DOCUMENTS OF THE GENERAL FACULTY

PROPOSED CHANGES TO THE BACHELOR OF SCIENCE IN COMPUTER SCIENCE DEGREE PROGRAM IN THE COLLEGE OF NATURAL SCIENCES CHAPTER IN THE UNDERGRADUATE CATALOG 2016-2018

Dean Linda Hicke in the College of Natural Sciences has filed with the secretary of the Faculty Council the following changes to the *Undergraduate Catalog*, 2016-2018. The secretary has classified this proposal as legislation of *general* interest to more than one college or school.

The Committee on Undergraduate Degree Program Review recommended approval of the changes on February 4, 2016, and forwarded the proposal to the Office of the General Faculty. The Faculty Council has the authority to approve this legislation on behalf of the General Faculty. The authority to grant final approval on this legislation resides with UT System.

If no objection is filed with the Office of the General Faculty by the date specified below, the legislation will be held to have been approved by the Faculty Council. If an objection is filed within the prescribed period, the legislation will be presented to the Faculty Council at its next meeting. The objection, with reasons, must be signed by a member of the Faculty Council.

To be counted, a protest must be received in the Office of the General Faculty by February 24, 2016.

Hillary Hart, Secretary

General Faculty and Faculty Council

PROPOSED CHANGES TO THE BACHELOR OF SCIENCE IN COMPUTER SCIENCE DEGREE PROGRAM IN THE COLLEGE OF NATURAL SCIENCES CHAPTER IN THE UNDERGRADUATE CATALOG 2016-2018

Type of Change	✓ Academic Chan✓ Degree Program	0	form required)			
Proposed classificati	on Exclusive	⊠ General	☐ Major			
CONSULT LIN	IF THE ANSWER TO ANY OF THE FOLLOWING QUESTIONS IS YES, THE COLLEGE MUST CONSULT LINDA DICKENS, DIRECTOR OF ACCREDITATION AND ASSESSMENT, TO DETERMINE IF SACS-COC APPROVAL IS REQUIRED.					
• Is this a new	degree program?			Yes 🔲 No 🖂		
 Does the pro 	gram offer courses the	hat will be taught o	off campus?	Yes 🗌 No 🖂		
• Will courses	in this program be d	elivered electronic	ally?	Yes ☐ No ⊠		

2. EXPLAIN CHANGE TO DEGREE PROGRAM AND GIVE A DETAILED RATIONALE FOR EACH INDIVIDUAL CHANGE:

Streamline the first science sequence requirements in Options I, II, and IV by removing the biology
and chemistry labs and the two-course geological sciences sequence. Create more flexibility for
students who want to study physics by allowing any calculus-based physics sequence, including mixed
sequences, to count without need of petitions.

Rationale: Experience with lab work in biology and chemistry is not necessary for computer scientists working in biology and chemistry as computational specialists. The physics laboratory courses are co-requisites for the physics lecture courses; hence these labs cannot be removed. Computer science students often take the engineering physics sequence but any calculus-based physics sequence is suitable. Writing the requirement as the first half of the three sequences and the second half of the three sequences allows students who switch sequences midstream without the need to file petitions. These changes are a formalization of a long-standing departmental policy of counting other calculus-based physics sequences, including mixed sequences.

The Jackson School of Geosciences restricts enrollment in its major-level coursework to majors, making it extremely difficulty for students to complete this sequence. The only geological science courses readily available are GEO 401 or courses designed for non-science majors that are not suitable for computer science majors.

2. Reduce the second science sequence requirement in Options I, II, and IV from a full-year sequence to a one semester experience. Allow requirement to be completed with a course from one of the sequences previously listed in requirement #7, geological sciences, or upper-division course in mathematics as an alternative.

Rationale: The computer science faculty determined that exposure to science outside of computer science is beneficial but that another year of science is unnecessary. In addition, the science courses are not prerequisites for other requirements on the BS in Computer Science. Computer science is closely related to mathematics and is a good choice for students who wish to explore the theoretical foundations of computer science.

3. Increase by 1 the number of upper-division computer science honors courses required; exclude CS 429H from applying toward this requirement, in Option II.

