



**MONTANA STATE UNIVERSITY-BILLINGS
BACHELOR OF SCIENCE IN CHEMISTRY
TEACHING CERTIFICATE OPTION
GENERAL BULLETIN 2003-2005**

Access & Excellence

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Name _____

Student ID # _____

GENERAL EDUCATION REQUIREMENTS – SEE PAGE 4 FOR SPECIFIC COURSES

General Education Category	Course #	Credits	Grade	Semester	Equivalent
Category I: Writing (6 cr.)	ENGL 150	3			
Category II: Oral Skills (3 cr.)					
Category III: Mathematics (4 cr.) <i>MATH 112 – Chemistry Major Requirement</i>	MATH 112	4			
Category IV: Natural Sciences (7 cr.) (1 life science/1 physical science/1 lab) <i>BIOL 178/188 and PHYS 201 – Chemistry Major Requirements</i>	BIOL 178	3			
	BIOL 188	1			
	PHYS 201	3			
Category V: Social Sciences (6 cr.) (2 courses from separate prefixes) <i>EDF 100 – Education Core Requirement</i>	EDF 100	3			
Category VI: History (3 cr.)					
Category VII: Cultural Diversity (3 cr.)					
Category VIII: Fine Arts (3 cr.)					
Category IX: Integrated Humanities (3 cr.)					

Students should consult with their advisors to determine if specific courses are necessary in order to satisfy the General Education requirements within this program.

Certain courses in this program have prerequisites; students should check the course descriptions for required prerequisites.

CATEGORY I: WRITING			6
ENGL 150	College Composition		3
ENGL 210	Technical Writing		3
ENGL 226	Research Writing		3
ENGL 301	Business Communication		3
CTCM 202	Business Communication		3
CTCM 203	Technical Communication		3

CATEGORY II: ORAL SKILLS			3
COMT 101	Fundamentals of Communication		3
COMT 110	Interpersonal Communication		3
COMT 130	Introduction to Public Speaking		3

CATEGORY III: MATHEMATICS			3
MATH 106	College Algebra		3
MATH 107	Precalculus		5
MATH 112	Calculus I		4
MATH 121	Finite Mathematics		4
MATH 141	Contemporary Mathematics		3
STAT 141	Introduction to Statistics		3
STAT 241	Statistical Methods		4

CATEGORY IV: NATURAL SCIENCE			7
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Students are required to take one course from each subcategory and at least one lab or SCIN 101, 102 & 103

Subcategory A – Life Sciences

BIOL 101	Survey of Biology		3
BIOL 115	Survey of Biology Lab		1
BIOL 178	Principles of Biology		3
BIOL 188	Principles of Biology Lab		1

Subcategory B – Physical Sciences

CHEM 104	Fund of General & Organic Chemistry		3
CHEM 105	Fund of General & Organic Chem Lab		1
CHEM 115	General Chemistry I		3
CHEM 118	General Chemistry I Lab		1
EASC 100	Lithosphere and Hydrosphere		3
EASC 101	Lithosphere and Hydrosphere Lab		1
EASC 120	Historical Geology & Paleontology		3
EASC 121	Hist Geology & Paleontology Lab		1
GEOG 100	Physical Geography Lab		1
GEOG 101	Physical Geography		3
PHYS 101	Earth, Air, Fire and Water		3
PHYS 102	Earth, Air, Fire and Water Lab		1
PHYS 110	College Physics I		3
PHYS 111	College Physics I Lab		1
PHYS 201	Introduction to Astronomy		3
PHYS 203	Introduction to Astronomy Lab		1
SCIN 101, 102, 103	Integrated Science I, II, III		3, 1, 3

CATEGORY V: SOCIAL SCIENCE			6
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EDF 100 Educ Persons for a Democratic Society 3
and one of the following:

ECON 200	Principles of Microeconomics		3
ECON 201	Principles of Macroeconomics		3
POLS 101	Introduction to Government		3
POLS 212	United States Government		3
PSYC 101	General Psychology		3
SOCL 101	Introduction to Sociology		3
SOCL 212	Physical Anthropology & Archeology		3
SOCL 221	Social Problems		3

CATEGORY VI: HISTORY			3
HIST 204	United States History to 1877		3
<i>or</i>			
HIST 205	United States History Since 1877		3

CATEGORY VII: CULTURAL DIVERSITY			3
NAMS 181	Intro to Native American Studies		3
NAMS 211	Social Issues of the Native American		3

