

OFFICE OF THE FACULTY COUNCIL
THE UNIVERSITY OF TEXAS AT AUSTIN

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December 14, 2015

Judith H. Langlois
Interim Executive Vice President and Provost
The University of Texas at Austin
MAI 201
Campus Mail Code: G1000

Dear Dr. Langlois:

Enclosed for your consideration and action are proposed changes to the College of Natural Sciences chapter in the *Undergraduate Catalog, 2016-2018*. The proposals were classified as being of *general* interest to only one college or school and were approved by the Faculty Council on a no-protest basis on December 11, 2015. The authority to grant final approval on these changes resides with UT System.

- Proposed Changes to the Elements of Computing Certificate (D 13610-13613).
- Proposed Changes to the Food and Society Certificate (D 13614-13617).
- Proposed Changes to the Forensic Science Certificate (D 13618-13621)
- Proposed Changes to the Pre-Health Professions Certificate (D 13622-13629)
- Proposed Changes to the Certificate in Scientific Computation (D 13630-13632)
- Proposed Creation of a Marine Science Certificate (D 13633-13638)
- Proposed Changes to the BS in Medical Laboratory Science Degree Program (D 13679-13682)
- Proposed Changes to the BS in Physics Degree Program (D 13683-13689)

Please let me know if you have questions or if I can provide other information concerning these items.

Sincerely,

A handwritten signature in black ink, appearing to read "Hillary Hart".

Hillary Hart, Secretary
General Faculty and Faculty Council

HH:dlr

Enclosure

xc: Gregory L. Fenves, president
Janet Dukerich, senior vice provost

ec (letter only): Carol Longoria, deputy to the president
David Vanden Bout, associate dean for curriculum and programs, College of Natural Sciences
Judith Quinney, manager, records office, College of Natural Sciences
Allen Walser, manager of reporting and analysis, IRRIS
Brenda Schumann, associate registrar
Lydia Cornell, program coordinator, provost's office
Michelle George, administrative manager for faculty affairs, provost's office

DOCUMENTS OF THE GENERAL FACULTY

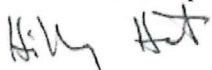
PROPOSAL TO CHANGE THE ELEMENTS OF COMPUTING CERTIFICATE IN THE COLLEGE OF NATURAL SCIENCES CHAPTER IN THE UNDERGRADUATE CATALOG, 2016-2018

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

Posted on the Faculty Council website <<http://www.utexas.edu/faculty/council/>> on November 19, 2015.

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:**¹ Eighteen hours.

10.	Course Abbreviation and Number	Course Title	SCH ²
Lis t Fa	CS 328E	Topics in Elements of Computing # # CS 303E	3

Faculty 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.

¹ See footnote 1b above: 18-24 hours are required.

² Semester Credit Hours.

DOCUMENTS OF THE GENERAL FACULTY

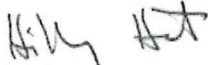
PROPOSAL TO CHANGE THE FOOD AND SOCIETY CERTIFICATE IN THE COLLEGE OF NATURAL SCIENCES CHAPTER IN THE *UNDERGRADUATE CATALOG, 2016-2018*

Dean Linda Hicke, in the College of Natural Sciences has filed with the secretary of the Faculty Council the following changes to the Food and Society Certificate in the *Undergraduate Catalog, 2016-2018*. On September 23, 2015, the college faculty approved the proposal. 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 FOOD AND SOCIETY 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 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 checked="" type="checkbox"/> Other: Limit overlap for BS in Nutrition majors. |

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:** Food and Society Certificate
- 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:**¹ Eighteen hours.
- 10. **List Faculty on the Certificate Program Faculty Committee.** N/A
- 11. **Academic Course Requirements:** N/A

12. Other Certificate Requirements: N/A**13. Give a Detailed Rationale for Change(s):**

Restrict BS in Nutrition majors to a maximum of six hours in nutrition that may count toward the certificate. Without this restriction, a student could count up to fifteen hours of their degree requirements toward the eighteen hours required for the certificate. For nutrition majors who seek the certificate, the college wants to broaden their knowledge of the history, culture, and impact of food on their clients beyond clinical considerations.

14. College/School Approval Process:

College Approval Date:	September 23, 2015
Dean Approver:	David Vanden Bout
Title:	Associate Dean for Undergraduate Education
Date:	September 28, 2015

PROPOSED NEW CATALOG TEXT:**Food and Society Certificate**

Though food-related issues vary widely in focus, they are all linked by their complexity and are deeply interdisciplinary nature, each relating to topics of health and nutrition, genetics, politics, culture, the environment, economics, and business. Students will be able to appreciate the full range of these interdisciplinary ties and apply new perspectives to their primary academic majors and careers.

Students completing the certificate will be able to apply a more comprehensive understanding of the implications of their food-related actions and decisions; find better solutions to today's complex problems; formulate more effective public policy; become better informed and active citizens; and make healthier choices for themselves and their families.

No admission to the certificate is required. Students must contact the advising office in the School of Human Ecology to apply for the certificate the semester before the certificate requirements are met. The certificate consists of eighteen hours, of which nine hours must be in upper-division coursework. Courses must be completed with minimum grades of at least C- unless the course is offered only on the pass/fail basis. Students also seeking the Bachelor of Science in Nutrition may count a maximum of 6 hours in nutrition toward the food and society certificate.

Some of the courses may contain prerequisites that are in addition to the coursework for the certificate.

1. Three hours of introductory nutrition, chosen from Nutrition 306, 312, or 312H.
2. Fifteen hours selected from a minimum of two themes chosen from a, b, and c. No more than nine hours in a single theme may be applied toward the certificate.
 - a. Nutrition and Health
 - i. Nutrition 307, *Introductory Food Science*
 - ii. Nutrition 315, *Nutrition through the Life Cycle*
 - iii. Nutrition 218, *Assessment of Nutritional Status* and Nutrition 118L, *Assessment of Nutritional Status Laboratory*
 - iv. Nutrition 330, *Nutrition Education and Counseling*
 - v. Nutrition 321, *International Nutrition: The Developing World*
 - vi. Nutrition 334, *Foodservice Systems Management*
 - vii. Nutrition 353, *Field Experience in International Nutrition*
 - viii. Nutrition 365 (Topic 4: *Obesity and Metabolic Health*)
 - ix. Sociology 308S, *Introduction to Health and Society*

- x. Nursing 309, *Global Health*

- b. Culture and History
 - i. Nutrition 316, *Culture and Food*
 - ii. American Studies 370 (Topic 26: *American Food*)
 - iii. Anthropology 307, *Culture and Communication*
 - iv. Asian Studies 379 (Topic 7: *Cuisine and Culture in Asia*)
 - v. Classical Civilization 340 (Topic 6: *Food, Health, and Culture in the Ancient Mediterranean*)
 - vi. Classical Civilization 348 (Topic 14: *Ancient Greek Medicine*)

- c. Politics, Economics, and Environment
 - i. Nutrition 331, *International Nutrition: Social and Environmental Policies*
 - ii. Nutrition 332, *Community Nutrition*
 - iii. Geography 331K, *Nature, Society, and Adaptation*
 - iv. Geography 344K, *Global Food, Farming, and Hunger*
 - v. Geography 339K, *Environment, Development, and Food Production*
 - vi. Government 370L (Topic 21: *Politics of Food in America*)
 - vii. Marine Science 308, *Humans and a Changing Ocean*
 - viii. Marine Science 367K, *Human Exploration and Exploitation of the Sea*

¹ See footnote 1b above: 18-24 hours are required.

