CHANGES TO THE _BS BIOCHEMISTRY__ DEGREE PROGRAM IN THE
COLLEGE/SCHOOL OF _NATURAL SCIENCES__ SECTION IN THE UNDERGRADUATE
CATALOG 2014-2016 or LAW SCHOOL CATALOG 2014-2016

Type of Change  X  Academic Change
    __  Degree Program Change (THECB form required)

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___ No  X___

• Does the program offer courses that will be taught off campus? Yes___ No X___

• Will courses in this program be delivered electronically? Yes___ No X___

2. EXPLAIN CHANGE TO DEGREE PROGRAM AND GIVE A DETAILED RATIONALE FOR
EACH  INDIVIDUAL CHANGE (include page numbers page 491-493 in the catalog where changes
will be made):

Option I: Biochemistry

1. Delete foreign language/culture.
   **Rationale:** to allow students to have more choices in selecting courses relevant to their future career goals.

2. Remove M 408M. If student takes three-part calculus sequence, does not have to take third part (M 408M).
   **Rationale:** SDS 328M has been added as a requirement and may serve as the third semester of math.

3. Remove upper-division Mathematics or Computer Science requirement.
   **Rationale:** SDS/SSC 328M has been added as a requirement and may serve as the third semester of Mathematics or Computer Science.

4. Add BIO 328M or SDS 328M to curriculum.
   **Rationale:** to update curriculum for student to achieve quantitative skillset, which is more relevant to the modern Biochemist.

5. Remove CH 328M, 328N, 128K, and 128L from Organic Chemistry.
   **Rationale:** Students are only required to take one semester of organic chemistry to prepare for BCH 339F and CH 320N is the more appropriate course for biochemistry majors.

5. Remove CH 320N and 220C.
   **Rationale:** Students are only required to take one semester of organic chemistry to prepare for BCH339F and no longer required to take a second semester of organic chemistry and organic chemistry laboratory. There are sufficient electives for pre-medical students to take CH 320N and 220C to meet pre-medical requirements within the hours available as electives.

   **Rationale:** Students will take a foundational course in biochemistry in their sophomore year to prepare them to choose from a modular series of courses that will prepare them for future career goals.

   **Rationale:** remove two semester order series in favor of a series of courses (BCH 339J, 339M, 339N, 370) after a foundational course (BCH 339F) to allow students to select courses appropriate for their interests.

   **Rationale:** Provide modularity for students to select courses with content appropriate for their interests and to update the field of study.

9. Change CH 369L and CH 370 to BCH 369L and BCH 370.
   **Rationale:** With the move of biochemistry courses under the administrative umbrella of the Department of Molecular Biosciences, courses that are biochemistry-specific are being shifted out of the Department of Chemistry. This will aid in tracking budgetary expenditures of course offerings.
10. Remove “at least six semester hours chosen from the following……” text re: additional Biology and Chemistry coursework beyond specific (required) courses.  
   **Rationale:** to allow students more freedom to choose courses based on their interests/goals.

11. Add requirement to complete 1 of the following:  
a. 18 hours of additional upper-division biology and chemistry  
b. A transcript-recognized certificate  
c. 18 hours in an approved field of study  
   **Rationale:** student will be free to choose from a variety of options based on his/her interests within the area of Biochemistry and prepare for future career goals.

12. Reduce total from 127 hours to 120 hours.  
   **Rationale:** The curriculum was redesigned to reduce the total number of hours, providing flexibility to students to pursue complimentary interests to the modular biochemistry degree plan.

Option II: Systems and Synthetic Biology

Delete Option II: Systems and Synthetic Biology degree plan.  
   **Rationale:** With updates of curriculum for Option I, the key elements of Option II have been absorbed. Coursework in statistics and systems biology were added to Option I obviating the need for Option II.

Option III: Biochemistry Honors

1. Remove CH 339K and 339L. Replace with Biochemistry (BCH) 339F and 369L as required courses.  
   **Rationale:** remove two semester order series in favor of a series of courses (BCH 339J, 339M, 339N, 370) after a foundational course (BCH 339F) to allow students to select courses appropriate for their interests.

2. Add BCH 339F as a required course.  
   **Rationale:** Students will take a foundational course in biochemistry in their sophomore year to prepare them to choose from a modular series of courses that will prepare them for future career goals.

3. Add BCH 339J, 339M, 339N, as (students will choose three from these four options).  
   **Rationale:** Provide modularity for students to select courses with content appropriate for their interests and to provide updates to the field of study.

