

**UCC/UGC/ECCC**

Proposal for Plan Change or Plan Deletion

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| **FAST TRACK (Select if this will be a fast track item**. Refer to  [***Fast Track Policy***](http://www4.nau.edu/avpaa/UCCPolicy/Agenda_FastTrack_Consent.docx) for eligibility) |

***If this proposal represents changes to the intent of the plan or its integral components, review by the college dean, graduate dean (for graduate items) and/or the provost may be required prior to college curricular submission.***

***All Plans with NCATE designation, or plans seeking NCATE designation, must include an NCATE Accreditation Memo of Approval from the NAU NCATE administrator prior to college curricular submission.***

***UCC proposals must include an updated 8-term plan.***

***UGC proposals must include an updated program of study.***

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| 1. College: | **CEFNS** | | | 2. Academic Unit: | | | **Biological Sciences** |
|  | |  |  | |  | | |
| 3. Academic      Plan Name: | | **Biomedical Science; B.S. (BIOMDBSX)** | | 4. Emphasis: | |  | |

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| 5. Plan proposal: | | Plan Change | | Plan Deletion | |
|  | New        Emphasis | | Emphasis       Change | | Emphasis             Deletion |

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| 6. Current student learning outcomes of the plan. If structured as plan/emphasis, include for **both c**ore and emphasis.  1. Students will be able to communicate scientific information effectively  2. Students will be able to collect, analyze and interpret scientific data  3. Students will develop proficiency in the quantitative skills necessary to analyze biological problems (e.g., arithmetic, algebra, dimensional analysis, and statistical analysis as applied to biology)  4. Students will be able to apply the scientific method  5. Students will be able to describe fundamental principles of biology *e.g.*, central dogma, diversity of life, inheritance  6. Students will understand that evolution is the central principle uniting the field of biology, and that human biology (*e.g.*, physiology, behavior, disease, pathogen interactions) is shaped by the evolutionary process  7. Students will be able to access and interrogate the primary scientific literature  8. Students will be able to synthesize material from throughout the biomedical discipline (e.g., evolution, genetics, molecular biology, anatomy, physiology, behavior, microbiology) and apply this to advanced-level course material (*i.e.*, a Capstone experience)  9. Students will develop an appreciation for the interdisciplinary role of science as applied to human health challenges  10. Students will develop a mastery of one of the following areas, as applied to the biomedical sciences: a) Anatomy and Physiology, b) Genetics and Molecular Biology c) Microbiology and Immunology | Show the proposed changes in this column (if applicable). **Bold** the changes, to differentiate from what is not changing, and change font to **~~Bold Red with strikethrough~~**for what is being deleted. *(*[*Resources, Examples & Tools for Developing Effective Program Student Learning Outcomes*](http://www4.nau.edu/avpaa/Assessment/ProgramLearningOutcomesPDF_090712.pdf)*).*  **UNCHANGED** |