DOCUMENTS OF THE GENERAL FACULTY

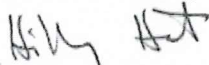
**PROPOSAL TO CHANGE THE FORENSIC SCIENCE CERTIFICATE IN THE COLLEGE OF
NATURAL SCIENCES CHAPTER IN THE *UNDERGRADUATE CATALOG, 2016-2018***

Dean Linda Hicke, in the College of Natural Sciences has filed with the secretary of the Faculty Council the following changes to the Forensic Science Certificate in the *Undergraduate Catalog, 2016-2018*. On September 23, 2015, the college faculty approved the proposal. 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

Posted on the Faculty Council website <<http://www.utexas.edu/faculty/council/>> on November 19, 2015.

**PROPOSAL TO CHANGE THE FORENSIC SCIENCE 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)**

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

3. **SCOPE OF PROPOSED CHANGE**

- a. Does this proposal impact other colleges/schools? Yes No
 If yes, then how? Many of the courses contained in this certificate are offered in the Department of Anthropology. This proposal does not subtract any courses from the existing certificate, and adds only one at the recommendation of the Department of Anthropology. It is primarily a rearrangement of certificate requirements to accommodate the structures of the interactive degree audit. We believe these changes do not impact the academic intentions of the certificate requirements. At the suggestion of Dr. Deborah Bolnick, ANT 349C, Human Variation, was added.
- 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
 It is unknown whether ANT 349C will experience an increase or decrease in students from COLA or other colleges who are pursuing this certificate

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: We anticipate no impact.

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

Date of communication: April 6, 2015

Response: These updates look reasonable to me. You might also consider adding ANT 349C

(Human Variation) as an option under requirement #3.

4. **Official Certificate Name:** Forensic Science Certificate
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:¹ Eighteen hours.

10.	Course Abbreviation and Number	Course Title	SCH ²
Lis t Fa	ANT 349C	Human Variation # # ANT 301	3

culty on the Certificate Program Faculty Committee. N/A

11. Academic Course Requirements: N/A

12. Other Certificate Requirements: N/A

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

Require six upper-division hours for the certificate.

Rationale: While unlikely, it would be possible for a student to complete the certificate without taking any advanced coursework as written in the 2014-16 catalog. It should not be difficult for students to complete six upper-division hours, and should allow for a richer experience in one or two of the subareas defined within the certificate.

Require that the coursework for the certificate be completed with minimum grades of at least C-.

Rationale: The minimum grade standard for the certificate was inadvertently omitted in the initial proposal for the 2014-16 catalog.

Remove ANT 324L (approved topics) from the certificate.

Rationale: The only approved topic relevant to the certificate was forensic anthropology. The Department of Anthropology is no longer scheduling this course and do not have plans to make it a numbered topic. Currently, there is no faculty member who specializes in forensic anthropology.

Restructure the certificate as follows:

- Make ANT 301 a requirement, not an option. ANT 301 is a required prerequisite to ANT 366.
- Move ANT 366, Anatomy and Biology of the Human Skeleton, to requirement #2.
- Allow requirement #2 courses beyond six hours to count toward requirement #3 if chosen by the student.
- Add ANT 349C to requirement #3 at suggestion of Deborah Bolnick, Department of Anthropology.

Rationale: During the 2014-15 academic year, the College of Natural Sciences realized that the forensic science certificate structure is not compatible with the capabilities of the interactive degree audit (IDA). IDA cannot code a range of hours in multiple requirements and then check for eighteen hours.

14. College/School Approval Process:

Committee Approval Date: April 8, 2015
 College Approval Date: September 23, 2015
 Dean Approver: David Vanden Bout
 Title: Associate Dean for Undergraduate Education
 Date: September 28, 2015

PROPOSED NEW CATALOG TEXT:

Forensic Science Certificate

The Forensic Science Certificate provides an interdisciplinary perspective for students interested in careers in forensic science.

Students seeking employment in forensic science laboratories upon graduation are encouraged to select biology and chemistry courses. Some of these courses may require introductory biology and chemistry courses as prerequisites.

No admission to the certificate is required. Students must contact the dean's office in the College of Natural Sciences to apply for the certificate during the semester in which they are completing the requirements. The certificate consists of eighteen hours, including six upper-division hours, with grades of at least C-:

1. [~~Three to six hours of forensic science, chosen from Anthropology 301, 324L (approved topics), and 366.~~] Three hours of physical anthropology: Anthropology 301
2. Six [~~to twelve~~] hours chosen from any of the following courses relevant to forensic science:
 - a. Criminalistics: Sociology 302, 325K, and 325L
 - b. Behavioral Science: Psychology 301, 308, 319K, and 352
 - c. Pharmacology: Neuroscience 365D
 - d. Forensic Science: Anthropology 366
3. Nine hours chosen from any of the following areas: [~~To achieve the minimum of eighteen hours required for the certificate, up to eight hours may be selected from any of the following courses:~~]
 - a. Anatomy and Physiology: Biology 309D or 365S, 446L, 361T, 165U, and 371L
 - b. Chemistry: Chemistry 220C, 320M, 320N, 455, and Biochemistry 369
 - c. Genetics and Microbiology: Anthropology 349C, Biology 325, 325L, 325T, 226L, and 326R
 - d. Statistics and Computation: One course chosen from the following: Biology 321G, Statistics and Data Sciences 302, 304, 306, 328M, or Mathematics 316
 - e. Additional coursework in criminalistics, behavioral science, pharmacology, and forensic science. A course may not count toward both requirement 2 and requirement 3.

¹ See footnote 1b above: 18-24 hours are required.

² Semester Credit Hours.

DOCUMENTS OF THE GENERAL FACULTY

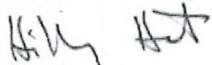
PROPOSAL TO CHANGE THE PRE-HEALTH PROFESSIONS CERTIFICATE IN THE COLLEGE OF NATURAL SCIENCES CHAPTER IN THE UNDERGRADUATE CATALOG, 2016-2018

Dean Linda Hicke, in the College of Natural Sciences has filed with the secretary of the Faculty Council the following changes to the Pre-health Professions Certificate in the *Undergraduate Catalog, 2016-2018*. On September 16, 2015, the college faculty approved the proposal, and 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 PRE-HEALTH PROFESSIONS 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)**
 - Courses in other colleges
 - Courses in proposer's college that are frequently taken by students in other colleges
 - Course in the core curriculum
 - Change 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)
 - Flags
 - Courses that have to be added to the inventory
 - Other: Rearrangement of science track to clarify original intent; rearrangement of non-science major track to clarify how courses apply toward specific health profession preparations; these changes were reviewed by the Health Professions Office

3. SCOPE OF PROPOSED CHANGE

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

There will be a slight change to the qualifications for applying to be in the Pre-Health Professions certificate that is of interest to colleges that contain pre-health professions students. ? The change will enable more students outside of natural Sciences to qualify for admission to the Pre-Health Professions Certificate. We do not know how many that will be.
- 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 yes, please indicate the number of students and/or class seats involved.

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:** Pre-Health Professions Certificate
- 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:**¹ Eighteen hours.
10. **List Faculty 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.

