

Program Modification

Program modifications must be submitted by October 15, 2013, and finalized by the end of that fall semester for catalog production.
Enter data in **YELLOWED** areas.

Date (Change date if modified and update the file name with the new date): 2014 2015 Catalog Copy 8.26.13; rev 12.10.13

Program Area: **Biology, B.A.**

Semester /Year First affected: FALL 2014

Instructions: Please use this Program Modification form for changes to existing program requirements, units, outcomes, emphases or options, or for other programmatic concerns. For minor changes (faculty or address changes, additions of approved electives, minor editing for clarity, and other minor updates) use the Program Update form, available at the Curriculum website.

Paste the latest approved version of your entire program in the left AND right boxes below. Make your deletions in the LEFT column by using the strikeout feature in Word or underlining, **and highlight**. Insert new language or other changes to the program on the RIGHT and highlight in **YELLOW** for easy identification. If possible, please align the two columns so that changes appear side-by-side with the original text.

SUMMARY OF CHANGES

Added UNIV 391, 392, 398 and 498 to the list of courses without the BIOL prefix from which students may choose to meet 3-4 units of upper division electives toward the major.

JUSTIFICATION

Many of our majors take these upper-division UNIV courses and they support multiple university mission pillars. Adding these courses to our list of approved non-BIOL electives will eliminate the need for substitution forms and encourage students to participate in these activities.

CURRENTLY APPROVED PROGRAM		PROPOSED PROGRAM	
Biology, B.A.		Biology, B.A.	
120 units		120 units	

Summary of Units: <table><tr><td>Lower Division Major Requirements</td><td>8</td></tr><tr><td>Upper Division Major Requirements</td><td>36</td></tr><tr><td>Required Supporting Courses</td><td>11</td></tr><tr><td>Additional General Education and other Graduation Requirements</td><td>65</td></tr><tr><td>Total Units</td><td>120</td></tr></table>	Lower Division Major Requirements	8	Upper Division Major Requirements	36	Required Supporting Courses	11	Additional General Education and other Graduation Requirements	65	Total Units	120	Summary of Units: <table><tr><td>Lower Division Major Requirements</td><td>8</td></tr><tr><td>Upper Division Major Requirements</td><td>36</td></tr><tr><td>Required Supporting Courses</td><td>11</td></tr><tr><td>Additional General Education and other Graduation Requirements</td><td>65</td></tr><tr><td>Total Units</td><td>120</td></tr></table>	Lower Division Major Requirements	8	Upper Division Major Requirements	36	Required Supporting Courses	11	Additional General Education and other Graduation Requirements	65	Total Units	120	
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Lower Division Requirements in the Major - 8 units BIOL 200 - Principles of Organismal and Population Biology Units: 4 * BIOL 201 - Principles of Cell and Molecular Biology Units: 4 * Upper Division Requirements in the Major - 36 units 1. Required Biology Courses - 14 units BIOL 300 - Cell Biology Units: 4 BIOL 302 - Genetics Units: 4 BIOL 303 - Evolutionary Biology Units: 3 BIOL 499 - Senior Capstone in Biology Units: 3 2. Electives in Biology - 22 units Use the appropriate graduation roadmap to select a minimum of 22 units of biology courses from 300 and 400 levels, two of which must be lab courses. BIOL 301 - Microbiology Units: 4	Lower Division Requirements in the Major - 8 units BIOL 200 - Principles of Organismal and Population Biology Units: 4 * BIOL 201 - Principles of Cell and Molecular Biology Units: 4 * Upper Division Requirements in the Major - 36 units 1. Required Biology Courses - 14 units BIOL 300 - Cell Biology Units: 4 BIOL 302 - Genetics Units: 4 BIOL 303 - Evolutionary Biology Units: 3 BIOL 499 - Senior Capstone in Biology Units: 3 2. Electives in Biology - 22 units Use the appropriate graduation roadmap to select a minimum of 22 units of biology courses from 300 and 400 levels, two of which must be lab courses. BIOL 301 - Microbiology Units: 4																					

