Type of Change: Degree Program Change

1. IF THE ANSWER TO ANY OF THE FOLLOWING QUESTIONS IS YES, THE COLLEGE MUST CONSULT NEAL ARMSTRONG TO DETERMINE IF SACS-COC APPROVAL IS REQUIRED.
   • Is this a new degree program? Yes
   • Does the program offer courses that will be taught off campus? No
   • Will courses in this program be delivered electronically? No

2. EXPLAIN CHANGE TO DEGREE PROGRAM AND GIVE A DETAILED RATIONALE FOR EACH INDIVIDUAL CHANGE (include page numbers in the catalog where changes will be made):

1) Addition of Bachelor of Science and Arts (or BSA), pp. 486-490:

   We propose to create a new interdisciplinary degree for CNS students, particularly those interested in combining a core science experience with an interdisciplinary application. We expect to see increased student flow through the BSA, reduced time to graduation, and increased student satisfaction with their educational experience. The single degree shell will also simplify degree presentation to students, making it easier to shift between majors without losing time to degree.

   Rationale
   The sole interdisciplinary degree currently available to CNS students is the Bachelor of Arts (BA) degree, a shared curriculum between Liberal Arts and Natural Sciences since the separation of the College of Arts and Sciences in 1970. The BA is not an attractive alternative to students in Natural Sciences. Despite the rigorous math and science requirements of the BS degree, CNS students overwhelmingly choose the BS degree even though it may be at odds with their interests. Consequently, we see increased times to graduation, bottlenecks in upper-division laboratory courses, student dissatisfaction with their academic experience, and students who struggle in components of the upper-division science coursework.

   A large number of CNS majors are seeking a core experience in science with a cross-disciplinary application, one that marries their interests in science with other topics, such as ethics, public policy, or even modeling efforts for the betterment of society. Large numbers of students seeking careers in the health professions could also be better served by such a degree. The proposed BSA degree structure is like the BA in that it is interdisciplinary, but its goals are broader in that it allows students to have an interdisciplinary area of study that is not limited to the College of Liberal Arts. Alternatively, they can complete an interdisciplinary certificate offered by any college or school on campus.

   Proposal
   Our proposal to construct the BSA has two important components - reducing the required hours of math and science where possible and redistributing the language/arts/culture hours - so that students are able to select and complete an 18-hour certificate that would weave their science, arts, and culture interests together. Natural Sciences proposes to work with the other colleges on campus to develop new 18-hr certificates to increase the number of options to students. In addition, BSA students would have the option of proposing their own 18-hr curriculum through the existing University Fellows certificate program. The new degree structure will be called the Bachelor of Science and Arts.

2) Deletion of Bachelor of Arts, Plan I (or BA), from the College of Natural Sciences, pp. 486-490.

   To most effectively manage college resources, the college proposes to delete the BA, Plan I degree options from the College of Natural Sciences. Currently, only two majors of the BA degree produce more than 30
graduates per year: mathematics and biology. The CNS faculty has overwhelmingly supported the creation of the BSA, and the College Course and Curriculum Committee voted unanimously to discontinue its current BA degrees in favor of the new BSA. A unanimous vote from our faculty is an unusual occurrence.

The BSA degree has been carefully crafted to ensure that freshmen can pursue coursework during their first year that will satisfy degree requirements in either the BS or the BSA. The college is developing an advising strategy with the assistance of faculty, departmental advisors, and dean’s office staff to clearly chart decision points where students should select one degree or the other. These decision points will include important information about career choices, course selections, and the overall experience they are looking for in their collegiate educational experience.

3) Human Development and Family Sciences, Human Ecology, Nutrition Majors: Change mathematics and statistics requirement to require SSC 302 and either calculus (M 408C or 408N) or the newly approved SSC 332, Statistical Models for the Health and Behavioral Sciences.

**Rationale:**
Students need more advanced statistical training to comprehend results sections the journal articles in their field that they will be reading in most of their upper-division courses. Students doing research also require more advanced statistical training. Most of our students would be much better served if they took an advanced statistics course rather than calculus, as calculus is not a necessary prerequisite for any of our upper-division courses.

4) Nutrition Major: add additional statistics courses to statistics option for students to select from.