Course Abbreviation and Number	Course Title	SCH ²
CH 302	Principles of Chemistry I # # CH 301 or 302H; M 305G or SDS 302 or one of the following: M 408C, 408D, 408K, 408L, 408M, 408N, 408R, 408S	3
M 408R	Differential and Integral Calculus for the Sciences # # an appropriate score on the mathematics placement exam	3
NTR 306	Fundamentals of Nutrition	3
BIO 326R	General Microbiology # # Credit or registration for BIO 325 or 325H and CH 302 or 302H	3
SDS 302	Data Analysis for the Health Sciences	3

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

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

Science Major Track

- 1) Removal of the statement that half of the science major track is one half science and one half coursework in themes related to healthcare. Rewrite the science major track to state that nine to eighteen hours of the certificate may be chosen from themes related to healthcare, rather than content in biochemistry, biology, chemistry, physics, and statistics.
Rationale: The original intent of the certificate was designed to encourage science majors to take coursework related to healthcare that is outside biochemistry, biology, chemistry, physics, and statistics coursework, while allowing up to nine hours from these areas. Removing the statement and rewording the science major track requirements will clarify this intention. In practice, some amount of overrides will need to be completed on the credential for individual students due to limitations of how the audit functions. However, the certificate language will be correct.
- 2) Addition of NTR 306 to the nutrition healthcare theme.
Rationale: NTR 306 is the introductory course taken by non-nutrition majors. It is entirely appropriate to apply to the certificate.
- 3) Addition of a statement that upper-division coursework in biochemistry, biology, and chemistry approved by the certificate advisor may be applied toward the maximum of nine hours in science coursework.
Rationale: Depending on a student's major, he or she may not have 9 hours of introductory science coursework listed in the certificate, but may have additional upper-division science coursework already completed. The statement allows the flexibility to apply other significant science coursework toward the certificate.

Non-science Major Track

- 1) Change admission to the certificate to require a minimum grade of B- in either CH 301 or CH 302. Add M 408R as an alternative to M 408C, 408K, or 408N.
Rationale: Previously, the certificate required a minimum grade of B- in CH 301. Some first-year students taking CH 301 in the fall semester had difficulties adjusting to college-level courses. Allowing either CH 301 or 302 with a grade of at least B- provides the opportunity for first-year

students to learn from their fall semester experiences and to apply these lessons to their spring semesters. This change will result in an increase of students eligible to pursue the Pre-Health Professions Certificate.

- M 408R is a terminal calculus course designed for students pursuing the health professions.
- 2) Rewrite and reorganize certificate requirements to state the pre-health professions requirements explicitly for various types of healthcare fields.
Rationale: Previously, students in the non-science major track completed eighteen hours from the same set of courses. However, pre-health professions preparation was not always identical to the 18 hours available for enrollment. In addition, the advanced coursework available to those who completed the certificate was listed separately. The certificate will now be customized depending on the specific set of pre-health professions coursework.
 - 3) The pre-physician assistant and pre-pharmacy certificate coursework will require one or two additional hours of coursework approved by the certificate advisor.
Rationale: As a consequence of customizing the certificate requirements according to what is actually needed for entry into these fields, the total hours in pre-physician assistant and pre-pharmacy preparation fall short of the eighteen hours by one or two hours. The certificate advisor will approve hours from one of the courses listed in the advanced coursework to satisfy the certificate. If a student chooses not to enroll in any advanced courses, the certificate advisor will determine alternate hours chosen from previously completed coursework.
 - 4) Replace M 316 with SDS 302.
Rationale: The Health Professions Office successfully negotiated with the professional schools to accept SDS 302, taught regularly, for M 316, no longer taught in residence.
 - 5) Replace BIO 326M with BIO 326R.
Rationale: The Department of Molecular Biosciences is restricting enrollment in BIO 326M to nursing, medical laboratory science, and public health majors. All other students needing a microbiology requirement will enroll in BIO 326R. However, if a student has already completed BIO 326M, he or she will not be required to take BIO 326R.

14. College/School Approval Process:

College Approval Date: September 16, 2015
 Approver: David Vanden Bout
 Title: Associate Dean for Undergraduate Education
 Date: September 28, 2015

PROPOSED NEW CATALOG TEXT:

Pre-Health Professions Certificate

The Pre-Health Professions Certificate assists students in preparing for post-baccalaureate, healthcare professional programs.

Students are encouraged to work closely with the Health Professions Office to select healthcare themes relevant to their professional career goals. Some of the courses may contain prerequisites that are in addition to the coursework for the certificate.

Majors in the College of Natural Sciences must seek the Science Major Track. ~~The composition of the science major track is one half science coursework and one half coursework from a theme related to healthcare. No admission to the track is required.~~

Majors outside of the College of Natural Sciences must seek the Non-Science Major Track. The composition of the non-science major track is science coursework necessary for admission to post-baccalaureate, healthcare professional programs. Non-science majors may apply to the certificate program upon completion of the following courses with grades of at least B-: Chemistry 301 or 302, and [completion of] one of the following: Statistics and Data Sciences 302, Mathematics 408C, 408K, [or] 408N, or 408R. Upon admission, the ability to progress in the certificate is dependent on completion of the certificate courses with satisfactory

grades. Non-science majors who complete the certificate may be eligible to enroll in select upper-division courses necessary for application to the health professions programs to which they are applying.

Students must contact the dean's office in the College of Natural Sciences to request the certificate during the semester in which they are completing the requirements. The certificate consists of a minimum of eighteen hours. Each course presented for the certificate must be completed with a grade of at least C-.

[Science Major Track

1. Complete up to nine hours chosen from the following:
 - a. Biochemistry and Chemistry: Chemistry 220C, 320M, 320N, and Biochemistry 369
 - b. Biology: Biology 311C, 311D, and 206L
 - c. Physics: Physics 302K, 102M, 302L, 102N; 317K, 117M, 317L, 117N; 301, 101L, 316, 116L; 303K, 103M, 303L, 103N.
 - d. Statistics: One of the following courses: Mathematics 316, Statistics and Data Sciences 302, 304, 306, or 328M.
2. Complete a minimum of nine hours chosen from the following themes relevant to healthcare:
 - a. Cultural Awareness:
 - i. Anthropology 322M (Topic 5: *Indians of Mexico and Guatemala*)
 - ii. Asian American Studies 301 and Asian American Studies 310 (Topic 1: *Psychological Perspectives on Asian American Identity*)
 - iii. African and African Diaspora Studies 301
 - iv. Latin American Studies 324L (Topic 16: *Mexican Immigration Cultural History*)
 - v. Mexican American Studies 307
 - vi. Middle Eastern Studies 301L
 - b. Health and Anatomy:
 - i. Classical Civilization 306M
 - ii. Educational Psychology 363 (Topic 3: *Human Sexuality*) or Health Education 366.
 - iii. Health Education 335, 343, 352K, 370K, and 373
 - iv. Kinesiology 320, 324K, 325K, and 326K
 - v. Psychology 301, 308, 332C, Psychology 341K (Topic 4: *Health Psychology*), Psychology 346K, and Psychology 353K.
 - c. Healthcare Policy:
 - i. Communication Studies 322E
 - ii. History 350R (Topic 18: *Women in Sickness and Health*)
 - iii. Philosophy 325M
 - iv. Nursing 309 and Nursing 321
 - v. Sociology 307M, 319, 336D, 354K, 358D, 368D, and 369K
 - vi. Urban Studies 350 (Topic: *Human Health and the Environment*)
 - vii. Geography 357
 - viii. Public Health 317
 - d. Human and Societal Development:
 - i. Communication Studies 310K and 322E.
 - ii. Educational Psychology 369K (Topic 10: *Educational Neuroscience*).
 - iii. Human Development and Family Sciences 304, 313, 335, 342, 351, and 378K (Topic: *Biobehavioral Health Processes Across the Family*).
 - iv. Nursing 310.
 - v. Psychology 301, 308, 332C, 341K (Topic 4: *Health Psychology*), and 346K.
 - vi. Sociology 302 and 330C.
 - e. Nutrition:
 - i. Communication Studies 322E
 - ii. History 350R (Topic 5: *American Cultural History of Alcohol and Drugs*)
 - iii. Nutrition 312, 218, 326, and 331]

