BROADFIELD SCIENCE TEACHING LICENSURE OPTION BACHELOR OF SCIENCE DEGREE

Program Learning Outcomes

Upon successful completion of this program, students will be able to:

- Understand the basic principles and laws governing our world and have a global awareness of their discipline.
- Demonstrate basic competency in laboratory, field and computer skills related to the sciences.
- Be familiar with accessing and interpreting the scientific literature.
- Be proficient in written and oral communication in the sciences.
- Understand scientific methodology, and conduct scientific investigations using it.
- Be prepared to participate in professional activities.

All students desiring licensure to teach are required to file an Application for Admission to the Educator Preparation Program (https://catalog.msubillings.edu/undergraduate/college-education/).

Required Courses

Code	Title	Credits
General Education Requirements (https://catalog.msubillings.edu/undergraduate/general-education-requirements/) [1]		31
Professional Core Requirements		**40**
Included in the core students must take:		
EDU 383	Assessment in Education	
EDU 397G	Methods: 5-12 Science	
Math and Stats Requirements		
Select two courses from the following, one from each rubric:		7
M 161	Survey of Calculus *	
M 171	Calculus I *	
STAT 216	Introduction to Statistics *	
Subtotal		7
Biology		
BIOB 160	Principles of Living Systems *	3
BIOB 161	Principles Living Systems Lab *	1
BIOB 170	Principles of Bio Diversity	3
BIOB 171	Principles Bio Diversity Lab	1
BIOB 260	Cellular & Molecular Biology	3
BIOB 261	Cellular & Molecular Biol Lab	1
Subtotal		12
Chemistry		
CHMY 141	College Chemistry I *	3
CHMY 142	College Chemistry I Lab *	1
CHMY 143	College Chemistry II	3
CHMY 144	College Chemistry II Lab	1
Select one pair of courses from the following:		4
CHMY 211 & CHMY 212	Elements of Organic Chemistry and Elements of Organic Chem Lab	
CHMY 311 & CHMY 312	Analytical Chem-Quant Analysis and Analyticl Chm Lab-Quant Anlsys	
CHMY 321 & CHMY 322	Organic Chemistry I and Organic Chemistry Lab I	
Subtotal		12
Earth Science		
GEO 101	Intro to Physical Geology *	3
GEO 102	Intro to Physical Geology Lab *	1
GEO 205	Mineralogy	4
GEO 211	Earth History & Evolution	3
GEO 212	Earth History & Evolution Lab	1
Subtotal		12
Physics		
ASTR 110	Introduction to Astronomy *	3
ASTR 111	Introduction to Astronomy Lab *	1
Select either the 205, 207 series or the 220, 232 series		8
PHSX 205	College Physics I *	
PHSX 206	College Physics I Lab *	
PHSX 207	College Physics II	
PHSX 208	College Physics II Lab	
PHSX 220	Physics I	
PHSX 221	Physics I Lab	
PHSX 232	Physics II & Thermo	
PHSX 233	Physics II & Thermo Lab	
Subtotal		12
Internship		
Earn a minimum of two credits chosen from the following:		2
BIOB 298	Internship/Cooperative Educ	
or BIOB 498	Internship/Cooperative Educ	
CHMY 298	Internship/Cooperative Educ	
or CHMY 498	Internship/Cooperative Educ	
ERTH 498	Internship/Cooperative Educ	
GEO 498	Cooperative Educ/Internship	
PHSX 498	Internship/Cooperative Educ	
Subtotal		2
Upper Division Science Electives		
Selected in consultation with advisor from the following rubrics:		13
BCH, BIOB, BIOE, BIOH, BIOM, BIOO, CHMY, ERTH, GEO, PHSX		
Subtotal		13
Total Minimum Credits		**128**

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

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May satisfy General Education requirements.

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Note: 13 credits will be filled from program requirements (7 Natural Science, 3 Mathematics, and 3 Social Sciences) leaving 18 needed in Gen Ed.

