About This Major...

The Biology Program provides a broad background in the biological sciences. Students choose biology courses from four areas: cell, developmental, and molecular biology; anatomical and physiological biology; organismal biology; and ecology, evolution, and systematics. Students wishing to obtain teacher certification complete a concentration in Teacher Licensure. The Biology Program also offers field courses on tropical ecosystems in Ecuador and on marine invertebrate communities in Oregon. The Department of Biology also operates the only electron microscope facility in the area. Graduates of our program pursue careers in teaching, pest control, plant pathology, wildlife biology, cell biology and biotechnology, among just a few of the career options opened with a Biology degree from Mesa State College.

POLICIES:

1. It is your responsibility to determine whether you have met the requirements for your degree. Please see your MSC Catalog for a complete list of graduation requirements.

2. You must go to the Registrar’s Office and fill out the “Intent to Graduate” form at the beginning of the semester prior to graduating.

3. This program sheet must be submitted with your graduation planning sheet to your advisor during the semester prior to graduating, no later than September 15 for Spring graduates, February 15 for Fall graduates.

4. Your advisor will sign and forward the Program Sheet, Intent to Graduate Form, and Graduation Planning Sheet to the Department Head for signature.

5. Finally, the Department Head or the department administrative assistant will take the signed forms to the Registrar’s Office. (Students cannot handle the forms once the advisor signs.)

6. If your petition for graduation is denied, it will be your responsibility to reapply for graduation in a subsequent semester. Your “Intent to Graduate” does not automatically move to a later graduation date.

7. NOTE: The semester before graduation, you will be required to take a Major Field Achievement Test (Exit Exam).

NAME: ___________________________ STUDENT ID # __________________

LOCAL ADDRESS AND PHONE NUMBER: __________________________________________

(________)(________) __________________________________________________________

I, (Signature) ________________________________________________________________, hereby certify that I have completed (or will complete) all the courses listed on the Program Sheet. I further certify that the grade listed for those courses is the final course grade received except for the courses in which I am currently enrolled and the courses which I complete next semester. I have indicated the semester in which I will complete these courses.

Signature of Advisor ___________________________ Date __________

Signature of Department Head ___________________________ Date __________

Signature of Registrar ___________________________ Date __________
• Must earn 120 semester hours and meet the academic residency requirements to earn a baccalaureate degree at Mesa State College.
• Must earn a minimum of 40 semester hours in upper division courses (i.e., 300-level and 400-level courses).
• A cumulative grade point average of 2.0 or higher must be maintained for all courses.
• A 2.5 GPA is required in the major courses. A “C” or higher is required in all major courses.
• When filling out this program sheet a course can only be used once, i.e., no double counting is allowed between categories.
• Excess HPWE courses beyond the two required and pre-collegiate courses (usually numbered below 100) cannot be used for graduation.
• All degree requirements must be completed as described. Any exceptions or substitutions must be recommended in advance by the faculty advisor and approved by the Department Head.
• It is recommended that students work closely with a faculty advisor when selecting courses and scheduling classes prior to registration.
• Students are required to participate in exit examinations or other programs deemed necessary to comply with the college accountability requirement.

General Education Requirements (Minimum of 33 semester hours) See the M.S.C. catalog for the list of courses that meet the general education categories.

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Credit</th>
<th>Grade</th>
<th>Term</th>
<th>Year</th>
<th>Trns/Subs</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 111</td>
<td>6</td>
<td></td>
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</tr>
<tr>
<td>ENGL 112</td>
<td>6</td>
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</tr>
</tbody>
</table>

*ENGL 129, Honors English, may be substituted for ENGL 111 and ENGL 112. Must earn a grade of “C” or better. May need to take additional electives.

Humanities: (6 semester hours)

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Credit</th>
<th>Grade</th>
<th>Term</th>
<th>Year</th>
<th>Trns/Subs</th>
</tr>
</thead>
</table>

Social and Behavioral Sciences: (6 semester hours)

<table>
<thead>
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<th>Course No.</th>
<th>Credit</th>
<th>Grade</th>
<th>Term</th>
<th>Year</th>
<th>Trns/Subs</th>
</tr>
</thead>
</table>

Other Requirements (10 semester hours)

Human Performance and Wellness: (3 Semester Hours)

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Credit</th>
<th>Grade</th>
<th>Term</th>
<th>Year</th>
<th>Trns/Subs</th>
</tr>
</thead>
</table>

Bachelor of Science Degree Distinction:

(7 semester hours) Must earn a “C” or better in both courses.