• <u>BIOL 304 - Comparative Animal Physiology</u> Units: 3 • <u>BIOL 310 - Vertebrate Biology</u> Units: 4 • <u>BIOL 311 - Plant Biology</u> Units: 4 • <u>BIOL 312 - Marine Biology</u> Units: 4 • <u>BIOL 313 - Conservation Biology (Cross-listed as ESRM 313)</u> Units: 4 • <u>BIOL 315 - Introduction to Biophysics (Cross-listed as PHYS 315)</u> Units: 4 • <u>BIOL 316 - Invertebrate Zoology</u> Units: 4 • <u>BIOL 317 - Parasitology</u> Units: 4 • <u>BIOL 318 - Medical Mycology</u> Units: 4 • <u>BIOL 319 - Plant Systematics and Identification</u> Units: 4 • <u>BIOL 335 - The Biosphere</u> Units: 3 * • <u>BIOL 345 - Science and Public Policy (Cross-listed as POLS 345)</u> Units: 3 * • <u>BIOL 389 - The Science of Art and the Art of Science (Cross-listed as ART 389)</u> Units: 3 • <u>BIOL 400 - Molecular Biology</u> Units: 4 • <u>BIOL 401 - Biotechnology and Recombinant DNA Techniques</u> Units: 5 • <u>BIOL 406 - Evolutionary Biogeography</u> Units: 3 • <u>BIOL 407 - Behavioral Ecology</u> Units: 3 • <u>BIOL 416 - Radiobiology and Radionuclides (Cross-listed as PHYS 416)</u> Units: 3 • <u>BIOL 420 - Cellular and Molecular Immunology</u> Units: 4	• <u>BIOL 304 - Comparative Animal Physiology</u> Units: 3 • <u>BIOL 310 - Vertebrate Biology</u> Units: 4 • <u>BIOL 311 - Plant Biology</u> Units: 4 • <u>BIOL 312 - Marine Biology</u> Units: 4 • <u>BIOL 313 - Conservation Biology (Cross-listed as ESRM 313)</u> Units: 4 • <u>BIOL 315 - Introduction to Biophysics (Cross-listed as PHYS 315)</u> Units: 4 • <u>BIOL 316 - Invertebrate Zoology</u> Units: 4 • <u>BIOL 317 - Parasitology</u> Units: 4 • <u>BIOL 318 - Medical Mycology</u> Units: 4 • <u>BIOL 319 - Plant Systematics and Identification</u> Units: 4 • <u>BIOL 335 - The Biosphere</u> Units: 3 * • <u>BIOL 345 - Science and Public Policy (Cross-listed as POLS 345)</u> Units: 3 * • <u>BIOL 389 - The Science of Art and the Art of Science (Cross-listed as ART 389)</u> Units: 3 • <u>BIOL 400 - Molecular Biology</u> Units: 4 • <u>BIOL 401 - Biotechnology and Recombinant DNA Techniques</u> Units: 5 • <u>BIOL 406 - Evolutionary Biogeography</u> Units: 3 • <u>BIOL 407 - Behavioral Ecology</u> Units: 3 • <u>BIOL 416 - Radiobiology and Radionuclides (Cross-listed as PHYS 416)</u> Units: 3 • <u>BIOL 420 - Cellular and Molecular Immunology</u> Units: 4	
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• <u>BIOL 421 - Virology</u> Units: 3 • <u>BIOL 422 - Plant Physiology</u> Units: 4 • <u>BIOL 423 - Cellular and Molecular Neurobiology</u> Units: 3 • <u>BIOL 424 - Human Physiology</u> Units: 3 • <u>BIOL 425 - Human Genetics</u> Units: 3 • <u>BIOL 426 - Hematology</u> Units: 4 • <u>BIOL 427 - Developmental Biology</u> Units: 4 • <u>BIOL 428 - Biology of Cancer</u> Units: 3 • <u>BIOL 431 - Bioinformatics</u> Units: 4 * • <u>BIOL 432 - Principles of Epidemiology and Environmental Health</u> Units: 3 * • <u>BIOL 433 - Ecology and the Environment</u> Units: 4 * • <u>BIOL 434 - Introduction to Biomedical Imaging (Cross-listed as HLTH 434, PHYS 434)</u> Units: 4 * • <u>BIOL 450 - Ichthyology: The Biology of Fishes</u> Units: 4 • <u>BIOL 451 - Ornithology</u> Units: 4 • <u>BIOL 452 - Entomology</u> Units: 4 • <u>BIOL 453 - Methods in Population and Community Ecology</u> Units: 4 • <u>BIOL 464 - Medical Instrumentation (Cross-listed as PHYS 464)</u> Units: 4 • <u>BIOL 490 - Special Topics</u> Units: 1-3 • <i><u>Students may count 3-4 units from the following courses towards the 22 units of electives:</u></i> • <u>CHEM 318 - Biological Chemistry</u> Units: 3	• <u>BIOL 421 - Virology</u> Units: 3 • <u>BIOL 422 - Plant Physiology</u> Units: 4 • <u>BIOL 423 - Cellular and Molecular Neurobiology</u> Units: 3 • <u>BIOL 424 - Human Physiology</u> Units: 3 • <u>BIOL 425 - Human Genetics</u> Units: 3 • <u>BIOL 426 - Hematology</u> Units: 4 • <u>BIOL 427 - Developmental Biology</u> Units: 4 • <u>BIOL 428 - Biology of Cancer</u> Units: 3 • <u>BIOL 431 - Bioinformatics</u> Units: 4 * • <u>BIOL 432 - Principles of Epidemiology and Environmental Health</u> Units: 3 * • <u>BIOL 433 - Ecology and the Environment</u> Units: 4 * • <u>BIOL 434 - Introduction to Biomedical Imaging (Cross-listed as HLTH 434, PHYS 434)</u> Units: 4 * • <u>BIOL 450 - Ichthyology: The Biology of Fishes</u> Units: 4 • <u>BIOL 451 - Ornithology</u> Units: 4 • <u>BIOL 452 - Entomology</u> Units: 4 • <u>BIOL 453 - Methods in Population and Community Ecology</u> Units: 4 • <u>BIOL 464 - Medical Instrumentation (Cross-listed as PHYS 464)</u> Units: 4 • <u>BIOL 490 - Special Topics</u> Units: 1-3 • <i><u>Students may count 3-4 units from the following courses towards the 22 units of electives; UNIV courses require Biology program approval:</u></i> • <u>CHEM 318 - Biological Chemistry</u> Units: 3	
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- [GEOL 121 - Physical Geology](#) Units: 4
- [GEOL 122 - Historical Geology](#) Units: 3
- [PHYS 100 - Introduction to Physics I](#) Units: 4
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- *No more than 2 units taken from the following can be counted towards the 22 units of electives:*
- [BIOL 492 - Internship](#) Units: 2-3
- [BIOL 494 - Independent Research](#) Units: 1-3
- [BIOL 497 - Directed Study](#) Units: 1-3