Rationale: Prior to the computer science curriculum overhaul in the 2014-16 catalog, Option II majors were required to complete 5 upper-division computer science honors courses when choosing courses to fulfill requirements 9a through 9e. The number was reduced to 4 in the 2014-16 catalog, in error.

Regarding the exclusion of CS 429H, the course is primarily made up of content previously offered as CS 310H and EE 316. An introductory course in systems was not applicable toward the 5 required

honors courses.

Taken together, these changes re-establish the honors requirement as intended by the Department of Computer Science.

4. Remove CS 353, Theory of Computation, in Option IV, 9d; consequently, delete 9e and move its requirements up to 9d.

Rationale: CS 353 was listed as a required course in error in the 2014-16 catalog. Its removal corrects this error.

5. Reduce the total hours to 120 in Options I and II.

Rationale: Reducing science requirements outside of computer science creates the opportunity to reduce the overall hours of the degree to 120 hours. The faculty would prefer that students graduate earlier or have more free time in their schedules to explore extracurricular activities that may assist them in personal and professional growth. Options III and IV are already at 120 hours. Option V, Teaching, cannot be reduced due to extensive certification requirements of the state of Texas.

6. Remove CS 312H from list of classes that may be taken by students who are not yet admitted to the Computer Science major. Clarify that enrollment in CS 312, 311 or 311H, and 314 or 314H is restricted to students admitted to the CS entry-level major.

Rationale: CS 312 is removed because the course has never been developed and consequently will never be offered. The statement that CS 312, 311 or 311H, and 314 or 314H are open only to CS entry-level majors is added to reflect ongoing enrollment restrictions.

3.	THIS PROPOSAL INVOLVES (I	Please check all that apply)						
	○ Courses in other colleges	Courses in proposer's college that are frequently taken by students in other colleges	☐ Flags					
	Course in the core curriculumChange in admission requirements (external or internal)	☐ Change in course sequencing for an existing program ☐ Requirements not explicit in the catalog language (e.g., lists of acceptable courses maintained by department office)	Courses that have to be added to the inventory					
4.	SCOPE OF PROPOSED CHANGE							
	a. Does this proposal impact other	Yes ⊠ No □						
	If yes, then how? Removing one geology course and the electrical engineering sequences will slightly reduce enrollments in the impacted courses for these two departments. See details below.							
	b. Do you anticipate a net change in the number of students in your college? Yes If yes, how many more (or fewer) students do you expect?							
	c. Do you anticipate a net increase taking classes in your college?	om outside of your college Yes □ No ⊠						
	If yes, please indicate the number of students and/or class seats involved.							
	1. Do you anticipate a net increase (or decrease) in the number of <u>students from your college</u> taking <u>courses in other colleges</u> ? Yes No							
		per of students and/or class seats involved.	103 🖂 110 🗀					
	If 4 a, b, c, or d was answered with yes, please answer the following questions. If the proposal has							
	4 4 1 1 1 4							

If 4 a, b, c, or d was answered with yes, please answer the following questions. If the proposal has potential budgetary impacts for another college/school, such as requiring new sections or a non-negligible increase in the number of seats offered, at least one contact must be at the college-level.

How many students do you expect to be impacted? At most, 18 seats in GEO 401 across the academic year; and eighteen seats in other lower-division GEO courses across the academic year.

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

Person communicated with: Rich Ketcham, Associate Dean, Jackson School of Geosciences Date of communication: February 10, 2016

Response: approved compromise proposed by Natural Sciences (reduction of GEO from two courses to one)

How many students do you expect to be impacted? At most, eighteen seats in EE 313 across the academic year; and 18 seats in EE 331 across the academic year.

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

Person communicated with: Dr. Ahmed Tewfik, Department of Electrical and Computer Engineering

Date of communication: April 10, 2015

Response: "Hi Doug, Our curriculum committee is fine with this change. Regards, Ahmed"

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

If yes, undergraduate studies must be informed of the proposed changes and their response included:

Person communicated with:

Date of communication:

Response:

f. Will this proposal change the number of hours required for degree completion? If yes, explain: **Yes.** Options I and II will be reduced to 120 hours (from 127 hours). If yes, explain:

Due to the reduction in science coursework apart from computer science and mathematics, students may fulfill the degree requirements within 120 hours, including room for electives.