**Rationale:**
This is in keeping with the statistics requirement for the BS Nutrition degrees.

5) Remove BSA major in Mathematics: Secondary School Teaching Option

**Rationale:**
With the approval of the UTeach certificate, there is no need for a separate major designated specifically for the population of mathematics students seeking teacher certification.

6) Update BSA major in Biology: Condense 6 areas into 4 areas. Require that a three-hour course from 3 of the 4 areas be completed.

**Rationale:**
The faculty decided that the original proposal for 9 hours to be chosen from 6 areas without restriction may result in students who were not educated broadly enough to meet the goals of the biology major. The major was restructured to require that the 9 hours be chosen from 3 of 4 areas instead.

7) Updates to BSA major in Human Ecology: correct to include nutrition requirement.

**Rationale:**
The dean’s office omitted the requirement in error in the original BSA degree proposal.

8) Updates to BSA major in Nutrition: remove SSC 303 and 305; add SSC 328M

**Rationale:**
SSC 303 and 305 are no longer offered. SSC 328M, Biostatistics, is an appropriate option for the statistics requirement.

3. **SCOPE OF PROPOSED CHANGE**

a. Does this proposal impact other colleges/schools? Yes

   If yes, then how?

b. Will students in other degree programs be impacted (are the proposed changes to courses commonly taken by students in other colleges)? No

   If yes, then how?

c. Will students from your college take courses in other colleges? Yes.

If 3 a, b, or c was answered with yes:

Impact statement last modified February 13, 2012.
How many students do you expect to be impacted?

The addition of the BSA would create opportunities for students to pursue certificates and/or minors outside of the College of Natural Sciences. CNS is working to create a set of certificates to serve these students. In addition, Associate Dean Sacha Kopp has begun having conversations with each of the colleges/schools that are most likely to house certificates or majors of interest to CNS students. These conversations have been met with interest and support for the idea of collaboratively planning and creating new interdisciplinary certificates, such as Science Communications or a Pre-health Professions Certificate.

In addition, Dr. Kopp has met with faculty and associate deans in Liberal Arts to discuss the proposed new degree and the removal of the BA, Plan I from the College of Natural Sciences. The removal of the BA degree is unlikely to have an impact on Liberal Arts given the very small number of students graduating in this degree plan each year (< 200).

Impacted schools must be contacted and their response(s) included:

Liberal Arts:
Person communicated with: Sr. Associate Dean Richard Flores
Date of communication: Nov. 12, Nov. 27, Jan. 30, March 5, March 19, also COLA C&C meeting Nov. 19
Response: There is concern among the COLA faculty that the original language around the BSA would be confused with the BA. COLA faculty do not feel this is a BA degree due to the lack of an explicit language requirement for all students. Dean Flores felt it important to make a distinction from the BA, supported the name BSA, and felt it important to emphasize that the BSA is broader than the BA, straddling other colleges, such as communications, business, etc. We agree with his suggestions and have worked to make this emphasis clearer. In addition, we have communicated with chairs of the Departments of History and the Department of Sociology, and also with Bob Hummer in his role of creating the new Health and Society Degree. There is alignment across colleges with the idea of collaborating on certificates.

Communications:
Person communicated with: Associate Dean Mark Bernstein
Date of communication: Jan. 31, Feb. 11, Feb. 19, March 8, March 19
Response: Supportive of the new degree proposal and has been working with faculty in his college to identify courses that CNS majors could find beneficial toward a new Science Communications Certificate and a new Pre-health Education Certificate.

Fine Arts:
Person communicated with: Associate Dean Andrew Dell’Antonio
Date of communication: Feb. 14
Response: Very supportive of the idea. Offered to investigate open courses within COFA for CNS students. Cited alignment between potential CNS degrees and scientific illustration, gaming, and graphic design.

Business:
Person communicated with: Associate Dean David Platt
Date of communication: March 27
Response: No concerns with the proposal, happy to support it. Cited alignment not only with current Business Foundations Certificate but a likely new Energy Management Certificate being created by the School of Business.

Undergraduate Studies:
Person communicated with: Interim Dean Larry Abraham
Date of communication: March 6, March 19
Response: Very interested in the idea. Suggested alignment with students pursuing the Bridging Disciplines Programs) BDP certificate program. Also suggested coursework in kinesiology for the Pre-Health Professions proposed certificate program.

