

## DOCUMENTS OF THE GENERAL FACULTY

**PROPOSAL TO CHANGE THE ELEMENTS OF COMPUTING CERTIFICATE 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 Elements of Computing Certificate in the *Undergraduate Catalog, 2016-2018*. On March 5 and September 23, 2015, the Department of Computer Science and the college faculty approved the proposal, respectively. On September 28, 2015, Associate Dean David Vanden Bout approved it on behalf of the college and the dean. 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 November 18, 2015, and forwarded them 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 December 11, 2015.



Hillary Hart, Secretary  
General Faculty and Faculty Council

**PROPOSAL TO CHANGE THE ELEMENTS OF COMPUTING CERTIFICATE IN THE COLLEGE OF NATURAL SCIENCES CHAPTER IN THE *UNDERGRADUATE CATALOG, 2016-2018***

- 1. Type of Proposal**     New Certificate Program (requiring THECB notification only)  
 Change an Existing Certificate Program  
 Delete a Program

**Proposed classification**     Exclusive     General     Major

**2. THIS PROPOSAL INVOLVES (Please check all that apply)**

- |  |  |   |
|--|--|---|
| <input type="checkbox"/> Courses in other colleges                               | <input type="checkbox"/> Courses in proposer's college that are frequently taken by students in other colleges                                 | <input type="checkbox"/> Flags  |
| <input type="checkbox"/> Course in the core curriculum                           | <input checked="" type="checkbox"/> Change in course sequencing for an existing program  | <input type="checkbox"/> Courses that have to be added to the inventory |
| <input type="checkbox"/> Change in admission requirements (external or internal) | <input type="checkbox"/> Requirements not explicit in the catalog language (e.g., lists of acceptable courses maintained by department office) | <input type="checkbox"/> Other:   |

**3. SCOPE OF PROPOSED CHANGE**

- a. Does this proposal impact other colleges/schools?    Yes  No   
If yes, then how?
- b. Do you anticipate a net change in the number of students in your college?    Yes  No   
If yes, how many more (or fewer) students do you expect?
- c. Do you anticipate a net increase (or decrease) in the number of students from outside of your college taking classes in your college?    Yes  No   
If yes, please indicate the number of students and/or class seats involved.
- d. Do you anticipate a net increase (or decrease) in the number of students from your college taking courses in other colleges?    Yes  No

**If 3 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

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

- 4. Official Certificate Name:** Elements of Computing
- 5. Proposed Implementation Date:** N/A
- 6. CIP Code** (administrative unit awarding the certificate): N/A
- 7. Statement of Objective:**  
N/A
- 8. Number of Students Expected to Receive the Certificate Each Semester:** N/A

**9. Number of Hours Required for Completion:**<sup>1</sup> Eighteen hours.

10.	Course Abbreviation and Number	Course Title	SCH <sup>2</sup>
List t Fa	CS 328E	Topics in Elements of Computing # # CS 303E	3

culty on the Certificate Program Faculty Committee. N/A

**11. Academic Course Requirements:** Use this table to identify the courses that qualify for this certificate program.

**12. Other Certificate Requirements:** N/A

**13. Give a Detailed Rationale for Change(s):**

When the certificate was created, the department envisioned the need for two separate paths for completing the certificate – 1) exposure to the foundational ideas of computing and 2) exposure to foundational computing ideas combined with opportunities to apply these concepts to solve real world problems.

The primarily conceptual track was comprised of students who took CS 301K, CS 302, and multiple topics offerings of CS 320N (a topics course which typically had no prerequisites at all). Over time, the department realized that students in this primarily conceptual track were not being well served. Lack of experience with applying these computing concepts left them at a disadvantage in the workforce.

The structural changes to the certificate detailed below are designed to deliver a strong skillset to certificate holders, such that they will have substantial experiences in computational problem solving to present to potential employers or to utilize in their academic research. The department plans to continue offering occasional topics under CS 320N; however, the department will emphasize elements course offerings that provide more opportunities for real world problem solving.

- 1) Require CS 313E, Elements of Software Design; previously, the course was optional.  
**Rationale:** By requiring CS 313E, students will gain knowledge and experience they will need to be successful in the upper-division Elements of Computing electives.
- 2) Require four upper division Elements courses rather than three.  
**Rationale:** By requiring an additional upper-division course, students will gain more in-depth experience in computing.
- 3) Remove CS 301K, CS 302 and CS 313E from list of options  
**Rationale:** CS 313E will be a required course. CS 301K and 302 do not meet the prerequisites for any of the upper-division Elements courses. By removing these two courses, the certificate is strengthened and certificate seekers have more opportunities for instruction in practical computing skills useful in employment and research endeavors.
- 4) Add CS 328E – Topics in Elements of Computing to the list of courses that may count towards the Elements of Computing Certificate  
**Rationale:** CS 328E has a prerequisite of CS 303E. Students may take CS 313E and a 328E topic concurrently, allowing them to complete the certificate in a more timely manner.

**14. College/School Approval Process:**

Departmental approver: March 5, 2015  
 College approver: September 23, 2015  
 Dean approver: David Vanden Bout  
 Title: Associate Dean for Undergraduate Education  
 Date: September 28, 2015

**PROPOSED NEW CATALOG TEXT:****The Elements of Computing Program**

The Elements of Computing Program, administered by the Department of Computer Science, is designed to support computational work in disciplines other than computer science and to provide students with skills in the use of computer applications. Any non-computer science major may take any elements of computing course for which he or she meets the prerequisite. No application process is required.

To earn the Elements of Computing Certificate, students must complete eighteen semester hours of coursework with a grade of at least C- in each course. The following coursework is required:

- [~~One~~] Two core courses: Computer Science 303E, *Elements of Computers and Programming*, or the equivalent, and *Computer Science 313E Elements of Software Design* or the equivalent
- [~~Five~~] Four of the following courses. [~~including at least three upper division courses:~~  
~~[Computer Science 301K, *Foundations of Logical Thought*]~~  
~~[Computer Science 302, *Computer Fluency*]~~  
~~[Computer Science 313E, *Elements of Software Design*]~~  
 Computer Science 320N, *Topics in Computer Science for Nonmajors*  
 Computer Science 324E, *Elements of Graphics and Visualization*  
 Computer Science 326E, *Elements of Networking*  
 Computer Science 327E, *Elements of Databases*  
Computer Science 328E, *Topics in Elements of Computing*  
 Computer Science 329E, *Advanced Topics in Elements of Computing*

With the approval of the certificate program faculty committee, other appropriate courses may be counted toward the elective requirement.

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<sup>1</sup> See footnote 1b above: 18-24 hours are required.

<sup>2</sup> Semester Credit Hours.