Professional Core Requirements

The Professional Core at Montana State University Billings combines the intellectual foundations of education and the professional knowledge and skills required of all teachers into a coherent sequence of courses. The core provides the basis for understanding the philosophical, historical, cultural, and sociopolitical means by which society attempts cultural transmission and it provides the opportunity to acquire the knowledge and skills that are essential for effective instruction. It includes the range of human development and learning as they affect instructional planning, evaluation, curriculum design and implementation, performance skills, management of classrooms, direction of students, professional responsibilities, and ethical issues affecting teacher effectiveness.

At different points in its sequence of courses, the Professional Core engages students in supervised practice applying their developing knowledge and skills. By having faculty who hold diverse disciplinary perspectives teach throughout its sequence, the Professional Core encourages students to develop a professionally responsible understanding of the diversity that defines learners and teachers. The student teaching experience completes the sequence and includes both a final look at classroom skills and a capstone seminar.

The Professional Core presents a balanced approach to epistemology from philosophical, psychological, and sociological perspectives. The core is predicated on the evidential nature of knowledge required for the professional practice of education. While the professional practice of education is also informed by belief and intuition, it is ultimately defensible only to the extent that it has evidential support. The Professional Core engages students in both the processes and products of human knowing as such knowing is central to all aspects of education. The Professional Core involves the

1. creation,
2. facilitation of change,
3. transmission, and
4. application of human knowledge across the diversity of ways in which individuals understand human knowledge.

Secondary and K-12

Code	Title	Credits
EDSP 204	Intro to Tchng Exceptnl Lrnrs	3
EDU 105	Education and Democracy *	3
EDU 220	Human Growth & Development	3
EDU 221	Educ Psyc & Measurement	3
EDU 333	Rd & Wrtng Across Curriculum	3
EDU 343	Strat for Mnging Div Learners	2
EDU 354	Secondary Junior Field	2
EDU 381	Curriculum Theory & Design	3
EDU 406	Phil, Legal & Ethical Issues	3
EDU 495A	Student Teaching: K-12	9
or EDU 495C	Student Teaching: 5-12	
HTH 412	Drugs and Alcohol	1
Content Area Methods Course		2-3
Total Minimum Credits		**37-38**

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May satisfy General Education requirements.

Suggested Plan of Study

Code	Title	Credits
First Year		
Fall		
BIOB 160 & BIOB 161	Principles of Living Systems and Principles Living Systems Lab	4
CHMY 141 & CHMY 142	College Chemistry I and College Chemistry I Lab	4
Professional Core		3
General Education		v
Total		Varies
Spring		
BIOB 170 & BIOB 171	Principles of Bio Diversity and Principles Bio Diversity Lab	4
CHMY 143 & CHMY 144	College Chemistry II and College Chemistry II Lab	4
Professional Core		3
General Education		v
Total		Varies
Second Year		
Fall		
BIOB 260 & BIOB 261	Cellular & Molecular Biology and Cellular & Molecular Biol Lab	4
M 171	Calculus I	4
BIOB 498	Internship/Cooperative Educ	1
Professional Core		v
General Education		v
Total		Varies
Spring		
Select one of the following:		4
CHMY 211 & CHMY 212	Elements of Organic Chemistry and Elements of Organic Chem Lab (Spring only)	
CHMY 311 & CHMY 312	Analytical Chem-Quant Analysis and Analyticl Chm Lab-Quant Anlsys (Fall only)	
STAT 216	Introduction to Statistics	4
CHMY 498	Internship/Cooperative Educ	1
Professional Core		v
General Education		v
Total		Varies
Third Year		
Fall		
Physics sequence		4
GEO 101 & GEO 102	Intro to Physical Geology and Intro to Physical Geology Lab	4
Science elective		5
Professional Core		v
Total		Varies
Spring		
ASTR 110 & ASTR 111	Introduction to Astronomy and Introduction to Astronomy Lab	4
Physics sequence		4
GEO 211 & GEO 212	Earth History & Evolution and Earth History & Evolution Lab	4

Science elective		4
Professional Core		v
Total		Varies
Fourth Year		
Fall		
GEO 205	Mineralogy	4
General Education		v
Professional Core		v
Science elective		4
Total		Varies
Spring		
General Education		v
Professional Core		v
EDU 383	Assessment in Education	3
Total		Varies