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Credit</th>
<th>Grade</th>
<th>Term</th>
<th>Year</th>
<th>Trns/Subs</th>
</tr>
</thead>
</table>

*Math 113 or higher level math as approved by advisor
Should be completed by the end of the sophomore year (≤70 semester hours)

Biological Sciences Major Requirements (61-63 Semester Hours)

A 2.5 GPA is required in the major courses. A “C” or higher is required in all major courses.

Required Core Courses (21-23 semester hours)

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Credit</th>
<th>Grade</th>
<th>Term</th>
<th>Year</th>
<th>Trns/Subs</th>
</tr>
</thead>
</table>

Continued on page 3
Required Related Study Area (20 semester hours): (Should be completed by the end of the sophomore year.)

<table>
<thead>
<tr>
<th>Course</th>
<th>No.</th>
<th>Credit</th>
<th>Grade</th>
<th>Term</th>
<th>Year</th>
<th>Trns/Subs</th>
<th>Course</th>
<th>No.</th>
<th>Credit</th>
<th>Grade</th>
<th>Term</th>
<th>Year</th>
<th>Trns/Subs</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM</td>
<td>131</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>PHYS</td>
<td>111</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHEM</td>
<td>131L*</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>PHYS</td>
<td>111L*</td>
<td>1</td>
<td></td>
<td></td>
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<tr>
<td>CHEM</td>
<td>132</td>
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<td>PHYS</td>
<td>112</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>CHEM</td>
<td>132L*</td>
<td>1</td>
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<td></td>
<td></td>
<td></td>
<td>PHYS</td>
<td>112L*</td>
<td>1</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

* A higher level subject may be taken in the same category with advisor approval.

Additional Biology Courses (20 semester hours) At least 50% must be at the 300 level or above. Courses must be selected from three of the following four areas: (1) Cell, Developmental, and Molecular; (2) Organismal; (3) Anatomical and Physiological; (4) Ecology, Evolution, and Systematics.

**Category 1:** BIOL 302/302L, BIOL 310/310L, BIOL 343/343L, BIOL 425, BIOL 442, CHEM 315/315L

**Category 2:** BIOL 221/221L, BIOL 231/231L, BIOL 250/250L, BIOL 331/331L, BIOL 350/350L, BIOL 411/411L, BIOL 412/412L, BIOL 413/413L, BIOL 416/416L, BIOL 431/431L, BIOL 450/450L

**Category 3:** BIOL 209/209L, BIOL 210/210L, BIOL 241, BIOL 341/341L, BIOL 342/342L, BIOL 421/421L, BIOL 423/423L, BIOL 426, 426L, BIOL 441/441L

**Category 4:** BIOL 211/211L, BIOL 315, BIOL 320, 321/321L, BIOL 403, BIOL 405/405L, BIOL 406, BIOL 414/414L, BIOL 415

Electives (All college level courses appearing on your final transcript, not listed above that will bring your total semester hours to 120 hours. Excludes HPWE activity courses.) (16 semester hours; additional upper division hours may be needed.)

**GRADUATION INFORMATION**

See the “Undergraduate Graduation Requirements” in the Mesa State College catalog for additional graduation information.

**GENERAL EDUCATION REQUIREMENTS** (Minimum of 33 Semester Hours) See current Mesa State College catalog for list of courses that fulfill the requirements below. If one (or more) of the selections below is required in your major, you must use it to fulfill the major requirement and make a different selection to meet the general education requirement. The courses may not be used to fulfill both requirements.

- **English** – 6 Semester Hours (Must be completed before student has 60 semester hours. Must receive grade of “C” or above.) ENGL 111 and ENGL 112 or ENGL 129 (by permission)

- **Humanities** – 6 semester hours

- **Social and Behavioral Sciences** – 6 semester hours

- **Humanities or Social/Behavioral Sciences** – 3 semester hours

- **Fine Arts** – 3 semester hours

- **Natural Sciences** – 6 semester hours (At least one course must include a lab.)