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| 7. Current catalog plan overview and requirements in this column. Cut and paste the *Overview* and *Details* tabs, in their entirety, from the current on-line academic catalog: (<http://catalog.nau.edu/Catalog/>)Biomedical Science; B.S. In addition to University Requirements:   * At least 67 units of major requirements * Be aware that you may not use courses with a BIO prefix to satisfy liberal studies requirements * Elective courses, if needed, to reach an overall total of at least 120 units   Please note that you may be able to use some courses to meet more than one requirement. Contact your advisor for details.   | Minimum Units for Completion | 120 | | --- | --- | | GPA | C | | Mathematics Required | [MAT 125](http://catalog.nau.edu/Courses/course?courseId=005205&catalogYear=1314) | | Research | Optional | | University Honors Program | Optional | | Progression Plan | [View Progression Plan](http://catalog.nau.edu/ProgressionPlans/index.jsp?inst=NAU00&cat=1314#BIOMDBSX) |   *Major Requirements*  Take the following 67 units including 40 units of Biology and Biology-related coursework with a Grade of "C" or better:   * BIO 181, BIO 181L, BIO 182, BIO 182L (8 units) * BIO 205 and BIO 205L (4 units) * BIO 305W (1 unit)   Select one of the following courses (3-4 units):   * BIO 482C (Recommended), BIO 401C, BIO 420C, BIO 444C, BIO 465C, BIO 488C   Select additional courses from (23-24 units):   * BIO 201, BIO 201L, BIO 202, BIO 202L, BIO 344, BIO 416, BIO 450 (These 18 units are recommended.) * BIO 300 (up to 3 units) * BIO 240, BIO 320, BIO 331, BIO 334, BIO 338, BIO 338L, BIO 343, BIO 346, BIO 350, BIO 360, BIO 375, BIO 376, BIO 424, BIO 440, BIO 440L, BIO 460, BIO 460L, BIO 475, BIO 484, BIO 545 * BIO 485, BIO 497, or BIO 498 (up to 6 units) * Non-BIO prefix courses from: CHM 238L, CHM 461, CHM 462C; NTS 256; PHI 332 (up to 6 units)   Basic chemistry sequence: CHM 151, CHM 151L, CHM 152, CHM 152L (9 units)  Biochemistry sequence: CHM 360 or CHM 461 (3 units)  Select one of the following organic chemistry sequences:   * CHM 230, CHM 230L (4 units) * CHM 235, CHM 235L (5 units) * CHM 235, CHM 235L, CHM 238 (8 units)   Select one of the following math combinations:   * MAT 125, (STA 270 or PSY 230) (7-8 units) * MAT 136 (4 units)   Select one of the following physics sequences:   * PHY 111, PHY 112 (8 units) * PHY 161, PHY 262, PHY 262L (8 units)   If you are considering a minor, 18 qualifying units of chemistry satisfy the requirements for the Chemistry Minor.  *General Electives*  Additional coursework is required, if, after you have met the previously described requirements, you have not yet completed a total of 120 units of credit.  You may take these remaining courses from any academic areas, using these courses to pursue your specific interests and goals. We encourage you to consult with your advisor to select the courses that will be most advantageous to you. (Please note that you may also use prerequisites or transfer credits as electives if they weren't used to meet major, minor, or liberal studies requirements.)  *Additional Information*  Be aware that some courses may have prerequisites that you must also take. For prerequisite information click on the course or see your advisor. | Show the proposed changes in this column.  **Bold** the changes, to differentiate from what is not changing, and change font to **~~Bold Red with strikethrough~~** for what is being deleted. Biomedical Science; B.S. In addition to University Requirements:   * At least 67 units of major requirements * Be aware that you may not use courses with a BIO prefix to satisfy liberal studies requirements * Elective courses, if needed, to reach an overall total of at least 120 units   Please note that you may be able to use some courses to meet more than one requirement. Contact your advisor for details.   | Minimum Units for Completion | 120 | | --- | --- | | GPA | C | | Mathematics Required | [MAT 125](http://catalog.nau.edu/Courses/course?courseId=005205&catalogYear=1314) | | Research | Optional | | University Honors Program | Optional | | Progression Plan | [View Progression Plan](http://catalog.nau.edu/ProgressionPlans/index.jsp?inst=NAU00&cat=1314#BIOMDBSX) |   *Major Requirements*  Take the following 67 units including 40 units of Biology and Biology-related coursework with a Grade of "C" or better:   * BIO 181, BIO 181L, BIO 182, BIO 182L (8 units) * BIO 205 and BIO 205L (4 units) * BIO 305W (1 unit)   Select one of the following courses (3-4 units):   * BIO 482C (Recommended), BIO 401C, BIO 420C, BIO 444C, BIO 465C, BIO 488C   Select additional courses from (23-24 units):   * BIO 201, BIO 201L, BIO 202, BIO 202L, BIO 344, BIO 416, BIO 450 (These **~~18~~** **20** units are recommended.) * BIO 300 (up to 3 units) * BIO 240, BIO 320, BIO 331, BIO 334, BIO 338, BIO 338L, BIO 343, BIO 346, BIO 350, BIO 360, BIO 375, BIO 376, BIO 424, BIO 440, BIO 440L, BIO 460, BIO 460L, BIO 475, BIO 484, BIO 545 * BIO 485, BIO 497, or BIO 498 (up to 6 units) * Non-BIO prefix courses from: CHM 238L, CHM 461, CHM 462C; NTS 256; PHI 332 (up to 6 units)   Basic chemistry sequence: CHM 151, CHM 151L, CHM 152, CHM 152L (9 units)  Biochemistry sequence: CHM 360 or CHM 461 (3 units)  Select one of the following organic chemistry sequences:   * CHM 230, CHM 230L (4 units) * CHM 235, CHM 235L (5 units) * CHM 235, CHM 235L, CHM 238 (8 units)   Select one of the following math combinations:   * MAT 125, (STA 270 or PSY 230) (7-8 units) * MAT 136 (4 units)   Select one of the following physics sequences:   * PHY 111, PHY 112 (8 units) * PHY 161, PHY 262, PHY 262L (8 units)   If you are considering a minor, 18 qualifying units of chemistry satisfy the requirements for the Chemistry Minor.  *General Electives*  Additional coursework is required, if, after you have met the previously described requirements, you have not yet completed a total of 120 units of credit.  You may take these remaining courses from any academic areas, using these courses to pursue your specific interests and goals. We encourage you to consult with your advisor to select the courses that will be most advantageous to you. (Please note that you may also use prerequisites or transfer credits as electives if they weren't used to meet major, minor, or liberal studies requirements.)  *Additional Information*  Be aware that some courses may have prerequisites that you must also take. For prerequisite information click on the course or see your advisor. |