Option III: Biochemistry Honors

1. Reduce approved electives from 28 to 24 hours.  
   **Rationale:** The change in biochemistry requirements requires a reduction in electives to ensure the degree option does not exceed 120 hours. David Hillis, Dean’s Scholars Program, director, approves the changes.

3. SCOPE OF PROPOSED CHANGE

   a. Does this proposal impact other colleges/schools? Yes _X_ No

   If yes, then how? Degree plans that require CH 339K or 339L will be able to substitute BCH 369 for the requirement.

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

   If yes, then how?

   c. Will students from your college take courses in other colleges? No.

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

   **How many students do you expect to be impacted?**

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

   Person communicated with:
Date of communication: 
Response: 

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

If yes, undergraduate studies must be informed of the proposed changes and their response included: 
Person communicated with: 
Date of communication: 
Response: 

e. Will this proposal change the number of hours required for degree completion? If yes, explain: 

Yes, Option I will be reduced from 127 to 120 hours. The curriculum was redesigned to reduce the total number of hours, providing flexibility to students to pursue complimentary interests to the modular biochemistry degree plan. 

4. COLLEGE/SCHOOL APPROVAL PROCESS 
**Department approval date:**
BIO approval date:  September 10, 2013 
College approval date:  September 11, 2013 
Dean approval date:  

Bachelor of Science in Biochemistry 

The degree of Bachelor of Science in Biochemistry is intended to prepare students for professional careers as chemists, either upon graduation or after graduate study in chemistry or related fields. In addition, it may serve as the basis for work in many areas outside pure chemistry, such as materials science, medicine and other health-related fields, pharmacology, patent law, business, and environmental science. The systems and synthetic biology option is intended to prepare students for professional and graduate programs by providing the quantitative and interdisciplinary skill sets necessary to understand biology from the level of molecules to the level of the organism. The honors option is intended to prepare students for academic or research careers. 

Students who plan to follow option III, Biochemistry Honors, must be admitted to the **Dean’s Scholars Honors Program**. 

Prescribed Work Common to all Options 

All students pursuing an undergraduate degree must complete the University’s **Core Curriculum**. The core includes courses in language, literature, social sciences, natural sciences, and fine arts. 

In addition, students seeking the Bachelor of Science in Biochemistry must complete the following degree-level requirements. In some cases, courses that fulfill degree-level requirements also meet the requirements of the core: 

1. Two courses with a writing flag. One of these courses must be upper-division. Courses with a writing flag are identified in the **Course Schedule** available at [http://registrar.utexas.edu/schedules](http://registrar.utexas.edu/schedules). They may be used simultaneously to fulfill other requirements, unless otherwise specified. 
2. At least thirty-six semester hours of upper-division coursework. 
3. At least twenty-one semester hours of upper-division coursework, including at least twelve semester hours of upper-division coursework in chemistry, must be completed in residence at the University.
Additional Prescribed Work for Each Option

Option I: Biochemistry

4. One of the following foreign language/culture choices:
   a. Second-semester level proficiency, or the equivalent, in a foreign language.
   b. First-semester level proficiency, or the equivalent, in a foreign language and a
      three-semester hour course in the culture of the same language area.
   c. Two three-semester hour courses in one foreign culture area. The courses must be
      chosen from an approved list available in the dean's office and the college
      advising centers.

5. Mathematics 408C and M 408D or 408N, 408S, and 408M; and at least three
   semester hours of upper-division coursework in mathematics or computer science.

4. Biostatistics: Biology 328M or Statistics and Data Analysis 328M.

6. One of the following sequences: Physics 301 and 101L, 316, and 116L; 303K and
   103M, 303L, and 103N; 317K and 117M, 317L, and 117N.

7. The following chemistry courses:
   A. General chemistry: Chemistry 301 or 301H, 302 or 302H, and 204 or 317.
   B. Organic chemistry: Chemistry 128K, 128L, 328M, and 328N; or 220C, 320M and
      320N.
      i. Biochemistry 339F and 369L.
      ii. Three additional courses, chosen from Biochemistry 339J, 339M, 339N, and
          370.
   D. Physical chemistry: Chemistry 353 or 353M.
   E. Analytical chemistry: Chemistry 455.