Science Major Track

1. Complete [~~a minimum of nine~~] eighteen hours chosen from the following themes relevant to healthcare. [~~Students pursuing the science major track may substitute a maximum of nine hours chosen from the optional lists that follow requirement 1.~~]

- a. Cultural Awareness:
 - i. Anthropology 322M (Topic 5: *Indians of Mexico and Guatemala*)
 - ii. Asian American Studies 301 and Asian American Studies 310 (Topic 1: *Psychological Perspectives on Asian American Identity*)
 - iii. African and African Diaspora Studies 301
 - iv. Latin American Studies 324L (Topic 16: *Mexican Immigration Cultural History*)
 - v. Mexican American Studies 307
 - vi. Middle Eastern Studies 301L
- b. Health and Anatomy:
 - i. Classical Civilization 306M
 - ii. Educational Psychology 363 (Topic 3: *Human Sexuality*) or Health Education 366.
 - iii. Health Education 335, 343, 352K, 370K, and 373
 - iv. Kinesiology 320, 324K, 325K, and 326K
 - v. Psychology 301, 308, 332C, Psychology 341K (Topic 4: *Health Psychology*), Psychology 346K, and Psychology 353K.
- c. Healthcare Policy:
 - i. Communication Studies 322E
 - ii. History 350R (Topic 18: *Women in Sickness and Health*)
 - iii. Philosophy 325M
 - iv. Nursing 309 and Nursing 321
 - v. Sociology 307M, 319, 336D, 354K, 358D, 368D, and 369K
 - vi. Urban Studies 350 (Topic: *Human Health and the Environment*)
 - vii. *Geography 357*
 - viii. *Public Health 317*
- d. Human and Societal Development:
 - i. Communication Studies 310K and 322E.
 - ii. Educational Psychology 369K (Topic 10: *Educational Neuroscience*).
 - iii. Human Development and Family Sciences 304, 313, 335, 342, 351, and 378K (Topic: *Biobehavioral Health Processes Across the Family*).
 - iv. Nursing 310.
 - v. Psychology 301, 308, 332C, 341K (Topic 4: *Health Psychology*), and 346K.
 - vi. Sociology 302 and 330C.
- e. Nutrition:
 - i. Communication Studies 322E
 - ii. History 350R (Topic 5: *American Cultural History of Alcohol and Drugs*)
 - iii. Nutrition 306, 312, 218, 326, and 331

Optional: If additional hours are needed to complete the eighteen hours required for the certificate, [Complete up to] a maximum of nine hours chosen from the following may be applied to the science major track.

Biochemistry and Chemistry: Chemistry 220C, 320M, 320N, and Biochemistry 369.

Biology: Biology 311C, 311D, and 206L.

Physics: Physics 302K, 102M, 302L, 102N; 317K, 117M, 317L, 117N; 301, 101L, 316, 116L; 303K, 103M, 303L, 103N.

Statistics: One of the following courses: Mathematics 316, Statistics and Data Sciences 302, 304, 306, or 328M.

Additional upper-division coursework in biochemistry, biology, and chemistry by approval of the undergraduate certificate adviser.

[Non-science Major Track

1. Complete a minimum of eighteen hours from the following:
 - a. Biology: Biology 311C, 311D, and 206L
 - b. Chemistry: Chemistry 302 and Chemistry 204.
 - c. Physics: Physics 302K, 102M, 302L, and 102N. The following physics sequences may substitute if they are already completed: Physics 317K, 117M, 317L, and 117N; Physics 301, 101L, 316, and 116L; Physics 303K, 103M, 303L, and 103N.

2. Students who successfully complete the Non-Science Major Track in requirement 1 will be eligible to enroll in the following courses according to the professional field they intend to enter. These additional courses are not required to earn the Pre-Health Professions Certificate.
 - a. Pre-dental preparation: Biochemistry 369; Biology 320, 325, 326M; Chemistry 320M, 320N, 220C
 - b. Pre-medical preparation: Biochemistry 369; Biology 320, 325; Chemistry 320M, 320N, 220C
 - c. Pre-occupational therapy preparation: Biology 325, 446L, 365S, 165U; Mathematics 316
 - d. Pre-optometry preparation: Biochemistry 369; Biology 325, 326M, 226L, 446L, 365S, 165U; Chemistry 320M, 320N, 220C; Mathematics 316
 - e. Pre-physical therapy preparation: Biology 325, 446L, 365S, 165U; Mathematics 316
 - f. Pre-physician assistant preparation: Biochemistry 369; Biology 320, 325, 326M, 226L, 344, 446L, 365S, 165U; Chemistry 320M, 320N, 220C; Mathematics 316; Nutrition 306.
 - g. Pre-pharmacy preparation: Biology 325, 326M, 226L, 446L, 365S, 165U; Chemistry 320M, 320N, 220C; Mathematics 316
 - h. Pre-veterinary preparation: Biochemistry 369; Biology 325, 326R, 226L, 344; Statistics and Data Sciences 321 or 328M]

Non-science Major Track

1. Complete eighteen hours from one of the following areas of health professions preparation, chosen from ai through hi. Upon completion of the certificate, students may enroll in the advanced coursework associated with their introductory preparation, chosen from aii through hii.
 - a. Pre-dental preparation:
 - i. Certificate coursework: Biology 311C, 311D, 206L; Chemistry 204; Physics 302K, 102M, 302L, 102N *.
 - ii. Advanced coursework: Biochemistry 369; Biology 320, 325, 326M 326R **; Chemistry 320M, 320N, 220C.

 - b. Pre-medical preparation:
 - i. Certificate coursework: Biology 311C, 311D, 206L; Chemistry 204; Physics 302K, 102M, 302L, 102N *.
 - ii. Advanced coursework: Biochemistry 369; Biology 320, 325, 326R **; Chemistry 320M, 320N, 220C.

 - c. Pre-occupational therapy preparation:
 - i. Certificate coursework: Biology 311C, 311D, 206L; Chemistry 204; Statistics and Data Sciences 302; Mathematics 316; Physics 302K, 102M *, and one hour of additional coursework approved by the certificate advisor.
 - ii. Advanced coursework: Biology 325, 446L, 365S, 165U.

 - d. Pre-optometry preparation:
 - i. Certificate coursework: Biology 311C, 311D, 206L; Chemistry 204; Physics 302K, 102M, 302L, and 102N *.
 - ii. Advanced coursework: Biochemistry 369; Biology 325, 326M, 226L, 326R **, 446L, 365S, 165U; Chemistry 320M, 320N, and 220C.

