### General Education Requirements

- **Category I: Global Academic Skills** (9 credits)
  - A. Mathematics (3 credits)
    - *M 171 & STAT 216 – Major requirements*
  - B. English (3 credits)
  - C. Communication & Information Literacy (3 credits)

- **Category II: Natural Sciences** (7 credits)
  - 2 lectures (6 credits) & 1 lab (1 credit)
  - (1 life science & 1 physical science & 1 lab)
  - *BIOB 160/161 – Major requirement*
  - *CHMY 141 – Major requirement*

- **Category III: Social Sciences and History** (6 credits)
  - A. Social Science (3 credits)
  - B. History (3 credits)

- **Category IV: Cultural Diversity** (3 credits)

- **Category V: Arts & Humanities** (6 credits)
  - A. Fine Arts (3 credits)
  - B. Humanities (3 credits)

---

*General Education Category* | *Course #* | *Credits* | *Grade* | *Semester* | *Equivalent*
--- | --- | --- | --- | --- | ---
Category I: Global Academic Skills | | | | | 
A. Mathematics | | 3 | | | 
M 171 & STAT 216 – Major requirements | | | | | 
B. English | | 3 | | | 
C. Communication & Information Literacy | | 3 | | | 
Category II: Natural Sciences | | | | | 
| | | | | 
| 2 lectures (6 credits) & 1 lab (1 credit) | | | | 
| (1 life science & 1 physical science & 1 lab) | | | | 
| BIOB 160/161 – Major requirement | | | | 
| CHMY 141 – Major requirement | | | | | 
Category III: Social Sciences and History | | | | | 
A. Social Science | | 3 | | | 
B. History | | 3 | | | 
Category IV: Cultural Diversity | | | | | 
Category V: Arts & Humanities | | | | | 
A. Fine Arts | | 3 | | | 
B. Humanities | | 3 | | | 

*Note: Certain degrees may require a minimum grade of “C” in General Education courses.*

*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 in the General Bulletin for required prerequisites.*

Reviewed:

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__________________________________
__________________________________
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**Montana State University Billings**

Advising & Career Services

Phone: 406-657-2240
Fax: 406-657-2302
advising@msubillings.edu

www.msubillings.edu/advise/
### Category I: Global Academic Skills 9 credits

**Subcategory A - Mathematics** 3 credits
- M 105 Contemporary Mathematics
- M 114 Extended Technical Mathematics
- M 121 College Algebra
- M 122 College Trigonometry
- M 130 Mathematics for Elementary Teachers I
- M 143 Finite Mathematics
- M 161 Survey of Calculus
- M 171 Calculus

**Subcategory B - English** 3 credits
- WRIT 101 College Writing I
- WRIT 121 Introduction to Technical Writing
- WRIT 122 Introduction to Business Writing
- WRIT 201 College Writing II
- WRIT 220 Business & Professional Writing
- WRIT 221 Intermediate Technical Writing

**Subcategory C - Communication & Information Literacy** 3 credits
- BMIS 150 Computer Literacy
- COMX 111 Introduction to Public Speaking
- COMX 115 Introduction to Interpersonal Communication
- LSCI 125 Research in the Information Age

### Category II: Natural Sciences 6 cr. lecture & 1 cr. lab

**Subcategory A - Life Sciences** 3-4 credits
- BIOB 161 Principles of Living Systems
- BIOB 160 Principles of Living Systems Lab

**Subcategory B - Physical Sciences** 3-4 credits
- ASTR 110 Introduction to Astronomy
- CHMY 121 Introduction to General Chemistry Lab
- CHMY 141 College Chemistry I
- CHMY 142 College Chemistry II Lab
- GEO 101 Introduction to Physical Geology
- GEO 102 Introduction to Physical Geology Lab
- GPHY 111 Introduction to Physical Geography
- M 105 Contemporary Mathematics
- M 114 Extended Technical Mathematics
- M 121 College Algebra
- M 122 College Trigonometry
- M 130 Mathematics for Elementary Teachers I
- M 143 Finite Mathematics
- M 161 Survey of Calculus
- M 171 Calculus

**Integrated Sciences**
- SCIN 101, 102, 103, 104 Integrated Sciences

### Category III: Social Sciences and History 6 credits

**Subcategory A - Social Sciences** 3 credits
- ANTY 217 Physical Anthropology & Archeology
- BGEN 105 Introduction to Business
- COMX 106 Communicating in a Dynamic Workplace
- ECNS 201 Principles of Microeconomics
- ECNS 202 Principles of Macroeconomics
- EDU 105 Education and Democracy
- GPHY 141 Geography of World Regions
- HTH 110 Personal Health and Wellness
- PSCI 210 Introduction to American Government
- PSCI 220 Introduction to Comparative Government
- PSYX 100 Introduction to Psychology
- PSYX 231 Human Relations
- SOCI 101 Introduction to Sociology
- SOCI 201 Social Problems