5. COLLEGE/SCHOOL APPROVAL PROCESS

Department approval date: March 4, 2015 College approval date: May 20, 2015

Dean approval date: September 28, 2015, David Vanden Bout, Associate Dean

PROPOSED NEW CATALOG TEXT:

BACHELOR OF SCIENCE IN COMPUTER SCIENCE

[no changes]

Prescribed Work Common to All Options

[no changes]

Additional Prescribed Work for Each Option

Option I: Computer Science

- 6. Mathematics 408C and 408D, or 408N, 408S, and 408M; either 340L or 341 or Statistics and Data Sciences 329C; and Mathematics 362K or Statistics and Data Sciences 321.
- 7. One of the following sequences of coursework:
 - a. Either Biology 311C and 311D, or Biology 315H and 325H, and Biology 206L or 208L.
 - b. Chemistry 301 or 301H, and 302 or 302H, and 204.
 - c. Geological Sciences 401 and either 404C or 405. Physics 303K and 103M, 301 and 101L, or 317K and 117M; and 303L and 103N, 316 and 116L, or 317L and 117N.
 - d. Physics 303K, 303L, 103M, and 103N.
- 8. Three additional hours of majors-level coursework chosen from:
 - a. a different sequence listed in requirement 7.
 - b. geological sciences.

- c. upper-division mathematics, excluding 325K, 340L, 341, and 362K. An additional sequence chosen from those in requirement 7 above, or one of the following:
- a. At least six hours of upper division coursework in biology approved by the undergraduate adviser.
- b. Chemistry 128K, 128L, 328M, and 328N, or Chemistry 220C, 320M, and 320N, or at least six hours of upper division coursework in chemistry approved by the undergraduate adviser.
- c. Geological Sciences 416K and 426P, or at least six hours of upper division coursework in geological sciences approved by the undergraduate adviser.
- d. Physics 315 and at least three hours of upper division coursework in physics approved by the undergraduate adviser.
- e. At least six hours of upper division coursework in mathematics approved by the undergraduate adviser; a course may not be counted toward both requirement 6 and requirement 8.
- Electrical Engineering 313 and 331.
- 9. The following courses in computer science:
 - a. Theory: Computer Science 311 or 311H, 331 or 331H, and three additional hours from an approved list available in the department.
 - b. Programming: Computer Science 312 or 312H, 314 or 314H, and three additional hours from an approved list in the department.
 - c. Systems: Computer Science 429 or 429H, 439 or 439H, and three additional hours from an approved list available in the department.
 - d. Fifteen additional hours of upper-division courses in computer science.
- 10. Enough additional coursework to make a total of $\frac{127}{120}$ semester hours.

Option II: Turing Scholars Honors

- 6. Mathematics 408C and 408D, or 408N, 408S, and 408M; either 340L or 341 or Statistics and Data Sciences 329C; and Mathematics 362K or Statistics and Data Sciences 321.
- 7. One of the following sequences of coursework:
 - a. Either Biology 311C and 311D, or Biology 315H and 325H; and Biology 206L or 208L.
 - b. Chemistry 301 or 301H, and 302 or 302H, and 204.
 - c. Geological Sciences 401 and either 404C or 405. Physics 303K and 103M, 301 and 101L, or 317K and 117M; and 303L and 103N, 316 and 116L, or 317L and 117N.
 - d. Physics 303K, 303L, 103M, and 103N.
- 8. Three additional hours of majors-level coursework chosen from:
 - a. a different sequence listed in requirement 7.
 - b. geological sciences.
 - c. upper-division mathematics, excluding 325K, 340L, 341, and 362K.