- e. Pre-physical therapy preparation:
- i. Certificate coursework: Biology 311C, 311D, 206L; Chemistry 204; Statistics and Data Sciences 302 Mathematics 316; Physics 302K, 102M, 302L, and 102N *.
 - ii. Advanced coursework: Biology 325, 446L, 365S, 165U.
- f. Pre-physician assistant preparation:
- i. Certificate coursework: Biology 311C, 311D, 206L; Chemistry 204; Statistics and Data Sciences 302 Mathematics 316; Nutrition 306, and two hours of additional coursework approved by the certificate advisor.
 - ii. Advanced coursework: Biochemistry 369; Biology 320, 325, 326M, 226L, 326R**, 344, 446L, 365S, 165U; Chemistry 320M, 320N, 220C.
- g. Pre-pharmacy preparation:
- i. Introductory coursework: Biology 311C, 311D, 206L; Chemistry 204; Statistics and Data Sciences 302 Mathematics 316; Physics 302K, 102N *, and one hour of additional coursework approved by the certificate advisor.
 - ii. Advanced coursework: Biology 325, 326M, 226L, 326R**, 446L, 365S, 165U; Chemistry 320M, 320N, 220C.
- h. Pre-veterinary preparation:
- i. Certificate coursework: Biology 311C, 311D, 206L; Chemistry 204; Physics 302K, 102M, 302L, 102N *.
 - ii. Advanced coursework: Biochemistry 369; Biology 325, 326R, 226L, 344; Statistics and Data Sciences 321 or 328M.
- a. * A completed calculus-based physics sequence may substitute for the purposes of earning the certificate.
** Previously completed Biology 326M may substitute for Biology 326R.

¹ See footnote 1b above: 18-24 hours are required.

² Semester Credit Hours.

DOCUMENTS OF THE GENERAL FACULTY

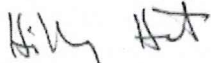
PROPOSAL TO CHANGE THE CERTIFICATE IN SCIENTIFIC COMPUTATION IN THE COLLEGE OF NATURAL SCIENCES CHAPTER IN THE UNDERGRADUATE CATALOG, 2016-2018

Dean Linda Hicke, in the College of Natural Sciences has filed with the secretary of the Faculty Council the following proposal to rename the Certificate in Scientific Computation in the *Undergraduate Catalog, 2016-2018*. On September 22, 2015, the college faculty approved the proposal. 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

Posted on the Faculty Council website <<http://www.utexas.edu/faculty/council/>> on November 19, 2015.

PROPOSAL TO CHANGE THE CERTIFICATE IN SCIENTIFIC COMPUTATION 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 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 checked="" type="checkbox"/> Other: change to title of certificate |

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:

Date of communication:

Response:

4. **Official Certificate Name:** Certificate in Scientific Computation, however, the proposal is to change the name to Certificate in Scientific Computation and Data Sciences.
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:** Our target enrollment is twenty students, with five to eight graduates each academic year.
9. **Number of Hours Required for Completion:**¹ Eighteen
10. **List Faculty on the Certificate Program Faculty Committee.** N/A
11. **Academic Course Requirements:** N/A

12. Other Certificate Requirements: N/A**13. Give a Detailed Rationale for Change(s):**

The Department of Statistics and Data Sciences faculty voted to change the title of the certificate. "Data Sciences" is added so that the name of the certificate aligns with the new departmental name and clarifies the scope of the certificate.

14. College/School Approval Process:

Departmental Approver:	Michael Daniels, Chair
Approval date:	April 8, 2015
College approval date:	April 22, 2015
Dean approver:	David Vanden Bout
Title:	Associate Dean for Undergraduate Education
Date:	September 28, 2015

PROPOSED NEW CATALOG TEXT:**Certificate in Scientific Computation and Data Sciences**

The Certificate in Scientific Computation and Data Sciences helps undergraduates equip themselves with the mathematical, statistical, and computer-based tools necessary to investigate complex systems in a variety of applications. It is designed to appeal to students across the University in science, engineering, economics, premedicine, sociology, and many other disciplines. The program is administered by the Department of Statistics and Data Sciences. To be admitted, a student must be in good standing in an approved undergraduate degree program and must have earned a grade of at least C- in each certificate course he or she has completed. Students may apply for admission to the program at any point in their undergraduate study; they are encouraged to apply as early as possible so that they can be advised throughout the program.

The following coursework is required. Students must also complete Mathematics 408D or 408M as a prerequisite. No single course or topic may be used to meet more than one of these requirements.

1. Statistics and Data Sciences 222
2. One course in linear algebra, discrete mathematics, or differential equations chosen from the following: Mathematics 340L, 341, 362M, 372K, Statistics and Data Sciences 329C
3. Two courses in scientific computing, chosen from two of the following areas:
 - a. *Numerical methods*: Aerospace Engineering 211K, Chemical Engineering 348, Computer Science 323E, 323H, 367, Mathematics 348, Petroleum and Geosystems Engineering 310, Statistics and Data Sciences 335
 - b. *Statistical methods*: Biomedical Engineering 335, Electrical Engineering 351K, Mathematics 358K, 378K
 - c. *Other computing topics*: Computer Science 324E, 327E, 329E (approved topics), 377, Mathematics 346, 362M, 368K, 372K, 375T (approved topics), 376C, Mechanical Engineering 367S, Statistics and Data Sciences 329D, 374C, 374D, 374E
4. One of the following courses in applied computational science: Aerospace Engineering 347, Biology 321G, Biomedical Engineering 342, 346, 377T (approved topics), Chemistry 368 (approved topics), Computer Science 324E, 329E (approved topics), Economics 363C, Electrical Engineering 379K (approved topics), Geological Sciences 325K, Mathematics 375T (approved topics), 374M, Physics 329
5. An independent research course: Statistics and Data Sciences 479R.

¹ See footnote 1b above: 18-24 hours are required.

DOCUMENTS OF THE GENERAL FACULTY

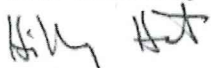
PROPOSAL TO CREATE THE MARINE SCIENCE CERTIFICATE IN THE COLLEGE OF NATURAL SCIENCES CHAPTER IN THE UNDERGRADUATE CATALOG, 2016-2018

Dean Linda Hicke, in the College of Natural Sciences has filed with the secretary of the Faculty Council the following proposal to create a Marine Science Certificate in the *Undergraduate Catalog, 2016-2018*. On September 23, 2015, the college faculty approved the proposal. 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 with formal notification to the Texas Higher Education Coordinating Board.

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

along with specialized upper division coursework in aquatic science. The certificate targets students who have an interest in marine science but do not want to specialize at the undergraduate stage. Exposure to marine science is important for students who think they may be interested in this field, because it does not receive enough attention in introductory science courses for students to make informed decisions about whether they would like to pursue the subject. The certificate will provide students knowledge of aquatic science that will help inform their decision about pursuing employment or graduate school in aquatic science, and make them competitive for jobs or graduate study. The proposed certificate comes at little or no cost to the University, as there is existing capacity in current marine science courses to accommodate the expected demand, without the need for additional course sections.

8. **Number of Students Expected to Receive the Certificate Each Semester:** Our target enrollment is twenty students, with five to eight graduates each academic year.
9. **Number of Hours Required for Completion:**¹ Nineteen hours.
10. **List Faculty on the Certificate Program Faculty Committee.**

Name of Faculty Member	College/Department	Title at UT Austin	Highest Degree and Awarding Institution
Robert Dickey Chair	CNS/Marine Science	Professor Director, Marine Science Institute Chair, Dept. of Marine Science	Ph.D. Southern Illinois University, Carbondale
Bryan Black	CNS/Marine Science	Associate Professor	Ph.D. Pennsylvania State University
Kenneth Dunton	CNS/Marine Science	Professor	Ph.D. University of Maine
Deana Erdner	CNS/Marine Science	Associate Professor	Ph.D. Massachusetts Institute of Technology/Woods Hole Oceanographic Institution
Andrew Esbaugh	CNS/Marine Science	Assistant Professor	Ph.D. Queen's University
Amber Hardison	CNS/Marine Science	Assistant Professor	Ph.D. Virginia Institute of Marine Science, College of William and Mary

