

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>)

V. REQUIREMENTS IN MAJOR: 57 CREDITS CR. GR.

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  
: \_\_\_\_\_  
: \_\_\_\_\_

**A. Required in Chemistry (45 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 257: Organic Spectroscopy	3	_____
CHEM 265: Inorganic Chemistry I	3	_____
CHEM 266: Inorganic Chemistry I (Lab)	1	_____
CHEM 366: Inorganic Chemistry II	3	_____
CHEM 367: Inorganic 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	_____
CHEM 355: Physical Chemistry II	3	_____
CHEM 470: Chemistry Seminar	3	_____

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.  
: \_\_\_\_\_  
: \_\_\_\_\_

**B. Supplemental Science Related Courses (12 credits)**  
Earn at least 12 credits total from the courses below. Select a minimum of two courses from Category 1 and course(s) from at least one other category.

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

1) CHEMISTRY:	2) BIOLOGY:	3) MATH & PHYSICS:	4) OTHER:
BCHM 453; BCHM 463; BCHM 454; CHEM 359; CHEM 465 CHEM 466 or CHEM 471	BIOL 155; BIOL 165; BIOL 201; or BIOL 203	Math courses MATH 272 and higher; or Physics courses 300-level and higher	CHEM 211; CIS courses 200-level and higher; PHIL 317; ES 150; ES 260; ES 270; ES 280; or ES 360

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

1) \_\_\_\_\_  
1) \_\_\_\_\_  
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: \_\_\_\_\_

**FLAGS - Record below:** (see link above for info)  
\_\_\_\_\_ 1st Year Values (V) \_\_\_\_\_ 2<sup>nd</sup> Year Values (S)  
\_\_\_\_\_ Quant. Reas. (Q) \_\_\_\_\_ Info. Lit. (I)  
\_\_\_\_\_ Writing Int. (W) \_\_\_\_\_ Writing Int. (W)

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

**PROGRAM NOTES:**

- Chemistry majors are required to take MATH 270, 271, and either Physics 251, 252, or Physics 258, 259, 268, 269 and may elect to place these courses under I. Liberal Education Skills or II. Liberal Knowledge.
- 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.

## SUGGESTED SCHEDULE OF COURSES and COURSE PLANNING GUIDE

### DEGREE PROGRAM: B.S. CHEMISTRY

#### 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

Other courses/electives to consider for your Freshman year: **(1)** ENG 111- Writing II; **(2)** BIOL 155, 156, 165, 166; Principles of Biology I and II w/ Labs; **(3)** First Year Values Flag Course [Go here for Gen. Ed. information <http://www.clarion.edu/academics/registrar-office/for-students/index.html>]; **(4)** Health and/or Personal Performance

#### 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	CHEM 265 Inorganic Chemistry I (Lec); 3 CR
	CHEM 266 Inorganic Chemistry I Lab; 1 CR †
Physics Sequence: PH 251 General Physics I; 4 CR <b>OR</b> PH 258 Intro. Physics I w/ lab (PH 268); 4 CR	Physics Sequence: PH 252 General Physics II; 4 CR <b>OR</b> PH 259 Intro. Physics II w/ lab (PH 269); 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; **(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 †
CHEM 366 Inorganic Chemistry II (Lec); 3 CR	CHEM 257 Organic Spectroscopy; 3 CR †
CHEM 367 Inorganic Chemistry II Lab; 1 CR †	

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.

#### SENIOR YEAR

<i>Fall Semester</i>	<i>Spring Semester</i>
CHEM 354 Physical Chemistry I (Lec); 3 CR	CHEM 355 Physical Chemistry II (Lec); 3 CR
CHEM 364 Physical Chemistry I Lab; 1 CR †	CHEM 470 Chemistry Seminar; 3 CR
BCHM 453 Biochemistry I (Lec); 3 CR (optional)	CHEM 466 Chemical Research; 1-3 CR † (optional)
BCHM 463 Biochemistry Lab; 1 CR † (optional)	
CHEM 465 Chemical Research; 1-3 CR † (optional)	

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)** BCHM 454 Biochemistry II (Lec); 3 CR; **(5)** Offered alternate spring semesters: CHEM 359 Advanced Organic Chem. (Lec); 3 CR.

**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) a foundation course in biochemistry (BCHM 453) and (2) 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 BCHM 463 or courses consisting entirely of research that culminate in a comprehensive written report (such as CHEM 465/466).