

# John Carroll University Chemistry Department

## B.S. Chemistry with Concentration in Chemical Physics Study Plan

### First Year

Fall Semester	Credits	Major	Core	Other	Spring Semester	Credits	Major	Core	Other
CH141 General Chemistry 1*	4	X			CH142 General Chemistry II*	4	X		
CH143 General Chemistry Lab I*	1	X			CH144 General Chemistry Lab II*	1	X		
MT135 Calculus / Analytic Geometry I	4	X			MT136 Calculus / Analytic Geometry II	4	X		
EN125 Seminar on Academic Writing	3		X		Engaging the Global Community (EGC)	3		X	
COMM125 Speech Communications	3		X		Issue in Social Justice Course (ISJ)	3		X	
<b>Total Credit Hours</b>	<b>15</b>				<b>Total Credit Hours</b>	<b>15</b>			

### Second Year

Fall Semester	Credits	Major	Core	Other	Spring Semester	Credits	Major	Core	Other
CH221 Organic Chemistry I	3	X			CH222 Organic Chemistry II	3	X		
CH223 Organic Chemistry Lab I	1	X			CH224 Organic Chemistry Lab II	1	X		
MT233 Calculus and Analytic Geom III	3	X			CH261 Analytical Chemistry	3	X		
PH135 General Physics I	4	X			CH263 Analytical Chemistry Lab (QA)	1	X	X	
PH135 Physics Workshop I	1	X			PH136 Physics II	4	X		
Language Requirement	3		X		PH136L Physics Workshop II	1	X		
					Language Requirement	3		X	
<b>Total Credit Hours</b>	<b>15</b>				<b>Total Credit Hours</b>	<b>16</b>			

### Third Year

Fall Semester	Credits	Major	Core	Other	Spring Semester	Credits	Major	Core	Other
CH363 Physical Chemistry I	3	X			CH366 Physical Chemistry II***	3	X		
CH367 Physical Chemistry I Lab	2	X			CH368 Physical Chemistry Lab II***	1	X		
CH399 Undergraduate Research	1	X			CH478 Chemistry Seminar	0	X		
PH246 Modern Physics	3	X			CH399 Undergraduate Research	1	X		
Humanities Course	3		X		CH431 General Biochemistry****	4	X		
Social Sciences Course	3		X		EP217 Math. Methods. Phys. and Eng.	3	X		
					Creative and Performing Arts (CAPA)	1-3		X	
					Philosophy Knowledge/Reality (PLKR)	3		X	
<b>Total Credit Hours</b>	<b>15</b>				<b>Total Credit Hours</b>	<b>16</b>			

### Fourth Year

Fall Semester	Credits	Major	Core	Other	Spring Semester	Credits	Major	Core	Other
CH441 Instrumental Analysis	3	X			CH481 Inorganic Chemistry	3	X		
CH443 Instrumental Analysis Lab**	2	X			CH482 Inorganic Chemistry Lab	1	X		
CH399 Undergraduate Research	1	X			Linked Pair of Courses	6		X	
CH495 Special Topics	3	X			TRS Course	3		X	
Philosophy Values/Society (PLVS)	3		X		Major or Program Elective	3	X	X	
TRS Course	3		X						
<b>Total Credit Hours</b>	<b>15</b>				<b>Total Credit Hours</b>	<b>16</b>			

*If you are planning to attend graduate school, take the GRE in summer between the 3rd and 4th years or early fall and begin submitting applications in the fall of the 4th year.*

**Total CH Credit Hours Required: 42    Total Credit Hours Required to Graduate: 120**

#### Notes:

\* Well prepared students may substitute the CH141-144 sequence with CH151/153 - Chemical Principles and Lab in the Fall Semester

\*\* CH443 will satisfy the Core Requirements for Capstone, Advanced Writing, and Oral Presentation within the major (CAP, AW,OP)

\*\*\* The combinations of CH366 and 368 and CH481 and 482 may be interchanged in the junior and senior years.

\*\*\* Students may complete CH435 and CH436 in place of CH431 and one upper division elective.

Please consult your academic advisor to address specific needs of your major, minor, and/or concentration.