**Education:**
Person communicated with: Assistant Dean Richard Hogeda  
Date of communication: March 28  
Response: Interested in the idea and supportive of the new degree. Suggested alignment with students pursuing kinesiology. Also suggested improvements in the Pre-health Education Certificate, which straddles our colleges.

d. **Does this proposal involve changes to the core curriculum or other basic education requirements (42-hour core, signature courses, flags)?**  
No

e. **Will this proposal change the number of hours required for degree completion?**  
No

4. **COLLEGE/SCHOOL APPROVAL PROCESS**  
Department approval date:  
Approved by all departments March 1, 2013  
College approval date:  
March 5, 2013  
Dean approval date:  
April 2, 2013
Bachelor of Science and Arts

The requirements for the Bachelor of Science and Arts are designed to give each student an opportunity to combine a core mathematics or science experience with an interdisciplinary curriculum which complements their major. Students pursuing the Bachelor of Science and Arts will major in a discipline within the College of Natural Sciences as well as minor in a field of study which explores applications of their major in the broader society, allows the student to see the impacts of the sciences in other fields of study, or develops a complementary expertise, which supports multidisciplinary study.

All students must complete the University’s Core Curriculum. The prescribed work requirements for the Bachelor of Science and Arts consist of the language, arts and culture requirement, major requirements, minor or transcript-recognized certificate requirements, and electives. Students may not use a course in one area of prescribed work to fulfill the requirements of another area of prescribed work. Courses used to fulfill prescribed work requirements may be used to fulfill the university core curriculum requirements except where expressly prohibited.

Students pursuing a Bachelor of Science and Arts must fulfill both the University general requirements for graduation and the requirements of the College of Natural Sciences. These include a grade point average of at least 2.00 in all courses taken at the University (including credit by examination, correspondence, and extension), and a grade of at least C- in all math and science courses required in the major. Students completing a transcript-recognized certificate program must meet the minimum grade requirements and grade point average requirements of the program. Students must also complete a minimum of sixty hours in residence at the University, including at least eighteen hours of the major in residence.

Students may earn an honors major in their fields of study upon graduation by completing the following requirements:

1. Good standing in the Health Science Honors Program or the University Fellows Program.
2. A section of Undergraduate Studies 302 or 303 that is approved by the departmental honors adviser.
3. Six hours of coursework in the major must be at the honors-level from the College of Natural Sciences.
5. A University grade point average of at least 3.50.

Prescribed Work Common to All Majors

1. Language, Arts and Culture Requirement. Twelve hours selected from at least two of the following four areas:
   a. Fine Arts: courses chosen from design, ensemble, fine arts, music, studio art, performance, visual art studies, and theater and dance.
   b. Humanities: courses chosen from American studies, ancient history and classical civilization, art history, classical civilization, comparative literature, English, humanities, philosophy, religious studies, and rhetoric and writing.
   c. Social and Behavioral Sciences: courses chosen from anthropology, economics, geography, government, history, linguistics, psychology, and sociology.
   d. Foreign Language and Culture: foreign language courses, or culture courses chosen from an approved list available in the college advising centers. Students who elect to pursue a foreign language must minimally complete a one-year competency.

   Courses used to satisfy the university core curriculum, or credit earned by examination, may not be used to satisfy this requirement.

2. Major Requirements. The specific courses required for the major vary with the major selected and are described in the section below. Unless the requirements of the major state otherwise, a major consists of at least thirty-six but no more than forty-nine semester hours.
3. Minor or Certificate Requirement. The Bachelor of Science and Arts requires the completion of all requirements for one transcript-recognized certificate program or a minor. A minor consists of at least fifteen hours in a single field of study that is outside the College of Natural Sciences, Cockrell School of Engineering, and Jackson School of Geosciences. A student may not pursue a certificate that requires more than three hours of coursework required in the major, or more than six hours of coursework in their major field of study.

4. Electives: Enough additional coursework to make a total of 120 semester hours.

**Majors**

**Astronomy**

1. Mathematics:
   a. Mathematics 408C and 408D.
   b. Mathematics 427K.

2. Primary science:
   a. Physics 301, 101L, 315, 115L, 316, and 116L.
   b. Two courses chosen from the following: Astronomy 352K, 353, or 358.
   c. Six additional upper-division semester hours in astronomy and physics.

