Student Name _____ Catalog Year _____ Graduation Year _____

Chemistry Major Concentration IV: American Chemical Society Certified – Chemical Education Program*

A similar route to teacher licensure is Concentration VII, which leads to a B.S. in Chemistry Education with a second major in Secondary Education

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 Chemical Education Program Requirements[1]:

400 lab hours required for all ACS concentrations.

345 hrs met by Core and Program courses in this concentration

____	At least 55 additional lab hours from list of Electives		(V)	1-5
____	CHEM 325	Chemical Hazards and Lab Safety	(Fall odd)	1
____	BIO ___	Minimum 3 credits (not BIO 103)		3-4
____	GEOL ___	Minimum 3 credits (not GEOL 102, 115)		3-4
____	CHEM 352	Instrumental Analysis	(Sp)	3
____	CHEM 352L	Instrumental Analysis Laboratory	(Sp)	2
____	CHEM 432	Physical Chemistry II	(F)	3
____	CHEM 438L	Physical Chemistry Laboratory	(F)	2
				18-20+

[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

It is necessary to be admitted to the teacher education program prior to enrolling in professional education courses. This is typically done during the sophomore year. Students should **consult regularly with the Chemistry Education Advisor (Dr. Barbara Reisner)** and the Secondary Education Science Advisor (Dr. Angela Webb).

Pre-Professional Studies in Education**

See COE requirements:
http://www.jmu.edu/coe/msme/secondary-ed/requirements-sec.shtml

Freshman / Sophomore Year

____	PSYC 160	Life Span Human Development	(F,Sp)	3
____	EDUC 300	Foundations of American Education	(F,Sp)	3

Practicum I (7 credits, recommended that these be taken as a block)

____	EDUC 310	Teaching in a Diverse Society	(F,Sp)	3
____	MSSE 370	Gen Instructional Methods for Grades 6-12	(F,Sp)	3
____	MSSE 371	Clinical Experience in Adolescent Ed	(F,Sp)	1

Practicum II (9 credits, must be taken as a block)

____	MSSE 470	Teaching Methods Course	(F,S)	3
____	MSSE 471	Content Area Field Experience in Middle Schools	(F,Sp)	3
____	LED 440	Literacy-Based Learning in Secondary Education	(F,S)	3
				22

Students should apply for admission to the graduate program early in their senior year.

Master of Arts in Teaching Professional Studies in Education (Graduate)

Consult College of Education MAT Requirements. Courses will begin the summer after the B.S. in Chemistry is awarded. All undergraduate coursework must be completed prior to enrollment in the graduate program.

*It is the student's responsibility to meet any required co- or pre- requisites.
**for ACS Chem Ed Program, Core Requirements must be completed with a C- or better, PSYC 160 with a C or better, other COE courses with B- or better

Student Name _____ Catalog Year _____ Graduation Year _____

Chemistry Major Concentration IV: American Chemical Society Certified – Chemical Education Program*

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Electives – At least 55 Additional Lab Hours are Required

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	Alt Lower-Div Chem Experience	(V)	1-4	
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	(22)
CHEM 362	Biochemistry II	(Sp)	3	
CHEM 366L	Biochemistry Laboratory	(Sp)	2	(90)
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	(22)
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)

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

**for ACS Chem Ed Program, Core Requirements must be completed with a C- or better, PSYC 160 with a C or better, other COE courses with B- or better