11. **Academic Course Requirements:**

Course Abbreviation and Number	Course Title	SCH
BIO 311C	Introductory Biology I # # credit or registration in CH 301 or 301H	3
BIO 311D	Introductory Biology II # # BIO 311C	3
BIO 315H	Advanced Introduction to Genetics: Honors # # score of 5 on the College Board Advanced Placement Examination in Biology and credit or registration for CH 301 or 301H	3
CH 301	Principles of Chemistry I # # credit or registration for 1 of the following: M 305G, 408C,	3

	408D, 408K, 408L, 408M, 408N, 408R, 408S, SDS 302; and an appropriate score on the Department of Chemistry placement examination	
CH 301H	Principles of Chemistry I: Honors # ## credit or registration for 1 of the following: M 305G, 408C, 408D, 408K, 408L, 408M, 408N, 408R, 408S, SDS 302; an appropriate score on the Department of Chemistry placement examination; and consent of the departmental honors adviser	3
CH 302	Principles of Chemistry II # # CH 301 or 301H; credit in M 305G or SDS 302; credit or registration for 1 of the following: 408C, 408D, 408K, 408L, 408M, 408N, 408R, 408S	3
CH 302H	Principles of Chemistry II: Honors # # CH 301 or 301H; credit in M 305G or SDS 302; credit or registration for 1 of the following: 408C, 408D, 408K, 408L, 408M, 408N, 408R, 408S; and consent of the departmental honors adviser	3
MNS 310	Fundamentals of Marine Science # # BIO 311D; CH 302 or 302H	3
MNS 320	Marine Ecology # BIO 311D and CH 302/H	3
MNS 120L	Marine Ecology Laboratory # # Credit or registration in MNS 320	1
MNS 440	Limnology and Oceanography # # BIO 325 or 325H; CH 302 or 302H	4
MNS 152L	Topics in Marine Science Laboratory # # Credit or registration in MNS 352	1
MNS 152S	Seminar in Marine Science	1
MNS 152T	Principles of Marine Science: Special Topics	1
MNS 348:1	Topic 1: Training Cruise(s) # # UD standing; consent of instructor; BIO 325; CH 302 or 302H	3
MNS 352	Principles of Marine Science	3
MNS 352C	Estuarine Ecology # # UD standing; 6 hours in BIO, CH, GEO, or PHY	3
MNS 352D	Marine Botany # # UD standing; 3 hours of BIO; and 1 course from following: BIO 322, 324, 325 or 325H, 328, MNS 320, 352C	3
MNS 352E	Marine Conservation Biology # # BIO 311D; CH 302 or 302H	3
MNS 353	Topics in Marine Science # # UD standing; consent of instructor	3
MNS 354	Marine Invertebrates # # UD standing; 6 hours of BIO	3
MNS 354C	Biology of Fishes # # UD standing; 6 hours in BIO or consent of instructor	3
MNS 354E	Aquatic Microbiology # # BIO 311D; CH 302 or 302H; consent of instructor	3
MNS 354J	Marine Chemistry # # UD standing; CH 301 and 302; or consent of instructor	3
MNS 354Q	Marine Environmental Science # # UD standing; BIO 311D; CH 302 or 302H	3
MNS 354T	Biological Oceanography # # UD standing; BIO 311D	3
MNS 354U	Biology of Sharks, Skates, and Rays # # UD standing; BIO 354L, 361T, or MNS 354C; 3 UD hours of	3

	BIO or MNS or consent of instructor	
MNS 355C	Physiology of Fishes # # UD standing; BIO 311D; CH 302 or 302H; or consent of instructor	3
MNS 356	Ecosystem Oceanography # # UD standing; BIO 311D; CH 302 or 302H	3
MNS 357	Marine Phytoplankton Diversity # # UD standing; BIO 311D; CH 302 or 302H	3
MNS 367K	Human Exploration and Exploitation of the Sea # # UD standing; MNS 307	3
MNS 170, 270, 370	Special Studies in Marine Science # # 6 UD hours in science; grade point average of at least 3.0; written consent of instructor	1-3

12. Other Certificate Requirements: N/A

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

14. College/School Approval Process:

Departmental approval: April 6, 2015; September 21, 2015
 College approval: September 23, 2015
 Dean's approver: David Vanden Bout
 Title: Associate Dean for Undergraduate Education
 Date: September 28, 2015

PROPOSED NEW CATALOG TEXT:

Marine Science

The Marine Science transcript-recognized certificate enables students to explore of the field of marine science. The minor provides a foundation of basic competency in the fundamentals of marine science, along with specialized upper-division coursework in aquatic science. The knowledge of aquatic science that students gain through the certificate will help them to be competitive for employment or graduate study in this field.

The certificate consists of a minimum of nineteen hours with grades of at least C-. Most of the courses in the certificate contain prerequisites of one year of general biology and one year of general chemistry.

Marine and Freshwater Biology and Marine and Freshwater Science majors are not eligible to earn the certificate. Environmental Science majors may count no more than nine hours of degree requirements toward the Marine Science certificate.

1. Three hours chosen from: Biology 311C, 311D, 315H, Chemistry 301, 301H, 302, 302H.
2. Marine Science 310, Fundamentals of Marine Science.
3. Marine Science 320, Marine Ecology
4. Marine Science 120L, Marine Ecology Laboratory
5. Choose nine hours from the following list, including at least six hours at the Marine Science Institute in Port Aransas, Texas:
 - a. Marine Science 440, Limnology and Oceanography
 - b. Marine Science 152L, Topics in Marine Science Laboratory
 - c. Marine Science 152S, Seminar in Marine Science
 - d. Marine Science 152T, Principles of Marine Science: Special Topics
 - e. Marine Science 348:1, Research Training Cruise
 - f. Marine Science 352, Principles of Marine Science

- g. Marine Science 352C, Estuarine Ecology
- h. Marine Science 352D, Marine Botany
- i. Marine Science 352E, Marine Conservation Biology
- j. Marine Science 353, Topics in Marine Science
- k. Marine Science 354, Marine Invertebrates
- l. Marine Science 354C, Biology of Fishes
- m. Marine Science 354E, Aquatic Microbiology
- n. Marine Science 354J, Marine Chemistry
- o. Marine Science 354Q, Marine Environmental Science
- p. Marine Science 354T, Biological Oceanography
- q. Marine Science 354U, Biology of Sharks, Skates, and Rays
- r. Marine Science 355C, Physiology of Fishes
- s. Marine Science 356, Ecosystem Oceanography
- t. Marine Science 357, Diversity of Marine Phytoplankton
- u. Marine Science 367K, Human Exploration and Exploitation of the Sea
- v. Marine Science 170, 270, 370, Special Studies in Marine Science

¹ See footnote 1b above: 18-24 hours are required.

DOCUMENTS OF THE GENERAL FACULTY

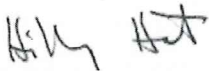
**PROPOSED CHANGES TO THE BACHELOR OF SCIENCE IN MEDICAL LABORATORY
SCIENCE DEGREE PROGRAM IN THE COLLEGE OF NATURAL SCIENCES CHAPTER IN THE
UNDERGRADUATE CATALOG 2016-2018**

Dean Linda A. Hicke in the College of Natural Sciences has filed with the secretary of the Faculty Council the following changes to BS in Medical Science Laboratory Sciences in the College of Natural Sciences chapter in the *Undergraduate Catalog, 2016-2018*. On August 12, 2015, the faculty representatives from department approved the changes, and on September 23 the college curriculum committee approved them. On September 28, 2015, Associate Dean David Vanden Bout approved the proposal on behalf of 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 October 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

- 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 yes, please indicate the number of students and/or class seats involved. Ten seats per year in MIS 302F.