8. Justification for proposal:

**This proposal is in conjunction with the BIO 416 proposed unit change from 4 to 6 units.**

9. NCATE designation, if applicable**:**

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| Initial Plan |  | Advanced Plan | | | |  | Remove Designation | |
| 10. Effective beginning **FALL**: | | | **2014** | |  | | |
| [**See effective dates calendar**](http://www4.nau.edu/avpaa/timelines/1314Effective.xls). | | | |  | | | |

11. Will this proposal impact other plans, sub plans, or course offerings, etc.? Yes      No

   If yes, describe the impact. If applicable, include evidence of notification to and/or response from

each impacted academic unit

**Answer 12-13 for UCC/ECCC only:**

12. A major is differentiated from another major by required course commonality: 24 units of the        required credit hours of a major must be unique, (i.e. not common or not dual use as a required        element in another major), to that major. Does this plan have 24 units of unique required        credit? Yes       No

13. Minor: A planned group of courses from one or more subject matter areas consisting of at least        18 hours and no more than 24 hours. At least 12 hours of the minor must be unique to that minor        to differentiate it from other minors.

        Does this minor have 12 units of unique required credit? Yes       No

**Answer 14-15 for UGC only:**

14. If this is a non-thesis plan, does it require a minimum of 24 units of formal graded coursework?                                                                                                                                       Yes       No

       If no, explain why this proposal should be approved.

15. If this is a thesis plan, does it require a minimum of 18 units of formal graded coursework?                                                                                                                                       Yes       No

       If no, explain why this proposal should be approved.

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| **FLAGSTAFF MOUNTAIN CAMPUS** |  |
| **Scott Galland** | **1/22/2014** |
| Reviewed by Curriculum Process Associate | Date |
|  |  |
| **Approvals**: |  |
|  |  |
| Department Chair/Unit Head (if appropriate) | Date |
|  |  |
| Chair of college curriculum committee | Date |
|  |  |
| Dean of college | Date |
|  |  |
| **For Committee use only:** |  |
|  |  |
| UCC/UGC Approval | Date |

Approved as submitted: Yes  No

Approved as modified: Yes  No

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| **EXTENDED CAMPUSES** |  |
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| Reviewed by Curriculum Process Associate | Date |
|  |  |
| **Approvals:** |  |
|  | |
| Academic Unit Head | Date |
|  | |
| Division Curriculum Committee (Yuma, Yavapai, or Personalized Learning) | Date |
|  | |
| Division Administrator in Extended Campuses (Yuma, Yavapai, or Personalized Learning) | Date |
|  | |
| Faculty Chair of Extended Campuses Curriculum Committee (Yuma, Yavapai, or Personalized Learning) | Date |
|  | |
| Chief Academic Officer; Extended Campuses (or Designee) | Date |
|  |  |

Approved as submitted: Yes  No

Approved as modified: Yes  No