CLARION UNIVERSITY OF PENNSYLVANIA
College of Arts and Sciences

DEGREE: B.S. Chemistry
Other:_____

Name _____
Clarion ID_____
Entrance Date _____
Program Entry Date_____
Advisor _____

Transfer:*_____
**_____
CUP: _____ _____ _____ _____ _____ _____ ____
_____ _____ _____ _____ _____ _____ _____ _____
_____ _____ _____ _____ _____ _____ _____ _____

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GENERAL EDUCATION REQUIREMENTS - 48 CREDITS
Consult the Gen. Ed. Requirements for your Catalog Year for more specifics.

I. LIBERAL EDUCATION SKILLS - 15 CREDITS — CR. — GR.

A. English Composition (3 credits)
Eng 111: Writing II _____ ____ ____

B. Mathematics Requirement (3 credits)
_____: _____ ____ ____

C. Freshman Inquiry Seminar (3 credits)
INQ_____: _____ ____ ____

D. 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: *(e.g. http://www.clarion.edu/30879.pdf)*

_____1st Year Values (V) _____2nd Year Values (S)

_____Quant. Reas. (Q) _____Info. Lit. (I)

_____ Writing Int. (W) _____Writing Int. (W)

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

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: Chemical Thermodynamics	3	___
CHEM 364: Physical Chemistry (Lab)	1	___
CHEM 355: Quantum Chemistry	3	___
CHEM 470: Chemistry Seminar	3	___

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.

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

1)_____: _____ ____ ____
1)_____: _____ ____ ____
_____: _____ ____ ____
_____: _____ ____ ____
_____: _____ ____ ____

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

PROGRAM NOTES:

1) 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.
2) In addition to the requirements above, an American Chemical Society certified degree requires sufficient laboratory work to bring the total, post-introductory chemistry laboratory hours to 400 (8 labs with CHEM 257) and BCHM 453. The additional lab hours can come from BCHM 463 or courses that consist entirely of research that culminates in a comprehensive written report. BCHM 453 and BCHM 463 or CHEM 465/466 can be used to fulfill requirements in category B and ACS certification.

No Changes since FALL 2020

SUGGESTED SCHEDULE OF COURSES and COURSE PLANNING GUIDE

DEGREE PROGRAM: B.S. CHEMISTRY (*w/ ACS Certification)

FRESHMAN YEAR

Fall Semester	***Spring Semester***
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 [See Registrar/ Student Resources/ General Education Flags: http://www.clarion.edu/academics/registrars-office/documents-and-forms/General-education-flags.pdf]; **(4)** Health and/or Personal Performance

SOPHOMORE YEAR

Fall Semester	***Spring Semester***
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 **OR** PH 258 Intro. Physics I w/ lab (PH 268); 4 CR	Physics Sequence: PH 252 General Physics II; 4 CR **OR** 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 [See Registrar/ Student Resources/ General Education Flags: http://www.clarion.edu/academics/registrars-office/documents-and-forms/General-education-flags.pdf]; **(3)** Health and/or Personal Performance.

JUNIOR YEAR

Fall Semester	***Spring Semester***
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 [See Registrar/ Student Resources/ General Education Flags: http://www.clarion.edu/academics/registrars-office/documents-and-forms/General-education-flags.pdf]; **(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

Fall Semester	***Spring Semester***
CHEM 354 Chemical Thermodynamics (Lec); 3 CR	CHEM 355 Quantum Chemistry (Lec); 3 CR
CHEM 364 Physical Chemistry Lab; 1 CR ‡	CHEM 470 Chemistry Seminar; 3 CR
*BCHM 453 Biochemistry I (Lec); 3 CR	*CHEM 466 Chemical Research (opt.); 1-3 CR ‡
*BCHM 463 Biochemistry Lab; 1 CR ‡	
*CHEM 465 Chemical Research (opt.); 1-3 CR ‡	

Other courses/electives to consider for your Senior year: **(1)** Complete Gen. Eds and "Additional required credits in chemistry"; **(2)** Complete ≥120 credits; **(3)** BCHM 454 Biochemistry II (Lec); 3 CR; **(4)** Offered alternate spring semesters: CHEM 359 Advanced Organic Chem. (Lec); 3 CR.

**ACS Certification requires at least 6 semester hours of advanced courses that include sufficient laboratory work to bring the total laboratory hours to 400 (9 lab courses beyond Chem. Prin. as designated* with ‡, each lab = 45 hrs)*; which requires BCHM 463 and either of the following courses in addition to the courses listed above: CHEM 461 and/or CHEM 465/466.*