CATEGORY VIII: FINE ARTS			3
ART 101	Fundamentals of Art for Elem Teach		2
ART 110	Art Studio Essentials for Non-Art Majors		3
ART 142	Introduction to Pottery		3
ART 161	Introduction to Drawing		3
COMT 150	Introduction to Theater		3
COMT 155	Global Cinema		3
COMT 250	Introduction to Acting		3
ENGL 160	Reading and Responding to Literature		3
ENGL 204	Fundamentals of Creative Writing		3
ENGL 280	Fiction into Film		3
MUSC 100	Music Appreciation		3
MUSC 160/360	Symphonic Band		1
MUSC 162/362	Concert Choir		1
MUSC 168/368	Jazz Ensemble		1
PHIL 303	Classical Mythology		3
CTDR 248	CAD Presentations		3

CATEGORY IX: INTEGRATED HUMANITIES			3
ART 132	Art History Survey		3
ENGL 260	World Foundations of Literature		3
HON 181	The Ancient and Medieval Worlds		3
HON 18	The Renaissance and Modern Worlds		3
MUSC 340	Music History to 1750		3
MUSC 341	Music History 1750 to the Present		3
PHIL 107	Philosophical Inquiry		3
PHIL 115	Ethics		3
PHIL 117	Philosophies of Life		3
PHIL/ENGL 240	The Bible as Literature		3
PHIL 250	Christianity		3
PHIL 301	Death, Dying, and Medical Ethics		3
PHIL 311	Environmental Ethics		3
PHIL 314	Business Ethics		3

		Course	Credits	Grade	Semester	Equivalent
Professional Education Core						
*EDF	100	Educated Persons for a Democratic Society	3			
EDF	225	Human Development in Education	3			
EDF	250	Educational Psychology	3			
SPED	260	Introduction to Teaching Exceptional Learners	3			
HHP	201	Core Concepts in Health	3			
RD	310	Reading and Writing Across the Curriculum	3			
EDCI	310	Teaching in the Middle and Secondary Schools	3			
EDCI	314	Teaching Science in Middle & Secondary Schools	3			
EDF	450	Philosophical, Legal & Ethical Issues in Education	3			
EDUC	486	Student Teaching	9			

*EDF 100 may be taken as a General Education course and substituted for EDF 120.

Chemistry Requirements

CHEM	115	General Chemistry I	3			
CHEM	118	General Chemistry I Lab	1			
CHEM	116	General Chemistry II	3			
CHEM	119	General Chemistry II Lab	1			
CHEM	320	Quantitative Chemical Analysis	3			
CHEM	325	Quantitative Chemical Analysis Lab	1			
CHEM	330	Organic Chemistry I	3			
CHEM	331	Organic Chemistry I Lab	1			
CHEM	334	Organic Chemistry II	3			
CHEM	335	Organic Chemistry II Lab	1			
CHEM	340	Physical Chemistry I	3			
CHEM	341	Physical Chemistry I Lab	1			
CHEM	344	Physical Chemistry II	3			
CHEM	361	Biochemistry	3			
CHEM	371	Biochemistry Lab	1			
CHEM	420	Instrumental Analysis	3			
CHEM	463	Advanced Biochemistry	3			
CHEM	490	Internship	1			

Mathematics Requirement

*MATH	112	Calculus I	4			
MATH	113	Calculus II	4			

Physics Requirement

*PHYS	201	Introduction to Astronomy	3			
PHYS	210	University Physics I	3			
PHYS	211	University Physics I Lab	1			
PHYS	220	University Physics II	3			

PHYS	221	University Physics II Lab	1			
PHYS	230	Modern Physics	3			
Physics Electives (Upper Division)			4			

Unrestricted Electives

*This course may meet General Education requirements. Students should consult with an academic advisor before registering for courses in order to minimize the number of credits required for graduation.

BACHELOR OF SCIENCE DEGREE IN CHEMISTRY – TEACHING CERTIFICATION OPTION

Categories	Credits	Earned
General Education	38	_____
Professional Education Core	33-36	_____
Chemistry Major	57-64	_____
Unrestricted Electives (variable)	V	_____
Total	128	_____

**It is the student's responsibility to know and meet the requirements for graduation.
A minimum of 36 credits must be upper division classes (300 and above).**

NOTES: