



2006 – 07 PETITION/PROGRAM SHEET

Degree: Bachelor of Science

Major: Biological Sciences

Concentration: Biology

www.mesastate.edu/schools/snsn/biology/program.htm

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 operates the only electron microscope facility in the area. Graduates of our program pursue careers in medical field, 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 the MSC Catalog for a complete list of graduation requirements.
2. You must turn in your "Intent to Graduate" form to the Registrar's Office by September 15 if you plan to graduate the following May, and by February 15 if you plan to graduate the following December.
3. This program sheet must be submitted with your graduation planning sheet to your advisor during the semester prior to the semester of graduation, no later than October 1 for spring graduates, no later than March 1 for fall graduates.
4. Your advisor will sign and forward the Program Sheet 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 \_\_\_\_\_ 20\_\_

Signature of Department Head \_\_\_\_\_ Date \_\_\_\_\_ 20\_\_

Signature of Registrar \_\_\_\_\_ Date \_\_\_\_\_ 20\_\_

- 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 KINA/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.

Course	No.	Credit	Grade	Term	Year	Trns/Subs	Course	No.	Credit	Grade	Term	Year	Trns/Subs
<b>English:</b> ENGL 111 and 112 (6 semester hours, must receive a "C" or higher, must be completed by the time the student has 60 semester hours)							<b>Humanities or Social/Behavioral Science:</b> (3 semester hours)						
*ENGL	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
*ENGL	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
*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.							<b>Fine Arts:</b> (3 semester hours)						
_____							_____						
_____							_____						
_____							_____						
<b>Humanities:</b> (6 semester hours)							<b>Natural Sciences:</b> (minimum 6 semester hours, at least one course must include a lab)						
_____							_____						
_____							_____						
_____							_____						
<b>Social and Behavioral Sciences:</b> (6 semester hours)							<b>Applied Studies:</b> (3 semester hours)						
_____							_____						
_____							_____						

**Other Requirements** (10 semester hours)

<b>Kinesiology:</b> (3 Semester Hours)							<b>Bachelor of Science Degree Distinction:</b> (7 semester hours) Must earn a "C" or better in both courses.						
Course	No.	Credit	Grade	Term	Year	Trns/Subs	Course	No.	Credit	Grade	Term	Year	Trns/Subs
KINE/HPWA	100	1	_____	_____	_____	_____	MATH*	113	4	_____	_____	_____	_____
KINA/HPWE	_____	1	_____	_____	_____	_____	MATH 146 (5) <b>or</b> STAT 200 (3)						
KINA/HPWE	_____	1	_____	_____	_____	_____	_____	_____	3	_____	_____	_____	_____
See the M.S.C. catalog for the list of approved KINA/HPWE/Selected DANC courses.							*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.

Course	No.	Credit	Grade	Term	Year	Trns/Subs	Course	No.	Credit	Grade	Term	Year	Trns/Subs
<b>Required Core Courses (21-23 semester hours)</b>													
BIOL	105	4	_____	_____	_____	_____	BIOL	301	3	_____	_____	_____	_____
BIOL	105L	1	_____	_____	_____	_____	BIOL	301L	1	_____	_____	_____	_____
BIOL	106	3	_____	_____	_____	_____	Chose one: (BIOL 483) or (BIOL 482 and BIOL 487)						
BIOL	106L	2	_____	_____	_____	_____	BIOL	483	2	_____	_____	_____	_____
BIOL	107	3	_____	_____	_____	_____	<b>Or</b>						
BIOL	107L	2	_____	_____	_____	_____	BIOL	482	2	_____	_____	_____	_____
							<b>and</b>						
							BIOL	487	2	_____	_____	_____	_____

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Course	No.	Credit	Grade	Term	Year	Trns/Subs	Course	No.	Credit	Grade	Term	Year	Trns/Subs
<b>Required Related Study Area</b> (20 semester hours): (Should be completed by the end of the sophomore year.)													
CHEM	131 *	4					PHYS	111 *	4				
CHEM	131L *	1					PHYS	111L *	1				
CHEM	132 *	4					PHYS	112 *	4				
CHEM	132L *	1					PHYS	112L *	1				

\* 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 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

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

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

Course	No.	Credit	Grade	Term	Year	Trns/Subs	Course	No.	Credit	Grade	Term	Year	Trns/Subs
_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____

### 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)

### **Kinesiology – 3 Semester Hours**

Each student must take KINE/HPWA 100 together with two KINA/HPWE/Selected DANC 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 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 of 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

This is a recommended sequence of course work. Certain courses may have prerequisites or are only offered during the Fall or Spring semesters. It is the student's responsibility to meet with their advisor and check the 2 year course matrix on the Mesa State website for course availability.

### FRESHMAN YEAR

Fall Semester	Hours	Spring Semester	Hours
BIOL 105      Attributes of Living Systems	4	BIOL 106      Principles of Animal Biology	3
BIOL 105L    Attributes of Living Systems Lab	1	BIOL 106L    Principles of Animal Biology Lab	2
CHEM 131     General Chemistry	4	CHEM 132     General Chemistry	4
CHEM 131L   General Chemistry Lab	1	CHEM 132L   General Chemistry Lab	1
MATH 113*    College Algebra	4	MATH 146*    Calculus for Biological Sciences (5) <b>or</b>	
KINE/HPWA 100 Health and Wellness	<u>1</u>	STAT 200     Probability and Statistics (3)	3-5
	15	KINA/HPWE    Activities (2 courses)	<u>2</u>
			15-17

\*Professional schools (medical, veterinary, dental) may require one or two semesters of calculus. Math 151 and 152 will fulfill the MATH requirement.

### SOPHOMORE YEAR

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

### JUNIOR YEAR

Fall Semester	Hours	Spring Semester	Hours
BIOL XXX (selected from list)	5	BIOL XXX (selected from list)	7
BIOL 301      Principles of Genetics	3	General Education Social/Behavioral Science or Humanities	3
BIOL 301L    Principles of Genetics	1	General Education Social/Behavioral Science	3
General Education Fine Arts	3	Electives	<u>3</u>
General Education Humanities	<u>3</u>		16
	15		

### SENIOR YEAR

Fall Semester	Hours	Spring Semester	Hours
BIOL XXX (selected from list)	4	BIOL 483      Senior Thesis (2) [if not 482& 487] <b>or</b>	
BIOL 482      Senior Research (if not 483)	2	BIOL 487      Independent Research (2) [if not 483]	2
General Education Natural Science	3	General Education Natural Science with Lab	3-4
General Education Applied Studies	3	Electives#	<u>7</u>
Electives#	<u>3-5</u>		12-13
	15-17		

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