- **Applied Studies** – 3 semester hours
OTHER REQUIREMENTS (10 Semester Hours)

**Human Performance and Wellness** – 3 Semester Hours
Each student must take HPWA 100 together with two HPWE Activity courses. See current catalog for listing.

**Degree Distinction** – 7 Semester Hours (Must be completed by the end of the sophomore year)
MATH 113 College Algebra (or a higher level math as approved by advisor) – 4 semester hours
MATH 146 Calculus for Biological Sciences (5 semester hours) or STAT 200 Probability and Statistics (4 semester hours)

**Biological Sciences - Biology** (61-63 Semester Hours)
A 2.5 GPA is required in the major courses. A “C” or higher is required in all major courses.

### Required Core Courses (21-23 semester hours):

- BIOL 105/105L Attributes of Living Systems and Laboratory
- BIOL 106/106L Principles of Animal Biology and Laboratory
- BIOL 107/107L Principles of Plant Biology and Laboratory
- BIOL 301/301L Principles of Genetics and Laboratory
- BIOL 483 Senior Thesis **or**
  - BIOL 482 Senior Research and BIOL 487 Advanced Research

### Required Related Study Area (20 semester hours):

(Should be completed by the end of the sophomore year.)

- CHEM 131/131L General Chemistry and Laboratory (or higher level)
- CHEM 132/132L General Chemistry and Laboratory (or higher level)
- PHYS 111/111L General Physics and Laboratory (or higher level)
- PHYS 112/112L General Physics and Laboratory (or higher level)

### Additional Biology Courses (20 semester hours minimum) At least 50% must be at the 300 level or above.

Courses must be selected from three of the following four areas:

**Category 1: Cell, Developmental and Molecular**
- BIOL 302/302L Cellular Biology and Laboratory
- BIOL 310/310L Developmental Biology and Lab
- BIOL 343/343L Immunology and Laboratory
- BIOL 425 Molecular Genetics
- BIOL 442 Pharmacology
- CHEM 315/315L Biochemistry and Laboratory

**Category 2: Organismal**
- BIOL 221/221L Plant Identification and Lab
- BIOL 231/231L Invertebrate Zoology and Lab
- BIOL 250/250L Intro to Medical Microbiology and Lab
- BIOL 331/331L Insect Biology and Lab
- BIOL 350/350L Microbiology and Lab
- BIOL 411/411L Mammalogy and Lab
- BIOL 412/412L Ornithology and Lab
- BIOL 413/413L Herpetology and Lab
- BIOL 416/416L Ethology and Lab
- BIOL 431/431L Animal Parasitology and lab
- BIOL 450/450L Mycology and Lab

**Category 3: Anatomical and Physiological**
- BIOL 209/209L Human Anatomy & Physiology I and Lab
- BIOL 210/210L Human Anatomy & Physiology II and Lab
- BIOL 241 Pathophysiology
- BIOL 341/341L General Physiology and Lab
- BIOL 342/342L Histology and Lab
- BIOL 421/421L Plant Physiology and Lab
- BIOL 423/423L Plant Anatomy and Lab
- BIOL 426/426L Intro to Electron Microscopy and Lab
- BIOL 441/441L Endocrinology and Lab

**Category 4: Ecology, Evolution, and Systematics**
- BIOL 211/211L Ecosystem Biology and Lab
- BIOL 315 Epidemiology
- BIOL 320 Plant Systematics
- BIOL 321/321L Taxonomy of Grasses and Lab
- BIOL 403 Evolution
- BIOL 405/405L Adv. Ecological Methods and Lab
- BIOL 406 Plant-Animal Interactions
- BIOL 414/414L Aquatic Biology and Lab
- BIOL 415 Tropical Ecosystems

* Category appropriate topics or elective courses may be used with Advisor approval.