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? Five seats per year in MIS 302F.

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

McCombs School of Business

Person communicated with: Regina Hughes, director, Business Foundations Program

Date of communication: September 22, 2015

Response: Certainly, add MIS302F. It's a great info systems class with very good instructors.

- 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: No

5. COLLEGE/SCHOOL APPROVAL PROCESS

Department approval date: August 12, 2015

College approval date: September 23, 2015

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

PROPOSED NEW CATALOG TEXT:

BACHELOR OF SCIENCE IN MEDICAL LABORATORY SCIENCE

The student preparing for a career in medical laboratory science completes at least one hundred hours of academic work at the University. After this work is completed, the student enters an accredited school of medical laboratory science (or clinical laboratory science) for an additional twelve to sixteen months of clinical education. After completion of this education, the student is awarded the Bachelor of Science in Medical Laboratory Science and is eligible ~~[for]~~ to take the national [certifying examinations] certification examination administered by the American Society for Clinical Pathology (ASCP) Board of Certification (BOC). Successful completion of ~~[these exams]~~ this exam results in national certification as a Medical Laboratory Scientist. ~~[medical laboratory scientist.]~~

The purpose of this degree program is to meet the increasing demand for laboratory professionals in hospital and clinic laboratories, research, industry, public health, education, and laboratory management. Medical laboratory science is also an excellent foundation for graduate study in medicine, dentistry, management, education, and other disciplines.

Prescribed Work

All students pursuing an undergraduate degree must complete the University's Core Curriculum. In addition, students seeking the Bachelor of Science in Medical Laboratory Science 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.
2. One course with a quantitative reasoning flag.

Courses with flags are identified in the *Course Schedule*. They may be used simultaneously to fulfill other requirements, unless otherwise specified.

3. 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.
4. Mathematics 408C or 408N, and Statistics and Data Sciences 304 or 328M.
5. Either Biology 311C, 311D, and 325 or Biology 315H and 325H.
6. Biology 226L, 326M, 330 or 446L, [~~353, 337 (Topic: *Fundamentals of Health Information Technology*)~~] 344 or 366R, 360K, 160L, 361, 361L, and 365S.
7. Chemistry 301 or 301H, 302 or 302H, 204, 220C, 320M, 320N, and Biochemistry 369.
8. Computer Science 303E, Management and Information Systems 302F, or Public Health 323.
9. [~~8~~] Enough additional elective coursework, if necessary, to make a total of at least 100 semester hours of academic work completed at the University before the clinical education program.
10. [~~9~~] Twelve to sixteen months of clinical education in a program of medical laboratory science (or clinical laboratory science) accredited by the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS). The student must apply to and be accepted into a clinical education program. The [~~faculty adviser in the Department of Molecular Biosciences and the~~] clinical education program director works closely with each student to ensure his or her success in the program. Upon completion of the clinical education program, the student must submit a letter from the program director verifying completion of coursework and a transcript showing grades in all courses in the program to The University of Texas at Austin, Office of the Dean, College of Natural Sciences, 1 University Station G2500, Austin TX 78712. To be counted toward the degree, the coursework must be approved by the faculty adviser for medical laboratory science [~~in the Department of Molecular Biosciences~~] and the dean. None of the coursework completed in the clinical education program may be used to fulfill in-residence degree requirements, requirements 1 through 9 [~~8~~] of the prescribed work above, or the requirements for a second bachelor's degree.

Special Requirements

{no changes}

Order and Choice of Work

{no changes}

DOCUMENTS OF THE GENERAL FACULTY

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

Dean Linda A. Hicke in the College of Natural Sciences has filed with the secretary of the Faculty Council the following changes to BS in Physics in the College of Natural Sciences chapter in the *Undergraduate Catalog, 2016-2018*. On August 23, 2015, the faculty representatives from department approved the changes, and on May 20, 2015, the college curriculum committee approved them. On September 28, 2015, On September 28, 2015, Associate Dean David Vanden Bout approved it on behalf of 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 October 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

- curriculum
 Change in admission requirements (external or internal)
- an existing program
 Requirements not explicit in the catalog language (e.g., lists of acceptable courses maintained by department office)
- added to the inventory

4. SCOPE OF PROPOSED CHANGE

- a. Does this proposal impact other colleges/schools? Yes No
 If yes, then how? Mechanical Engineering altered the courses that Radiation Physics majors take.
- 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 yes, please indicate the number of students and/or class seats involved.

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? A handful of Radiation Physics majors will take the Mechanical Engineering courses. There will be no need of additional resources.

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

Department of Mechanical Engineering

Person communicated with: Sheldon Landsberger, Professor

Date of communication: August 17, 2015

Response: The new rubric will be ME 336N as I mentioned before. That will make sure there is no confusion with other ME 379 courses.

{Note: ME originally changed 136N to 379M, a general topics course. Later, ME agreed to create ME 336N as a stand-alone course.}

- 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: No

5. COLLEGE/SCHOOL APPROVAL PROCESS

Department approval date: April 23, 2015; August 18, 2015

College approval date: May 20, 2015; September 9, 2015

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

PROPOSED NEW CATALOG TEXT:**BACHELOR OF SCIENCE IN PHYSICS**

{no changes}

Prescribed Work Common to All Options

{no changes}

Prescribed Work Common to All Options for Each**Option I: Physics**

This option is designed to give the student a strong foundation for graduate study or work in physics and for further study or work in a variety of other areas.

6. Chemistry 301 or 301H, and 302 or 302H.
7. Six semester hours in biology, geological sciences, or astronomy; a course may not be used to fulfill this requirement if it cannot be counted toward major requirements in the department that offers it.
8. Physics 301, 101L, 316, 116L, 315, and 115L.
9. Mathematics 408C and 408D or the equivalent, 427J or 427K and 427L, and six additional semester hours of upper-division coursework in mathematics; the following courses are recommended: Mathematics 340L, 361, and 362K. Only courses at the level of calculus and above may be counted toward the total number of hours required for the degree.
10. Physics 336K, 352K, 353L, 355, 362K, 362L, 369, 373, and 474, or their equivalents.
11. Enough additional coursework to make a total of 126 semester hours.

Option II: Computation

This option is designed to provide the necessary foundation and hands-on skill in computation for the student who plans a career or further study in computational physics or computer science. Students who complete this option may simultaneously fulfill some of the requirements of the Certificate in Scientific Computation.

6. Chemistry 301 or 301H, and 302 or 302H.
7. Six semester hours in biology, geological sciences, or astronomy; a course may not be used to fulfill this requirement if it cannot be counted toward major requirements in the department that offers it.
8. Physics 301, 101L, 316, 116L, 315, and 115L.
9. Mathematics 408C and 408D or the equivalent, 427J or 427K and 427L, and six additional semester hours of upper-division coursework in mathematics or statistics and data sciences; Statistics and Data Sciences 329C and Mathematics 362K are recommended; only courses at the level of calculus and above may be counted toward the total number of hours required for the degree.
10. Physics 329, 336K, 338K, 352K, 353L, 355, 369, and 373, or their equivalents.
11. One of the following scientific computation options:
 - a. [~~Statistics and Data Sciences 222,~~] Computer Science 303E; Computer Science 313E or Statistics and Data Sciences 322; [~~and two of the following courses; the student must complete] and two courses [coursework] from [at least] two of the areas listed below:~~
[following areas:]
 - i. Numerical methods: Chemical Engineering 348, Computer Science 323E, 323H, 367, Mathematics 348, Statistics and Data Sciences 335.
 - ii. Statistical methods: Biomedical Engineering 335, Mathematics 358K, 378K.
 - iii. Other computing topics: Computer Science 324E, 327E, 329E, 377, Mathematics 346, 362M, 368K, 372K, 376C, Mechanical Engineering 367S, Statistics and Data Sciences 329D, 374C, 374D, 374E.
 - b. Twelve semester hours chosen from Electrical Engineering 306, 312, 316, 319K, and 422C.
12. Enough additional coursework to make a total of 126 semester hours.