8. One of the following sequences: either Biology 311C, 311D, and 325 or Biology 315H
   and 325H; and nine additional semester hours in biology, chosen from the following
   courses. These nine hours must include at least three hours in each of the following areas;
   a single course may not fulfill this requirement in more than one area. A course may not
   count toward both requirement 8 and requirement 9.
   Cellular and developmental biology: Biology 320, 226L and either 326M or
   326R, 330, 331L, 335, 344, 346, 347, 349, 360K, 361, 365W
   Physiology: Biology 328, 339, 345, 361T, 365R or 371M, 365S

9. At least six semester hours chosen from the following courses: Chemistry 431*, 339I,
   371K*, 372C*, 375K or 475K, and 376K*. At least three of these hours must be in a
   laboratory course; courses marked with an asterisk fulfill this laboratory requirement.
   Three of these hours may come from the biology courses listed above in 8a. A course
   may not count toward both requirement 8 and requirement 9.
   Cell and molecular biology: Biology 311C, 311D, and either 326M or
   326R, 330, 331L, 335, 344, 346, 347, 349, 360K, 361, 365W
   Physiology: Biology 328, 339, 345, 361T, 365R or 371M, 365S.

Completion of one the following:
   a. Eighteen additional semester hours of upper-division of biochemistry, biology, chemistry, and neuroscience.
b. Eighteen additional semester hours in a field of study approved by the undergraduate adviser.

c. A transcript-recognized certificate.

10. Enough additional coursework to make a total of 127-120 semester hours.

**Option II: Systems and Synthetic Biology**

4. The following chemistry courses:
   a. General chemistry: Chemistry 301 or 301H, 302 or 302H, and 204 or 317.
   b. Organic chemistry: Chemistry 128K and 328M.
   d. Mathematics 408C and 408D, or 408N, 408S, and 408M; Statistics and Scientific Computation 321; and either Statistics and Scientific Computation 329C or Mathematics 340L or 341.
   e. One of the following sequences: Physics 301, 101L, 316, and 116L; 303K, 303L, and 103N; 317K, 117M, 317L, and 117N.
   f. Biology 311C, 311D, and 325, or Biology 315H and 325H.
   g. Six additional hours of upper-division biology chosen from the following: Biology 320, 226L*, and 326R, 330, 331L*, 337, 344, 347, 349, and 360K*. Courses marked with an asterisk (*) may count toward the laboratory hours in requirement 10.
   h. Six additional hours of upper-division chemistry chosen from the following: Chemistry 128L*, and 328N, 341*, 353 or 353M, 153K*, 455*, 369L*, and 369T*. Courses marked with an asterisk (*) may count toward the laboratory hours in requirement 10.
   i. Of the twelve upper-division hours used to satisfy requirement 8 and requirement 9, at least six hours must be laboratory-based courses.


12. One of the following sequences:
   a. Computer Science 303E and nine hours chosen from: Computer Science 313E, 320N, 324E, 326E, 327E, and 329E.
   b. Computer Science 312 and nine hours chosen from: Computer Science 313K, 314, and an upper-division computer science course. (Note: Students seeking a more rigorous foundation in computer science are encouraged to choose sequence b.)

13. Six hours of Biology 377 or Chemistry 369K or another approved independent research course.

14. Enough additional coursework to make a total of 127 semester hours.

**Option III: Biochemistry Honors**

4. Breadth requirement: An honors mathematics course, Biology 315H and 325H, Chemistry 301H and 302H, and three additional semester hours of coursework chosen from honors courses in the college. Credit earned by examination may not be counted toward this requirement.

5. The following chemistry courses:
   a. General chemistry: Chemistry 204 or 317.
   b. Organic chemistry: Chemistry 128K, 128L, 328M, and 328N; or 220C, 320M, and 320N.
   d. Physical chemistry: Chemistry 353 or 353M.
   e. Analytical chemistry: Chemistry 455.
6. A section of Undergraduate Studies 302 or 303 that is approved by the departmental honors adviser.
7. A section of Rhetoric and Writing 309S that is restricted to Dean’s Scholars.
8. Chemistry 379H or Biochemistry 379H and either a three-semester-hour upper-division research course approved by the departmental honors adviser or a second section of Chemistry 379H or Biochemistry 379H.
9. Twenty-eight Twenty-four additional semester hours of coursework approved by the departmental honors adviser.
10. Six semester hours of coursework in the College of Liberal Arts or the College of Fine Arts.
11. Enough additional coursework to make a total of 120 semester hours.

Special Requirements
Students in all options must fulfill both the University's General Requirements for graduation and the college requirements. They must also earn a grade of at least C- in each mathematics and science course required for the degree, and a grade point average in these courses of at least 2.00. More information about grades and the grade point average is given in General Information available at http://registrar.utexas.edu/catalogs/.

To graduate under option III, students must remain in good standing in the Dean’s Scholars Honors Program, must earn grades of at least A- in the departmental research and thesis courses described in requirement 8 above, and must present their research in an approved public forum, such as the college’s annual Undergraduate Research Forum.

Order and Choice of Work
The student must consult the undergraduate adviser each semester regarding order and choice of work.