**General Electives:** 16 semester Hours; additional upper division hours may be needed.

Students are required to participate in exit examinations or other programs deemed necessary to comply with the college accountability requirement. All degree requirements must be completed as described above. Any exceptions or substitutions must be recommended in advance by the faculty advisor and approved by the Department Head.
SUGGESTED COURSE SEQUENCING FOR A MAJOR IN BIOLOGICAL SCIENCES – BIOLOGY

**FRESHMAN YEAR**

<table>
<thead>
<tr>
<th>Fall Semester</th>
<th>Hours</th>
<th>Spring Semester</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 105 Attributes of Living Systems</td>
<td>4</td>
<td>BIOL 106 Principles of Animal Biology</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 105L Attributes of Living Systems Lab</td>
<td>1</td>
<td>BIOL 106L Principles of Animal Biology Lab</td>
<td>2</td>
</tr>
<tr>
<td>CHEM 131 General Chemistry</td>
<td>4</td>
<td>CHEM 132 General Chemistry</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 131L General Chemistry Lab</td>
<td>1</td>
<td>CHEM 132L General Chemistry Lab</td>
<td>1</td>
</tr>
<tr>
<td>MATH 113* College Algebra</td>
<td>4</td>
<td>MATH 146* Calculus for Biological Sciences (5) or STAT 200 Probability and Statistics (3)</td>
<td>3-5</td>
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<tr>
<td>HPWA 100 Human Performance and Wellness</td>
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<td>HPWE Activity (2)</td>
<td>2</td>
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<td>15</td>
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*Professional schools (medical, veterinary, dental) may require one or two semesters of calculus. Math 151 and 152 will fulfill the MATH requirement.

**SOPHOMORE YEAR**

<table>
<thead>
<tr>
<th>Fall Semester</th>
<th>Hours</th>
<th>Spring Semester</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>BIOL 107 Principles of Plant Biology</td>
<td>3</td>
<td>BIOL XXX (selected from list)</td>
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<tr>
<td>BIOL 107L Principles of Plant Biology Lab</td>
<td>2</td>
<td>PHYS 112 General Physics (or higher)</td>
<td>4</td>
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<tr>
<td>PHYS 111 General Physics (or higher)</td>
<td>4</td>
<td>PHYS 112L General Physics Lab (or higher)</td>
<td>1</td>
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<tr>
<td>PHYS 111L General Physics Lab (or higher)</td>
<td>1</td>
<td>ENGL 112 English Composition</td>
<td>3</td>
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<tr>
<td>ENGL 111 English Composition</td>
<td>3</td>
<td>General Education Humanities</td>
<td>3</td>
</tr>
<tr>
<td>General Education Social/Behavioral Sciences</td>
<td>3</td>
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<td>15</td>
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<tr>
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<td>16</td>
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**JUNIOR YEAR**

<table>
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<th>Spring Semester</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>BIOL XXX (selected from list)</td>
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<td>BIOL XXX (selected from list)</td>
<td>7</td>
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<tr>
<td>BIOL 301 Principles of Genetics</td>
<td>3</td>
<td>General Education Social/Behavioral Science or Humanities</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 301L Principles of Genetics</td>
<td>1</td>
<td>General Education Social/Behavioral Science</td>
<td>3</td>
</tr>
<tr>
<td>General Education Fine Arts</td>
<td>3</td>
<td>Electives</td>
<td>3</td>
</tr>
<tr>
<td>General Education Humanities</td>
<td>3</td>
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<td>16</td>
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**SENIOR YEAR**

<table>
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<th>Hours</th>
<th>Spring Semester</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL XXX (selected from list)</td>
<td>4</td>
<td>BIOL 483 Senior Thesis (2) [if not 482&amp; 487] or BIOL 487 Independent Research (2) [if not 483]</td>
<td>2</td>
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<tr>
<td>BIOL 482 Senior Research (if not 483)</td>
<td>2</td>
<td>General Education Natural Science with Lab</td>
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<tr>
<td>General Education Applied Studies</td>
<td>3</td>
<td>Electives#</td>
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<tr>
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<td>15-17</td>
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</tr>
</tbody>
</table>

# Professional schools (medical, veterinary, dental) may require one or two semesters of organic chemistry, which may be taken to fulfill part of the electives.