Option III: Radiation Physics

This option is designed to provide the necessary foundation for the student who plans a career or further study in nuclear engineering, radiation engineering, or health physics.

6. Chemistry 301 or 301H, and 302 or 302H.

7. Six semester hours in biology, geological sciences, or astronomy; a course may not be used to fulfill this requirement if it cannot be counted toward major requirements in the department that offers it.
8. Physics 301, 101L, 316, 116L, 315, and 115L.
9. Mathematics 408C and 408D or the equivalent, 427J or 427K and 427L, and six additional semester hours of upper-division coursework in mathematics; the following courses are recommended: Mathematics 340L, 361, and 362K. Only courses at the level of calculus and above may be counted toward the total number of hours required for the degree.
10. Twenty-four semester hours of upper-division coursework in physics, including Physics 336K, 352K, 353L, 355, 362L, 369, and 373, or their equivalents.
11. [~~Sixteen~~] Eighteen semester hours of upper-division coursework in mechanical engineering, consisting of Mechanical Engineering [~~136N,~~] 337C, 337F, 337G, 361E, [~~and~~] 361F, and 336N.
12. Enough additional coursework to make a total of 126 semester hours.

Option IV: Space Sciences

This option is designed to provide the necessary foundation for the student who plans a career or further study in space sciences.

6. Chemistry 301 or 301H, and 302 or 302H.
7. Six semester hours in biology, geological sciences, or astronomy; a course may not be used to fulfill this requirement if it cannot be counted toward major requirements in the department that offers it.
8. Physics 301, 101L, 316, 116L, 315, and 115L.
9. Mathematics 408C and 408D or the equivalent, 427J or 427K and 427L, and six additional semester hours of upper-division coursework in mathematics; the following courses are recommended: Mathematics 340L, 361, and 362K. Only courses at the level of calculus and above may be counted toward the total number of hours required for the degree.
10. Physics 329, 336K, 352K, 353L, 355, 362K, 369, and 373, or their equivalents.
11. Either fifteen semester hours of upper-division coursework in aerospace engineering or [~~thirteen~~] twelve hours in aerospace engineering and three additional hours of upper-division coursework in physics.
12. Enough additional coursework to make a total of 126 semester hours.

Option V: Teaching

This option is designed to fulfill the course requirements for certification as a middle grades or secondary school science teacher in Texas; the student chooses composite science certification with physics as the primary teaching field, physical sciences certification, physics/mathematics certification, or mathematics, physical science, and engineering certification. However, completion of the course requirements does not guarantee the student's certification. For information about additional requirements, students should consult the UTeach-Natural Sciences academic adviser.

6. Physics 301, 101L, 316, 116L, 315, and 115L.
7. Mathematics 408C and 408D or the equivalent, 427J or 427K, and 427L.
8. At least eighteen semester hours of upper-division coursework in physics, consisting of Physics 341 (Topic 7: *Research Methods: UTeach*), 353L, 355, and three of the following courses: Physics 329, 333, 336K, 338K, 352K, 373, Science 365 [~~360 (Topic 4: *Physics by Inquiry*)~~]. With the consent of the UTeach-Natural Sciences undergraduate adviser, an upper-division physics course that includes a substantial research component may be substituted for Physics 341.
9. History 329U or Philosophy 329U.
10. The requirements of one of the following certification areas:
 - a. For composite science certification:
 - i. Biology 311C and 311D.
 - ii. Chemistry 301 or 301H and 302 or 302H.
 - iii. Six hours of coursework in geological sciences; courses intended for non-science majors may not be counted toward this requirement.
 - iv. Enough additional approved coursework in biology, chemistry, or geological sciences to provide the required twelve hours in a second field.
 - b. For physical sciences certification:
 - i. Chemistry 301 or 301H, 302 or 302H, 204 or 317, 353, 153K, 154K, 354L, and 455 or 456.

- ii. Three additional hours of upper-division coursework in physics.
- c. For physics/mathematics certification: Mathematics 315C, 325K, 333L, 341 or 340L, 358K, 362K, 360M or 375D.
- d. For mathematics, physical science, and engineering certification:
 - i. Mathematics 315C, 325K, 333L, 358K, and 362K.
 - ii. Chemistry 301 or 301H, 302 or 302H, and 204.
 - iii. Chemical Engineering 379 (Topic: *Fundamentals of Engineering and Design*), 379 (Topic: *Engineering Energy Systems*), and Mechanical Engineering 379M (Topic: *Design of Machines and Systems*).
- 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. Students seeking middle grades certification must complete the following courses: Educational Psychology 363M (Topic 3: *Adolescent Development*), or Psychology 301 and 304; and Curriculum and Instruction 339E.
- 13. Enough additional coursework to make a total of at least 126 semester hours.

Option VI: Physics Honors

- 6. Breadth requirement: Biology 315H and 325H, Chemistry 301H and 302H, and Mathematics 427J or 427K and 427L; at least one of the math courses must be a designated honors section; credit earned by examination may not be counted toward this requirement.
- 7. Mathematics 340L and 361.
- 8. Physics 301, 101L, 316, 116L, 315, and 115L.
- 9. Physics 336K, 352K, 353L, 355, 362K, 362L, 369, 373, and 474.
- 10. A section of Undergraduate Studies 302 or 303 that is approved by the departmental honors adviser.
- 11. A section of Rhetoric and Writing 309S that is restricted to students in the Dean's Scholars Honors Program.
- 12. Physics 379H and a three-semester-hour upper-division research course approved by the departmental honors adviser.
- 13. Ten additional semester hours of coursework approved by the departmental honors adviser.
- 14. Six semester hours of coursework in the College of Liberal Arts or the College of Fine Arts.
- 15. Enough additional coursework to make a total of 120 semester hours.

Option VII: Biophysics

- 6. Chemistry 301 or 301H and 302 or 302H.
- 7. Either Biology 311C, 311D, and 325 or Biology 315H and 325H; Biology 206L.
- 8. Physics 301, 101L, 316, 116L, 315, and 115L.
- 9. Mathematics 408C and 408D or the equivalent, 427J or 427K and 427L, and six additional semester hours of upper-division coursework in mathematics; the following courses are recommended: Mathematics 340L, 361, and 362K.
- 10. Physics 336K, 345, 352K, 353L, 355, 369, and 373 or their equivalents.
- 11. Either Chemistry 320M or 328M, and Biochemistry 369.
- 12. Complete one of the following areas:
 - a. Cell Biology: Biology 320.
 - b. Microbiology: Biology 326R.
 - c. Developmental Biology: Biology 349.
 - d. Neurobiology: Either Neuroscience 365R or Biology 371M.
 - e. Virology: Biology 330.
 - f. Computation: Statistics and Data Sciences 335 and Biology 337J [~~or Statistics and Data Sciences 339 (Topic: *Computational Biology*) or (Topic: *Computational Chemistry*)~~].

A list of recommended biology laboratory courses that complement the lecture courses listed in 12a through 12e are available in the advising center and the dean's office.

13. Enough additional coursework to make a total of 126 semester hours.

Special Requirements
{no changes}