Student Name _____ Catalog Year _____ Graduation Year ____

Chemistry Major
Concentration II: American Chemical Society Certified - Biochemistry Program*

Core Requirements for All Concentrations[1]:

____	CHEM 131	General Chemistry I	(F,Sp,Su)	3
____	CHEM 132	General Chemistry II	(Sp,Su,F)	3
____	CHEM 135L[2]	Special General Chemistry Lab I	(F)	1
____	CHEM 136L[2]	Special General Chemistry Lab II	(Sp)	2
____	CHEM 241	Organic Chemistry I	(F)	3
____	CHEM 242	Organic Chemistry II	(Sp)	3
____	CHEM 270	Inorganic Chemistry I	(Sp)	3
____	CHEM 287L	Integrated Inorganic/Organic Lab I	(F)	2
____	CHEM 288L	Integrated Inorganic/Organic Lab II	(Sp)	2
____	CHEM 331	Physical Chemistry I	(Sp)	3
____	CHEM 351	Analytical Chemistry	(F)	4
____	CHEM 361	Biochemistry I	(F,Sp)	3
____	CHEM 481	Literature and Seminar I	(F)	1
____	CHEM 482	Literature and Seminar II	(Sp)	1
____	MATH 235[3]	Calculus I	(F,Sp,Su)	4
____	MATH 236	Calculus II	(F,Sp,Su)	4
____	PHYS 240	University Physics I	(F,Sp)	3
____	PHYS 250	University Physics II	(Sp,F)	3
____	PHYS 240L	University Physic Lab I	(F)	1
____	PHYS 250L	University Physics Lab II	(Sp)	1
				50

Additional ACS Biochemistry Program Requirements[1]:

____	400 lab hours (435 met by Core and Program courses)			
____	CHEM 352	Instrumental Analysis	(Sp)	3
____	CHEM 352L	Instrumental Analysis Laboratory	(Sp)	2
____	CHEM 362	Biochemistry II	(Sp)	3
____	CHEM 366L	Biochemistry Lab	(Sp)	2
____	CHEM 432	Physical Chemistry II	(F)	3
____	CHEM 438L	Physical Chemistry Laboratory	(F)	2
____	BIO 140	Foundations of Biology I	(F,**Sp**,Su)	4
____	BIO 240[4]	Genetics	(F,**Sp**)	4
____	BIO 245[5]	General Microbiology	(F,Sp)	4
____	BIO 480	Advanced Molecular Biology	(F,Sp)	4
				31

Electives

The well-prepared student is encouraged to take as many of the additional departmental offerings as possible as electives with particular attention being given to junior and/or senior research projects.

			Credits	(Lab Hrs)
CHEM 280	An Alt Lower-Division Chem Exp	(V)	1-4	
CHEM 315	Instructional Experiences	(F,Sp)	1	
CHEM 325	Chemical Hazards and Lab Safety	(F odd)	1	
CHEM 353	Environmental Chemistry	(Sp,odd)	3	
CHEM 354	Environmental Chemistry Field Camp	(Su)	3	(50)
CHEM 355	Geochemistry of Natural Waters	(F)	3	
CHEM 375	Intro to Material Science	(F)	3	
CHEM 390	Problems in Chemistry	(F,Sp)	1-3	(45-135)
CHEM 395	Perspectives in Chem (Industry/Gov't)	(F)	1	
CHEM 440	Intermediate Organic Chemistry	(F even)	3	
CHEM 445	Polymer Chemistry	(F odd)	3	
CHEM 445L	Polymer Chemistry Lab	(F odd)	1	(45)
CHEM 450	Nuclear and Radiation Chemistry	(Sp even)	3	
CHEM 450L	Nuclear & Radiation Chemistry Lab	(Sp even)	1	(45)
CHEM 455	Lasers & Applications to Phys Sci	(F even)	3	
CHEM 470	Inorganic Chemistry II	(F)	3	
CHEM 480	Selected Topics in Chemistry	(V)	1-4	
CHEM 497	Undergrad Chemical Research	(F,Sp)	2-4	(90-180)
CHEM 499	Honors	(F,Sp)	6	(270)

(F = Fall, Sp = Spring, Su = Summer, V = varied, all are subject to change)

[1]These courses may NOT be taken credit / no credit
[2]CHEM 131L and 132L (2 credits) may substitute for 135L and 136L
[3] MATH 231 and 232 (6 credits) may substitute for MATH 235
[4]Non-PPH students contact **biodept@jmu.edu** for permission to enroll in BIO 240 without the BIO 150 pre-req. Include name, ID#, major and specific BIO 240 section numbers for lecture and lab.
[5]BIO 245 will replace BIO 280 starting Spring 2021.

*It is the student's responsibility to meet any required co- or pre- requisites.

Updated April 2021