**Subcategory B - History** 3 credits
- HSTA 101 American History I
- HSTA 102 American History II
- HSTR 101 Western Civilization I
- HSTR 102 Western Civilization II
- HSTR 103 Honors Western Civilization I
- HSTR 104 Honors Western Civilization II
- PSCI 230 Introduction to International Relations

### Category IV: Cultural Diversity 3 credits

**Subcategory A - Fine Arts** 3 credits
- A&SC/WGSS 274 Women, Culture, and Society
- ARTZ 131 Art Fundamentals
- ARTZ 105 Visual Language-Drawing
- ARTZ 147 Choral Ensemble: University Chorus
- CRWR 240 Intro Creative Writing Workshop
- FILM 160 Introduction to World Cinema
- GPHY 141 Geography of World Regions
- GPHY 121 Human Geography
- HSTR 103 Honors Western Civilization I
- HSTR 104 Honors Western Civilization II
- M 122 College Trigonometry
- M 143 Finite Mathematics
- M 161 Survey of Calculus
- M 171 Calculus

**Subcategory B - Humanities** 3 credits
- ANTY 217 Physical Anthropology & Archeology
- BGEN 105 Introduction to Business
- COMX 106 Communicating in a Dynamic Workplace
- ECNS 201 Principles of Microeconomics
- ECNS 202 Principles of Macroeconomics
- EDU 105 Education and Democracy
- GPHY 141 Geography of World Regions
- HTH 110 Personal Health and Wellness
- PSCI 210 Introduction to American Government
- PSCI 220 Introduction to Comparative Government
- PSYX 100 Introduction to Psychology
- PSYX 231 Human Relations
- SOCI 101 Introduction to Sociology
- SOCI 201 Social Problems

### Category V: Arts & Humanities 6 credits

**Subcategory A - Fine Arts** 3 credits
- ARTZ 101 Art Fundamentals
- ARTZ 105 Visual Language-Drawing
- ARTZ 131 Ceramics for Non-majors
- CRWR 240 Intro Creative Writing Workshop
- FILM 160 Introduction to World Cinema
- GPHY 141 Geography of World Regions
- GPHY 121 Human Geography
- HSTR 103 Honors Western Civilization I
- HSTR 104 Honors Western Civilization II
- PSCI 230 Introduction to International Relations

**Subcategory B - Humanities** 3 credits
- ANTY 217 Physical Anthropology & Archeology
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- HSTR 104 Honors Western Civilization II
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- GPHY 141 Geography of World Regions
- GPHY 121 Human Geography
- HSTR 103 Honors Western Civilization I
- HSTR 104 Honors Western Civilization II
- PSCI 230 Introduction to International Relations

**Subcategory B - Humanities** 3 credits
- ANTY 217 Physical Anthropology & Archeology
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- COMX 106 Communicating in a Dynamic Workplace
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- HTH 110 Personal Health and Wellness
- PSCI 210 Introduction to American Government
- PSCI 220 Introduction to Comparative Government
- PSYX 100 Introduction to Psychology
- PSYX 231 Human Relations
- SOCI 101 Introduction to Sociology
- SOCI 201 Social Problems
A minimum grade of C- or better is required in all major coursework.

### Biology Requirements

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Grade</th>
<th>Semester</th>
<th>Equivalent</th>
</tr>
</thead>
<tbody>
<tr>
<td>*BIOB 160 Principles of Living Systems</td>
<td>3</td>
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<tr>
<td>* BIOB 161 Principles of Living Systems Lab</td>
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<tr>
<td>BIOB 170 Principles of Biological Diversity</td>
<td>3</td>
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<tr>
<td>BIOB 171 Principles of Biological Diversity Lab</td>
<td>1</td>
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<tr>
<td>BIOB 260 Cellular and Molecular Biology</td>
<td>3</td>
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<tr>
<td>BIOB 261 Cellular and Molecular Biology Lab</td>
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<tr>
<td>BIOM 360 General Microbiology</td>
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<tr>
<td>BIOE 370 General Ecology</td>
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<td>BIOE 371 General Ecology Lab</td>
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<tr>
<td>BIOB 375 General Genetics</td>
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<td>BIOB 376 General Genetics Lab</td>
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<tr>
<td>BIOB 490 Undergraduate Research</td>
<td>2</td>
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<tr>
<td>OR BIOB 498 Internship/Cooperative Education</td>
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<tr>
<td>BIOB 499 Senior Thesis/Capstone</td>
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</tbody>
</table>

### Upper Division Biology Electives (11 credits)

Selected in consultation with advisor.