An additional sequence chosen from those in requirement 7 above, or one of the following:

- At least six hours of upper division coursework in biology approved by the undergraduate adviser.
- b. Chemistry 128K, 128L, 328M, and 328N, or Chemistry 220C, 320M, and 320N, or at least six hours of upper-division coursework in chemistry approved by the undergraduate adviser.
- e. Geological Sciences 416K and 426P, or at least six hours of upper division coursework in geological sciences approved by the undergraduate adviser.
- d. Physics 315 and at least three hours of upper-division coursework in physics approved by the undergraduate adviser.
- e. At least six hours of upper division coursework in mathematics approved by the undergraduate adviser; a course may not be counted toward both requirement 6 and requirement 8.
- f. Electrical Engineering 313 and 331.
- 9. The following courses in computer science:
 - a. Theory: Computer Science 311 or 311H, 331 or 331H, and three additional hours from an approved list available in the department.

- b. Programming: Computer Science 314 or 314H, and three additional hours from an approved list available in the department.
- c. Systems: Computer Science 429 or 429H, 439 or 439H, and three additional hours from an approved list available in the department.
- d. Computer Science 178H and 379H.
- e. Twelve additional hours of upper-division courses in computer science.

The courses the student chooses to fulfill requirements a through c must be approved by the Turing Scholars program director. In addition to Computer Science <u>429H</u>, 178H and 379H, at least <u>four five</u> upper-division courses chosen to fulfill requirements a through e must be honors courses. The honors thesis the student completes in Computer Science 379H must be approved by the program director.

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

Option III: Computer Science Honors

- 6. Breadth requirement: An honors mathematics course; Computer Science 311H and 314H; one of the following two-semester sequences: Biology 315H and 325H, Chemistry 301H and 302H, Physics 301, 101L, 316, and 116L; and either an additional three hours chosen from these courses or Physics 315 and 115L. Credit earned by examination may not be counted toward this requirement.
- 7. At least six semester hours of upper-division coursework in mathematics.
- 8. Computer Science 429H, 331H, 439H, and twelve additional hours of upper-division coursework in computer science.
- 9. A section of Undergraduate Studies 302 or 303 that is approved by the departmental honors adviser.
- 10. A section of Rhetoric and Writing 309S that is restricted to students in the Dean's Scholars Honors Program.
- 11. Computer Science 379H and a three-semester-hour upper-division research course approved by the departmental honors adviser.
- 12. Twenty-five additional semester hours of coursework approved by the departmental honors adviser.
- 13. Six semester hours of coursework in the College of Liberal Arts or the College of Fine Arts.
- 14. Enough additional coursework to make a total of 120 semester hours.

Option IV: Integrated Program

- 6. Mathematics 408C and 408D, or 408N, 408S, and 408M; either 340L or 341 or Statistics and Data Sciences 329C; and Mathematics 362K or Statistics and Data Sciences 321.
- 7. One of the following sequences of coursework:
 - a. Either Biology 311C and 311D, or Biology 315H and 325H; and Biology 206L or 208L.
 - b. Chemistry 301 or 301H, and 302 or 302H, and 204.
 - c. Geological Sciences 401 and either 404C or 405. Physics 303K and 103M, 301 and 101L, or 317K and 117M; and 303L and 103N, 316 and 116L, or 317L and 117N.
 - d. Physics 303K, 303L, 103M, and 103N.
- 8. Three additional hours of majors-level coursework chosen from:
 - a. a different sequence listed in requirement 7.
 - b. geological sciences.
 - c. upper-division mathematics, excluding 325K, 340L, 341L and 362K.

An additional sequence chosen from those in requirement 6 above, or one of the following:

- At least six hours of upper division coursework in biology approved by the undergraduate adviser.
- b. Chemistry 128K, 128L, 328M, and 328N, or Chemistry 220C, 320M, and 320N, or at least six hours of upper division coursework in chemistry approved by the undergraduate adviser.
- e. Geological Sciences 416K and 426P, or at least six hours of upper division coursework in geological sciences approved by the undergraduate adviser.
- d. Physics 315 and at least three hours of upper-division coursework in physics approved by the undergraduate adviser.

- e. At least six hours of upper division coursework in mathematics approved by the undergraduate adviser; a course may not be counted toward both requirement 6 and requirement 8.
- f. Electrical Engineering 313 and 331.
- 9. The following courses in computer science:
 - a. Theory: Computer Science 311 or 311H, 331, or 331H, and three additional hours from an approved list available in the department.
 - b. Programming: Computer Science 312 or 312H, 314 or 314H, and three additional hours from an approved list available in the department.
 - c. Systems: Computer Science 429 or 429H, 439 or 439H, and three additional hours from an approved list available in the department.
 - d. Computer Science 353 or 331 or 331H Nine additional hours of upper-division courses in computer science.
 - e. Nine additional hours of upper division courses in computer science.
- 10. Enough additional coursework to make a total of 120 semester hours.

