John Carroll University Chemistry Study Plan

Chemistry Major with Concentration in Chemical Physics

1st yr

Fall	15 cr total	Spring	15 cr total
4 cr CH141 General Chemistry I		*4 cr CH142 General Chemistry II*	
1 cr CH143 General Chemistry Laboratory I		*1 cr CH144 General Chemistry Laboratory II*	
4 cr MT135 Calculus and Analytic Geometry I		*4 cr MT135 Calculus & Analytic Geometry II*	
3 cr EN125		3 cr Engaging the Global Community	
3 cr CO125		3 cr Social Justice Requirement	

2nd yr

Fall	15 cr total	Spring	16 cr total
3 cr CH221 Organic Chemistry I		*3 cr CH222 Organic Chemistry II*	
1 cr CH223 Organic Chemistry Laboratory I		*1 cr CH224 Organic Chemistry Laboratory II*	
3 cr MT233 Calculus & Analytic Geometry III		*3 cr CH261 Analytical Chemistry (QA)*	
4 cr PH135 Physics I		*1 cr CH263 Analytical Chemistry Laboratory*	
1 cr PH135L Physics Workshop I		*4 cr PH136 Physics II*	
3 cr Foreign Language Requirement		*1 cr PH136L Physics Workshop II*	
		3 cr Foreign Language Requirement	

3rd yr

Fall	15 cr total	Spring	16 cr total
3 cr CH365 Physical Chemistry I		*3 cr CH366 Physical Chemistry II*	
2 cr CH367 Physical Chemistry Laboratory I		*1 cr CH368 Physical Chemistry Laboratory II*	
1 cr CH399A Undergraduate Research		*1 cr CH399A Undergraduate Research*	
0 cr CH478A Chemistry Seminar		*4 cr CH431 General Biochemistry*	
3 cr PH246Modern Physics		*0 cr CH478B Chemistry Seminar*	
3 cr Introduction to Humanities		*3 cr EP217 Mathematical Methods of Physics and Engineering*	
3 cr Introduction to Social Sciences		1 cr Creative Arts Requirement	
		3 cr PLKR Course	

4th yr

Fall	15 cr total	Spring	16 cr total
3 cr CH441 Instrumental Analysis		*3 cr CH481 Inorganic Chemistry*	
*2 cr CH443 Instrumental Analysis Laboratory**		*1 cr CH482Inorganic Chemistry Laboratory*	
3 cr CH495 Special topics		6 cr Linked Pair of Courses	
1 cr CH399A Undergraduate Research		3 cr TRS Course	
3 cr PLVS Course		3 cr Elective	
3 cr TRS Course			

Required by JCU major Elective or required by JCU core

Very Strong Students should be encouraged to take PH135/135L during their freshman year and postpone their CO125 and Social Justice courses till their sophomore year.
Weaker students should be encouraged to take MT133 and MT134 during their freshman year and take MT136 and MT233 during their sophomore year and postpone the Language Requirement until their junior or senior years
Students may complete CH 435 and CH436 in place of CH431 and one upper division elective.
The combinations of CH366 & CH368 and CH481 & CH482 may be interchanged
*CH443 will satisfy the Core Requirements for Capstone, Advanced Writing within the major and Oral Presentation within the major.