### Chemistry Requirements

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Grade</th>
<th>Semester</th>
<th>Equivalent</th>
</tr>
</thead>
<tbody>
<tr>
<td>*CHMY 141 College Chemistry I</td>
<td>3</td>
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<tr>
<td>*CHMY 142 College Chemistry Lab I</td>
<td>1</td>
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<tr>
<td>CHMY 143 College Chemistry II</td>
<td>3</td>
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<tr>
<td>CHMY 144 College Chemistry Lab II</td>
<td>1</td>
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<tr>
<td>CHMY 211 Elements of Organic Chemistry</td>
<td>3</td>
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<tr>
<td>CHMY 212 Elements of Organic Chemistry Lab</td>
<td>1</td>
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</tr>
</tbody>
</table>

### Chemistry Electives

Choose 8 credits of Chemistry electives from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Grade</th>
<th>Semester</th>
<th>Equivalent</th>
</tr>
</thead>
<tbody>
<tr>
<td>BCH 380 Biochemistry</td>
<td>3</td>
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<tr>
<td>BCH 381 Biochemistry Lab</td>
<td>1</td>
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<tr>
<td>CHMY 311 Analytical Chemistry – Quantitative Analysis</td>
<td>3</td>
<td></td>
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<tr>
<td>CHMY 312 Analytical Chemistry Lab – Quantitative Analysis</td>
<td>1</td>
<td></td>
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<tr>
<td>CHMY 421 Advanced Instrument Analysis</td>
<td>3</td>
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<tr>
<td>CHMY 422 Advanced Instrument Analysis Lab</td>
<td>1</td>
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</tbody>
</table>

### Total Credits

- Biology Total: 38 credits
- Chemistry Total: 20 credits

*May satisfy General Education requirements
### Mathematics and Statistics Requirement

<table>
<thead>
<tr>
<th>Code</th>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>*M</td>
<td>171 Calculus I</td>
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<tr>
<td>*STAT</td>
<td>216 Introduction to Statistics</td>
<td>4</td>
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</table>

**Math and Statistics Total** 8

### Physics Requirement (choose one Physics course with lab)

<table>
<thead>
<tr>
<th>Code</th>
<th>Course</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>*PHSX</td>
<td>205 College Physics I</td>
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<td>*PHSX</td>
<td>206 College Physics I Lab</td>
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<tr>
<td>OR</td>
<td>PHSX 220 Physics I</td>
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<td></td>
<td>PHSX 221 Physics I Lab</td>
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**Physics Total** 4

### Earth Science and Geography Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>*GEO</td>
<td>101 Introduction to Physical Geology</td>
<td>3</td>
</tr>
<tr>
<td>*GEO</td>
<td>102 Introduction to Physical Geology Lab</td>
<td>1</td>
</tr>
<tr>
<td>GEO</td>
<td>205 Mineralogy</td>
<td>4</td>
</tr>
<tr>
<td>GPHY</td>
<td>282 Mapping Techniques</td>
<td>3</td>
</tr>
</tbody>
</table>

**Upper Division Earth Science Electives**

**(9 credits to be chosen from courses in GEO, ERTH, or GPHY)**

**Earth Science & Geography Total** 20

### Electives

<table>
<thead>
<tr>
<th>Code</th>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENST</td>
<td>385 Environmental Impact and Policy Analysis (Recommended course)</td>
<td>3</td>
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</tbody>
</table>

**BACHELOR OF SCIENCE DEGREE IN BIOLOGY – ENVIRONMENTAL SCIENCES OPTION**

<table>
<thead>
<tr>
<th>Categories</th>
<th>Credits</th>
<th>Earned</th>
<th>Remaining</th>
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<tbody>
<tr>
<td>General Education</td>
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<tr>
<td>Biology Requirements **</td>
<td><strong>34</strong></td>
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<tr>
<td>Chemistry Requirements ***</td>
<td>***17</td>
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<tr>
<td>Math / Statistics Requirements **</td>
<td><strong>5</strong></td>
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<tr>
<td>Physics Requirements</td>
<td>4</td>
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<tr>
<td>Earth Sci. &amp; Geog. Requirements</td>
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<td></td>
</tr>
<tr>
<td>Electives (variable)</td>
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<tr>
<td>Total</td>
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</tr>
</tbody>
</table>

**4 credits that also satisfy General Education requirements are not included in the total number of credits.**

**3 credits that also satisfy General Education requirements are not included in the total number of credits.**

The total number of elective credits required for the degree will be determined by the number of courses a student elects to take which fulfill both the General Education requirements and the major requirements. Electives should be chosen in consultation with an academic advisor. 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).