

BROADFIELD SCIENCE TEACHING LICENSURE OPTION BACHELOR OF SCIENCE DEGREE

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>)

Code	Title	Credits
General Education Requirements (https://catalog.msubillings.edu/undergraduate/general-education-requirements) ¹		31
Professional Core Requirements ²		34
Math and Stats Requirements		
Select two courses from the following, one from each rubric:		7
M 171	Calculus I *	
M 172	Calculus II	
STAT 141	Intro to Statistical Concepts *	
STAT 216	Introduction to Statistics *	
STAT 217	Interm Statistical Concepts	
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
CHMY 211 & CHMY 212	Elements of Organic Chemistry and Elements of Organic Chem Lab	4
or 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		
Select either the 205, 207 series or the 220, 232 series		11
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	
ASTR 110	Introduction to Astronomy *	
Subtotal		11
Concentration		
Select 16 credits from group I or II. (minimum of 2 with labs)		16
I. Concentration in Biology		
BCH 380	Biochemistry	
BCH 381	Biochemistry Lab	
BIOB 315	Animal Development	
BIOB 375	General Genetics	
BIOB 376	General Genetics Lab	
BIOB 425	Adv Cell & Molecular Biology	
BIOB 426	Adv Cell & Molecular Biol Lab	
BIOB 498	Internship/Cooperative Educ	
BIOE 370	General Ecology	
BIOE 371	General Ecology Lab	
BIOM 360	General Microbiology	
BIOM 361	General Microbiology Lab	
BIOO 412	Animal Physiology	
BIOO 433	Plant Physiology	
BIOO 434	Plant Physiology Lab	
BIOO 435	Plant Systematics	
BIOO 436	Plant Systematics Lab	
BIOO 437	Plant Development	
BIOO 438	Plant Development Lab	
BIOO 450	Vertebrate Zoology	
BIOO 451	Vertebrate Zoology Lab	
II. Concentration in Chemistry		
BCH 380	Biochemistry	
BCH 381	Biochemistry Lab	
BCH 480	Advanced Biochemistry I	
BCH 481	Advanced Biochemistry I Lab	
CHMY 311	Analytical Chem-Quant Analysis	
CHMY 312	Analytical Chm Lab-Quant Anlsys	
CHMY 323	Organic Chemistry II	
CHMY 324	Organic Chemistry Lab II	
CHMY 371	Phys Chem-Qntm Chm & Spctrsctpy	
CHMY 372	Physical Chemistry Lab I	
CHMY 401	Advanced Inorganic Chemistry	
CHMY 402	Advanced Inorganic Chem Lab	
CHMY 421	Advanced Instrument Analysis	
CHMY 422	Adv Instrument Analysis Lab	
CHMY 498	Internship/Cooperative Educ	
Restricted electives selected with advisor approval.		6
Total Minimum Credits		128

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

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 Lnrs	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 354	Secondary Junior Field	2
EDU 380	Intro Curriculum Plan/Practice	2
EDU 406	Phil, Legal & Ethical Issues	3
EDU 495A or EDU 495C	Student Teaching: K-12 Student Teaching: 5-12	9
HTH 412	Drugs and Alcohol	1
Content Area Methods Course		2-3
Total Minimum Credits		34-35

¹ **Note:** 13 credits will be filled from program requirements (7 Natural Science, 3 Mathematics, and 3 Social Sciences) leaving 24 needed in Gen Ed.

² Includes EDU 397G

* 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
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 321 & CHMY 322	Organic Chemistry I and Organic Chemistry Lab I (Fall only)	
STAT 141	Intro to Statistical Concepts	3
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 concentration		4
Total		12
Spring		
ASTR 110	Introduction to Astronomy	3
Physics sequence		4
GEO 211 & GEO 212	Earth History & Evolution and Earth History & Evolution Lab	4
Science concentration		4
Professional Core		v
Total		Varies
Fourth Year		

Fall		
GEO 205	Mineralogy	4
General Education		v
Professional Core		v
Science concentration		4
Total		Varies
Spring		
General Education		v
Professional Core		v
Science concentration		3
Elective		4
Total		Varies