Required Supporting Courses - 11 units

1. Chemistry - 8 units

- [CHEM 121 - General Chemistry I](#) Units: 4 *
- [CHEM 122 - General Chemistry II](#) Units: 4 *

2. Mathematics and Statistics - 3-4 units

Select one of the following:

- [BIOL 203 - Quantitative Methods for Biology](#) Units: 3 *

- [GEOL 121 - Physical Geology](#) Units: 4
- [GEOL 122 - Historical Geology](#) Units: 3
- [PHYS 100 - Introduction to Physics I](#) Units: 4

- [UNIV 391 – United States Travel Study Experience](#) Units: 1-3

- [UNIV 392 – International Experience](#) Units: 1-3

- [UNIV 398 – Advanced Research Investigations](#) Units: 3

- [UNIV 498 – Faculty/Student Collaborative Research](#) Units: 3

- *No more than 2 units taken from the following can be counted towards the 22 units of electives:*

- [BIOL 492 - Internship](#) Units: 2-3
- [BIOL 494 - Independent Research](#) Units: 1-3
- [BIOL 497 - Directed Study](#) Units: 1-3

Required Supporting Courses - 11 units

1. Chemistry - 8 units

- [CHEM 121 - General Chemistry I](#) Units: 4 *
- [CHEM 122 - General Chemistry II](#) Units: 4 *

2. Mathematics and Statistics - 3-4 units

Select one of the following:

- [BIOL 203 - Quantitative Methods for Biology](#) Units: 3 *

• MATH 105 - Pre-Calculus Units: 4 * • MATH 150 - Calculus I Units: 4 * Note: <i>Courses with * are double-counted toward GE credits.</i> Additional General Education and other Graduation Requirements - 65 units Students must complete a minimum of 120 units of which 40 units must be upper division. • Additional General Education Courses not met with major* • American Institutions Requirement • Electives *(for A3, recommend MATH 230 - Logic and Mathematical Reasoning (Cross-listed as PHIL 230))	• MATH 105 - Pre-Calculus Units: 4 * • MATH 150 - Calculus I Units: 4 * Note: <i>Courses with * are double-counted toward GE credits.</i> Additional General Education and other Graduation Requirements - 65 units Students must complete a minimum of 120 units of which 40 units must be upper division. • Additional General Education Courses not met with major* • American Institutions Requirement • Electives *(for A3, recommend MATH 230 - Logic and Mathematical Reasoning (Cross-listed as PHIL 230))	
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Proposer of Program Modification

Date

APPROVAL SHEET

Program: BIOL

If your course has a General Education Component or involves Center affiliation, the Center will also sign off during the approval process.

Multiple Chair fields are available for cross-listed courses.

The CI program review process includes a report from the respective department/program on its progress toward accessibility requirement compliance. By signing below, I acknowledge the importance of incorporating accessibility in course design.

Program Chair Amy Denton		10/13/13
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Signature

Date

Curriculum Chair		
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Signature

Date

AVP		
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Signature

Date