Option V: Teaching (Senior grades)

- 6. History 329U or Philosophy 329U.
- 7. Mathematics 408C and 408D, or 408N, 408S, and 408M; either 340L or 341 or Statistics and Data Sciences 329C.
- 8. One of the following sequences of coursework:
 - a. Biology 311C and 311D; and Biology 206L or 208L.
 - b. Chemistry 301 or 301H, and 302 or 302H, and 204.
 - e. Geological Sciences 401 and either 404C or 405. Physics 303K and 103M, 301 and 101L, or 317K and 117M; and 303L and 103N, 316 and 116L, or 317L and 117N.
 - d. Physics 303K, 303L, 103M, and 103N.
- 9. The following courses in computer science:
 - a. Theory: Computer Science 311 or 311H, 331 or 331H, and three additional hours from an approved list available in the department.
 - b. Programming: Computer Science 312 or 312H, 314 or 314H, and three additional hours from an approved list available in the department.
 - c. Systems: Computer Science 429 or 429H, 439 or 439H, and three additional hours from an approved list available in the department.
- 10. The requirements of one of the following certification areas:
 - a. For computer science certification:
 - i. Mathematics 362K and Statistics and Data Sciences 321.
 - ii. An additional sequence chosen from the following:
 - 1. Biology 325 and 337 (Topic 2: Research Methods: UTeach).
 - 2. At least three hours of upper-division coursework in chemistry approved by the undergraduate adviser; and Chemistry 368 (Topic 1: *Research Methods: UTeach*).
 - 3. Physics 315 and 341 (Topic 7: Research Methods: UTeach).
 - iii. Fifteen additional hours of approved computer science upper-division coursework.
 - b. For computer science and mathematics certification:
 - Mathematics 315C, 333L, 362K, either 360M or 375D, and Statistics and Data Sciences 321
 - ii. Twelve additional hours of approved computer science upper-division coursework.
 - iii. Biology 337 (Topic 2: Research Methods: UTeach), or Chemistry 368 (Topic 1: Research Methods: UTeach), or Physics 341 (Topic 7: Research Methods: UTeach).
- 11. Eighteen semester hours of professional development coursework consisting of:
 - a. Curriculum and Instruction 650S.
 - b. Curriculum and Instruction 365C or UTeach-Natural Sciences 350.
 - c. Curriculum and Instruction 365D or UTeach-Natural Sciences 355.
 - d. Curriculum and Instruction 365E or UTeach-Natural Sciences 360.
 - e. UTeach-Natural Sciences 101, 110, and 170.

12. Enough additional coursework to make a total of 127 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*.

To graduate and be recommended for certification students who follow the teaching option must have a University grade point average of at least 2.50. They must earn a grade of at least C- in the supporting course in requirement 6, and in each of the professional development courses listed in requirement 11 and must pass the final teaching portfolio review. For information about the portfolio review and additional teacher certification requirements, students should consult the UTeach-Natural Sciences academic adviser.

With the exception of Enrollment in Computer Science 312 or 312H, 311 or 311H, and 314 or 314H, is restricted to computer science entry-level majors. all All other computer science courses that may be counted toward a degree in computer science are restricted to students who have been admitted to the computer science major or have the consent of the undergraduate faculty adviser.

An undergraduate may not enroll in any computer science course more than once without written consent of an undergraduate adviser in computer science. No student may enroll in any computer science course more than twice. No student may take more than three upper-division computer science courses in a semester without written consent of an undergraduate adviser in computer science.

Additional Requirements for Option II

[no changes]

Additional Requirements for Option III

[no changes]

Additional Requirements for Option IV

Satisfactory Progress

[no changes]

Probation

[no changes]

Dismissal

[no changes]

Graduation

[no changes]

Order and Choice of Work

[no changes]