3 CR
CHEM 363 Analytical Chemistry I Lab; 1 CR ‡	CHEM 368 Analytical Chemistry II Lab; 1 CR ‡
BCHM 453 Biochemistry I (Lec); 3 CR	BCHM 454 Biochemistry II (Lec); 3 CR
BCHM 463 Biochemistry Lab; 1 CR ‡	BIOL 341 Gen. Microbiology; 4 CR <i>[Prereq for BIOL 483 Fall or Spring]</i>

Other courses/electives to consider for your Junior year: **(1)** Liberal Knowledge Gen. Ed. requirements; **(2)** Second Values Flag Course; **(3)** If relevant, look at pre-requisites for graduate/ professional school; **(4)** Offered alternate spring semesters: CHEM 359 Advanced Organic Chem. (Lec); 3 CR; **(5) Add a Minor in Molecular, Cell, Organismal Biology, which will be inherently satisfied next year.**

SENIOR YEAR

<i>Fall Semester</i>	<i>Spring Semester</i>
CHEM 354 Physical Chemistry I (Lec); 3 CR	CHEM 470 Chemistry Seminar; 3 CR
CHEM 364 Physical Chemistry I Lab; 1 CR ‡	CHEM 265 Inorganic Chemistry I (Lec); 3 CR
BIOL 483 Molecular Biology; 4 CR ‡ [Fall only]	CHEM 266 Inorganic Chemistry I Lab; 1 CR ‡

Other courses/electives to consider for your Senior year: **(1) APPLY FOR GRADUATION**; **(2)** Complete Gen. Eds and degree requirements; **(3)** Complete ≥120 credits; **(4)** Offered alternate spring semesters: CHEM 359 Advanced Organic Chem. (Lec); 3 CR; **(5)** CHEM 465/466 Chemical Research.

American Chemical Society Certified Degree Option: In addition to what is specifically required for this degree, an American Chemical Society certified degree will require (1) taking the foundations course CHEM 265 (instead of Adv Biochem), (2) an additional in-depth course (CHEM 366 or 355) and (3) sufficient laboratory work to bring the total, post-introductory chemistry laboratory hours to 400 (9 total labs- CHEM 257 counts as one lab and each lab = 45 hrs. Lab courses counting towards the 400 hours are designated with ‡). The additional lab hours, beyond those indicated above, could come from CHEM 257, CHEM 367, or courses consisting entirely of research that culminate in a comprehensive written report (such as CHEM 465/466).