

# B.S. in Chemistry with Chemical Education Option/Michigan Teacher Cert.

## A Five Year Outline

FALL	SPRING
<b>FIRST YEAR</b>	
CH1110 University Chemistry I 4 AND CH1111 University Chemistry Lab I 1 OR CH1112 University Chem-Studio Lab I 5 CH1130 Orientation 1 PH1100 Physics by Inquiry I 1 MA1160 Calculus I 4 UN1001 Perspectives on Inquiry 3	CH1120 University Chemistry II 4 OR CH1122 University Chem-Studio Lab II 5 MA2160 Calculus II 4 PH1200 Physics by Inquiry II 1 PH2100 Univ. Physics I -Mechanics 3 UN1002 World Cultures 4
<b>TOTAL 14</b>	<b>TOTAL 16-17</b>
<b>SECOND YEAR</b>	
CH2410 Organic Chemistry I 3 CH2411 Organic Chemistry Lab I 1 PH2200 University Physics II – E&M 3 MA2330 Introduction Linear Algebra 3 UN2001 Revisions 3 UN2002 Institutions 3	CH2420 Organic Chemistry II 3 CH2212 Quantitative Analysis 5 MA3160 Multivariable Calculus 4 MA3520 Elementary Differential Eq. 2 PSY2000 Introduction to Psychology 3
<b>TOTAL 16</b>	<b>TOTAL 17</b>
<b>THIRD YEAR</b>	
CH3510 Physical Chemistry I 3 CH3511 Physical Chemistry Lab I 2 CH4710 Biomolecular Chemistry I 3 General Education Distribution 3 HU2830 Introduction Speech Communication 3	CH3520 Physical Chemistry II 3 ED/HU4150 Literacy in the content Areas 4 ED3110 Psychological Foundation of Learning 3 ED3210 Foundations of Education 2 ED3410 Clinical Experience 1 MA2910 Mathematical Experimentation 3
<b>TOTAL 14</b>	<b>TOTAL 16</b>
<b>FOURTH YEAR</b>	
CH4310 Inorganic Chemistry I 3 CH4311 Inorganic Chemistry Laboratory 2 CH4900 Senior Seminar I 1 MA3924 College Geometry with Technology 3 General Education Distribution 3	CH3020 Laboratory Teaching Internship 2 CH4810 Design/Operation of HS Chem Lab 2 MA2720 Statistical Methods 4 MA3910 Techniques of Teaching Mathematics 2 ED3100 Instructional Technology 2 ED4700 Fundamentals of Instruction 3
<b>TOTAL 12</b>	<b>TOTAL 15</b>
<b>FIFTH YEAR</b>	
ED4710 Science/Math Methods 3 ED4910 Directed Teaching and Methods of Teaching Science 12	<b>NOTE: This outline includes a secondary education MA minor. Also note that for Michigan Teaching Certification, you must be certified in First Aid and CPR for child and adult by completing either EH3985, Red Cross training or American Heart Association training.</b>
<b>TOTAL 15</b>	
<b>GRAND TOTAL = 135-136 Credits</b>	

**NOTE: 3 Units of co-curricular activities are required (P.E. courses are taught in 0.5 unit classes. Thus, 6 of these are needed for 3 units). It is highly recommended that students take at least one P.E. class during each semester of their first year, if possible.**