3. Secondary science: Choose twelve additional semester hours of majors-level coursework from one or more of the following areas. It is recommended that students select three of the twelve hours to also fulfill the Natural Science and Technology Part II core curriculum requirement.
   a. Biology
   b. Chemistry
   c. Computer Science
   d. Geological Sciences
   e. Mathematics
   f. Statistics and Scientific Computation

**Biology**

1. Mathematics:
   a. Mathematics 408C or 408N.
   b. Statistics and Scientific Computation 328M.

2. Primary science:
   a. Biology 206L or 208L; 311C, 311D, and 325, or 315H and 325H.
   b. One of the following: Biology 320 or 344.
   c. One of the following: Biology 370 or 373.
   d. Nine additional semester hours, including three hours each from three of the four one or more of the following areas. Courses used to satisfy requirement B or C may not also be used to satisfy requirement D. Of the nine semester hours chosen, at least one approved laboratory course must be completed. These courses are marked with an asterisk. Biology 377 may count with approval of the undergraduate adviser.

Impact statement last modified February 13, 2012.


3. Secondary science:
   a. Chemistry 301 or 301H, 302 or 302H, and 204.

Biochemistry

1. Mathematics:
   a. Mathematics 408C or 408N.
   b. Statistics and Scientific Computation 328M.

2. Primary science:
   a. Chemistry 301 or 301H, 302 or 302H, and 204.
   b. Chemistry 320M.
   c. Chemistry 369 and 369L.
   d. Two courses chosen from the following: Chemistry 339K, 339J, 339L, and 370.

3. Secondary science:
   a. Biology 311C, 311D and 325, or Biology 315H and 325H.
   b. One of the following physics sequences. Physics 317K, 117M, 317L, and 117N are recommended.
      i. Physics 317K, 117M, 317L, and 117N.
      ii. Physics 301, 101L, 316, and 116L.
      iii. Physics 303K, 103M, 303L, and 103N.

Chemistry

1. Mathematics:
   a. Mathematics 408C and 408D, or 408N and 408S.

2. Primary science:
   a. Chemistry 301 or 301H, 302 or 302H, and 204 or 317.
   b. Chemistry 320M, 320N and 220C, or CH 328M, 328N, 128K and 128L.
   c. Chemistry 353 or 353M, and 153K.
   d. Chemistry 431; 455 or 456; and 369.

3. Secondary science: One of the following physics sequences:
   a. Physics 301, 101L, 316, and 116L.
   b. Physics 303K, 103M, 303L, and 103N.
   c. Physics 317K, 117M, 317L, and 117N.

Computer Science

1. Mathematics:
   a. Mathematics 408C or 408N.
   b. Mathematics 340L or Statistics and Scientific Computation 329C.

2. Primary science:
   a. Theory: Computer Science 311 or 311H, and 331 or 331H.
b. Programming: Computer Science 312 or 312H, and 314 or 314H.
c. Systems: Computer Science 429 or 429H, and 439 or 439H.
d. Twelve additional semester hours of approved upper-division Computer Science.

3. Secondary science:
   a. Six semester hours of majors-level coursework chosen from a single field of study: Astronomy, Biology, Chemistry, Geological Sciences, Marine Science, or Physics. It is recommended that students select courses that will also fulfill the Natural Science and Technology Part I core curriculum requirement.

Human Development and Family Sciences

1. Mathematics:
   b. Mathematics 408C or 408N or three additional semester hours of statistics from the approved list Statistics and Scientific Computation 332.

2. Primary science:
   a. Human Development and Family Sciences 304, 313 and 113L, and 315L.
   b. Eighteen semester hours of upper-division human development and family sciences.

3. Secondary science:
   a. Chemistry 301 or 301H.
   b. Biology 311C.
   c. One of the following courses: Biology 311D, or Chemistry 302 or 302H.

Human Ecology

1. Mathematics:
   b. Mathematics 408C or 408N or three additional semester hours of statistics from the approved list Statistics and Scientific Computation 332.

