

**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** [**UCC**](http://www4.nau.edu/avpaa/UCCPolicy/FastTrack.docx) **or** [**UGC**](http://www.nau.edu/gradcol/UGC/UGC_FastTrack_Policy&Process.pdf) **Fast Track Policy 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: | | | **Electrical Engineering and Computer Science** |
|  | |  |  | |  | | |
| 3. Academic      Plan Name: | | **Computer Science; B.S.C.S.**  **(CSBSCSX)** | | 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.  Objective 1:  Graduates are technically competent and prepared for leadership and professional practice with strength in design, problem solving, communications and teaming.  Outcome 1.1 Possess professional skills and  knowledge of the software design process.  Outcome 1.2 Ability to function effectively in  both co-located and distributed software  development teams.  Outcome 1.3 Possess abilities to effectively  communicate orally.  Outcome 1.4 Possess abilities to effectively  communicate in writing.  Outcome 1.5 Abilities in creativity, critical  thinking and problem identification,  formulation and solving.  Objective 2:  Graduates are grounded in computer science and related mathematical fundamentals and prepared for advanced education and lifelong learning.  Outcome 2.1 Competence in and ability to  apply foundational theoretical concepts and  skills related to software development,  including underlying knowledge of  mathematics (including discrete math, linear  algebra, and statistics).  Outcome 2.2 Familiarity with a broad range of  programming languages and paradigms, with  practical competence in at least two  languages and paradigms.  Outcome 2.3 Ability to apply knowledge of  formal software development concepts to  select and apply software development  processes, programming paradigms, and  architectural models appropriate to different  application contexts.  Outcome 2.4 Motivation and skills needed for  lifelong learning.  Outcome 2.5 Ability to use industry standard  Integrated Development Environments (IDEs),  debugging support tools, and other modern  software development tools.  Objective 3:  Graduates are have an understanding of the scope and implications of the rapid and increasing integration of software-driven technologies into personal and professional spheres of modern society.  Outcome 3.1 Ability to relate a broad  education and contemporary issues to  software solutions and their impact in a  societal and global context.  Outcome 3.2 An appreciation and  understanding of professional and ethical  responsibility.  Objective 4:  Graduates integrate quickly into the workplace or advanced education due to an emphasis on high quality teaching, advising and mentoring.  Outcome 4.1\* Be a leader in educational innovation and the use of technology in providing a quality educational experience.  Outcome 4.2\* Attract and retain well-qualified  students.  Outcome 4.3\* Foster advising and mentoring  relationships between faculty and students.  Outcome 4.4\* Graduates have accurate well-     formed expectations about workplace or  graduate school. | 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** |
| 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/>)Computer Science, Bachelor of Science in Computer Science In addition to University Requirements:   * At least 36 units of preprofessional requirements * At least 61 units of major courses * Be aware that you may not use courses with a CS 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 | | --- | --- | | Mathematics Required | [MAT 316](http://catalog.nau.edu/Courses/course?courseId=005229&catalogYear=1213) | | Progression Plan | [View Progression Plan](http://catalog.nau.edu/ProgressionPlans/index.jsp?inst=NAU00&cat=1213#CSBSCSX) |   ***Major Requirements***  Take the following 96 units with a Grade of "C" or better in all required CS Core courses and CS 486C:  Preprofessional Requirements (at least 36 units)   * Basic Science courses, select one of the following blocks (7-8 units):   + PHY 161, PHY 262 (7 units)   + CHM 151, CHM 151L, CHM 152 (8 units)   + BIO 181, BIO 181L, BIO 182, BIO 182L (8 units) * MAT 136, MAT 137, MAT 226, (MAT 316 or MAT 362) (14 units) * CENE 225, STA 270, or STA 275 (3 units) * Technical electives at the 200-level or above, select from (9 units):   + Engineering disciplines (EE, EGR,ME, CENE)   + Natural Sciences (MAT, PHY, CHM, BIO)   + CS (excluding CS 248)   + At least 3 units of technical electives need to come from the Natural Sciences block. (Please note that you may use courses with other prefixes with your advisor's approval.) * ENG 302W (3 units)   Major Courses (61 units)   * Core Courses: CS 126, CS 126L, CS 136, CS 136L, CS 200, CS 212, CS 249, CS 301, CS 315, CS 386, CS 396, CS 421, CS 476, CS 480 (36 units) * CS 486C (4 units) * Select CS courses at the 300-level or above, chosen with your academic advisor (21 units)   You are allowed to take up to six units of letter-graded individualized study classes (e.g., CS 485 or CS 497). You may petition the department chair for approval of other computing-intensive courses.  ***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***  No more than one "D" is allowed in CS electives and technical electives.  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. Computer Science, Bachelor of Science in Computer Science In addition to University Requirements:   * At least 36 units of preprofessional requirements * At least 61 units of major courses * Be aware that you may not use courses with a CS 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. 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(Please note that you may use courses with other prefixes with your advisor's approval.) * ENG 302W (3 units)   Major Courses (61 units)   * Core Courses: CS 126, CS 126L, CS 136, CS 136L, CS 200, CS 212, CS 249, CS 301, CS 315, CS 386, CS 396, CS 421, CS 476, CS 480 (36 units) * CS 486C (4 units) * Select CS courses at the 300-level or above, chosen with your academic advisor (21 units)   You are allowed to take up to six units of letter-graded individualized study classes (e.g., CS 485 or CS 497). You may petition the department chair for approval of other computing-intensive courses.  ***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***  No more than one "D" is allowed in CS electives and technical electives.  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:

**The previous plan change rectified an addition error in the old plan: the sum of required units in the major courses/core courses section should have been 36 instead of 35 and consequently the overall major courses units is 61 instead of 60. We missed the total above that where the total units should be 97 instead of 96.**

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

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| Initial Plan |  | Advanced Plan | | | |  | Remove Designation | |
| 10. Effective beginning **FALL**: | | | **2013** | |  | | |
| [**See effective dates calendar**](http://www4.nau.edu/avpaa/timelines/1213Effective.xls). | | | |  | | | |

11. Will this proposal impact other plans, sub plans, or course offerings, etc.?

Yes      No

      If yes, describe the impact and include a letter of 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** | **05/31/2013** |
| Reviewed by Curriculum Process Associate | Date |
|  |  |
| **Approvals**: |  |
| Signature.jpg | **5-31-2013** |
| Department Chair/Unit Head (if appropriate) | Date |
|  |  |
| Chair of college curriculum committee | Date |
|  | **7/10/13** |
| 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** |  |
|  |  |
| 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