2. Primary science:
   a. Twenty-seven semester hours from the School of Human Ecology, including the following:
   b. One of the following: Human Development and Family Sciences 304, 304H, 313 and 113L, or 313H and 113L.
   c. Nutrition 306, 312, or 312H.
   d. Textiles and Apparel 303 or 205 and 105L.
   e. Fifteen semester hours of upper-division coursework.

3. Secondary science:
   a. Chemistry 301 or 301H.
   b. Biology 311C.
   c. Biology 311D or Chemistry 302 or 302H.

Nutrition

1. Mathematics:
   b. Mathematics 408C or 408N or three additional semester hours of statistics from the approved list Statistics and Scientific Computation 332.

2. Primary science:
   a. One of the following sequences:
      i. Nutrition 312, 112L, 326, and 126L.
      ii. Nutrition 312H and 312R.
   b. Sixteen additional semester hours of nutrition, including twelve semester hours of upper-division coursework.

3. Secondary science:
   a. Chemistry 301 or 301H, 302 or 302H, and 204.
   b. Chemistry 320M.
   c. Biology 311C.

Mathematics

Impact statement last modified February 13, 2012.
1. Mathematics:
   a. Mathematics 408C and 408D.

2. Primary science:
   b. Mathematics 328K, 343K, or 373K.
   c. Mathematics 362K.
   d. Mathematics 361K or 365C.
   e. Twelve additional semester hours of approved upper-division Mathematics.

3. Secondary science:
   a. Six semester hours of majors-level coursework chosen from a single field of study: Astronomy, Biology, Chemistry, Geological Sciences, Marine Science, or Physics. It is recommended that students select courses that will also fulfill the Natural Science and Technology Part I core curriculum requirement.
   b. Three semester hours of majors-level coursework chosen from a different field of study: Astronomy, Biology, Chemistry, Computer Science, Geological Sciences, Marine Science, or Physics. It is recommended that students select a course that will also fulfill the Natural Science and Technology Part II core curriculum requirement.

Mathematics: Secondary School Teaching Option

1. Mathematics:
   a. Mathematics 408C and 408D.

2. Primary science:
   a. Mathematics 315C.
   b. Mathematics 341.
   c. Mathematics 328K, 343K, or 373K.
   d. Mathematics 362K.
   e. Mathematics 361K or 365C.
   f. Mathematics 325K, 333L, 358K, and 360M or 375D.

3. Secondary science:
   a. Six semester hours of majors-level coursework chosen from a single field of study: Astronomy, Biology, Chemistry, Geological Sciences, Marine Science, or Physics. It is recommended that students select courses that will also fulfill the Natural Science and Technology Part I core curriculum requirement.
   b. Three semester hours of majors-level coursework chosen from a different field of study: Astronomy, Biology, Chemistry, Computer Science, Geological Sciences, Marine Science, or Physics. It is recommended that students select a course that will also fulfill the Natural Science and Technology Part II core curriculum requirement.

Neuroscience

1. Mathematics:
   a. Mathematics 408C or 408N and 408S.
   b. Statistics and Scientific Computation 328M.

2. Primary science:
   a. Biology 206L; 311C and 311D, or 315H and 325H.
   b. Biology 365R or Neuroscience 330.
   c. Neuroscience 335.

3. Secondary science:
   a. Chemistry 301 or 301H, 302 or 302H, and 204.
   b. One of the following physics sequences:
      i. Physics 301, 101L, 316, 116L.
      ii. Physics 303K, 103M, 303L, 103N.
      iii. Physics 317K, 117M, 317L, 117N.

Impact statement last modified February 13, 2012.
Physics
1. Mathematics:
   a. Mathematics 408C, 408D, 427K, and 427L.
2. Primary science:
   a. Physics 301, 101L, 315, 115L, 316, and 116L.
   c. One course chosen from the following: Mathematics 340L; and Physics 329, 333, 338, 345, 353L, 362K, 362L, 474, 375S, 375R, or 375P.
3. Secondary science:
   a. Three semester hours of majors-level coursework chosen from: Astronomy, Biology, Chemistry, Computer Science, and Geological Sciences. It is recommended that students select a course that will also fulfill the Natural Science and Technology Part II core curriculum requirement.