DOCUMENTS OF THE GENERAL FACULTY

PROPOSED CHANGES TO THE CIVIL ENGINEERING DEGREE PROGRAM IN THE COCKRELL SCHOOL OF ENGINEERING CHAPTER IN THE *UNDERGRADUATE CATALOG 2018-2020*

Dean Sharon L. Wood in the Cockrell School of Engineering has filed with the Secretary of the Faculty Council the following proposal to change the Civil Engineering degree program in the Cockrell School of Engineering chapter in the *Undergraduate Catalog, 2018-2020*. The Civil, Architectural, and Environmental Engineering faculty approved the proposal on April 14, 2017; the Degrees and Courses Committee approved it on May 24, 2017; the Dean and the College faculty approved it on September 18, 2017. The Secretary has classified this proposal as legislation of exclusive interest to one college or school.

The Committee on Undergraduate Degree Program Review recommended approval of the proposal on December 5, 2017, and forwarded it 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 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 12, 2017.

Alan W. Friedman

Alan W. Friedman, Secretary of the General Faculty and Faculty Council
The University of Texas at Austin
Arthur J. Thaman and Wilhelmina Doré Thaman Professor of English and Comparative Literature

Distributed through the Faculty Council Wiki site https://wikis.utexas.edu/display/facultycouncil/Wiki+Home on December 6, 2017.

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PROPOSED CHANGES TO THE CIVIL ENGINEERING DEGREE PROGRAM IN THE COCKRELL SCHOOL OF ENGINEERING CHAPTER IN THE *UNDERGRADUATE CATALOG 2018-2020*

TYPE OF CHANGE: ☐ Academic Change
☒ Degree Program Change (THECB form required)

PROPOSED CLASSIFICATION: ☒ Exclusive ☐ General ☐ Major

1. IF THE ANSWER TO ANY OF THE FOLLOWING QUESTIONS IS YES, THE COLLEGE MUST CONSULT LINDA DICKENS, DIRECTOR OF ACCREDITATION AND ASSESSMENT, TO DETERMINE IF SACSCOC APPROVAL IS REQUIRED.

- Is this a new degree program? Yes ☐ No ☒
- Is this program being deleted? Yes ☐ No ☒
- Does the program offer courses that will be taught off campus? Yes ☐ No ☒
- Will courses in this program be delivered electronically? Yes ☐ No ☒

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

- Update to CE 171P to CE 371P Engineering Professionalism to reflect a degree capstone course. CE 371P will have an updated course description of the following: Examines professional engineering licensure, ethics, leadership, public service, and public policy, with an emphasis on multidisciplinary perspectives, legal and business considerations, and the importance of lifelong learning. Includes participation in a culminating major design project in public service, reflecting knowledge from technical electives and base level coursework. Prerequisite: 3 technical electives and all base level courses.
- Removal of Level I & II elective language. Courses now included in technical electives, with CE 371P being required for all students that has a major design component. All previous course labeled as Level I or II are now Technical Electives.
- Removal of Math/Science/Engineering elective requirement. These courses may now satisfy 1 technical elective requirement. These courses do not count towards breadth requirement.
- Three hours added to Technical electives to replace Level II elective requirement. Level II electives will continue to be offered as Technical elective options.
- Update to the eight-semester suggested arrangement of courses in order to remove Level I and Level II elective wording.
- Update to the list of approved Technical electives to include courses previously added to the inventory to include past Level I and Level II electives as well at the Math/Science/Engineering electives list.
- Update to required number of hours for degree from 125 to 124 to reflect removal of Math/Science/Engineering elective requirement and addition of two (2) hours to the Engineering Professionalism course.

3. 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)	

4. SCOPE OF PROPOSED CHANGE:

a. Does this proposal impact other colleges/schools? Yes ☐ No ☒
If yes, then how would you do so?

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 ☐

- Students no longer required to take a Math/Science/Engineering elective. While some students may still choose to take these courses, we anticipate enrollment of Civil Engineering students in the following courses may be reduced: BIO 311D, CH 320M, CH 328M, CH 353, E M 311M, E M 339, GEO 316P, M 427L, M 340L, M 361, M 362K, M 364K, M 372, M 372K, M 374, M E 339, M E 349, M E 374F, PHY 335. We do not anticipate a decrease in enrollment in GEO 303, GEO 401, or BIO 311C since it is still a requirement that Civil Engineering student take one of these courses to fulfill their Science elective requirement.

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? 260
Impacted schools must be contacted and their response(s) included:
Person communicated with: Dr. Janice Fischer – Director of Undergraduate Biology; Dr. Dave Thirumalai – Department of Chemistry Chair; Dr. Noel Clemens – Department of Engineering Mechanics Chair; Dr. Charles Kerans – Department of Geological Sciences Chair; Dr. Thomas Chen – Department of Mathematics Chair; Dr. Richard Neptune – Department of Mechanical Engineering Chair; Dr. Jack Ritchie – Department of Physics
Date of communication: May 18, 2017
Response: No objections received.

e. Does this proposal involve changes to the core curriculum or other basic education requirements (42-hour core, signature courses, flags)? **NO**
If yes, explain:
If yes, Undergraduate Studies must be informed of the proposed changes and their response included:
Person communicated with:
Date of communication:
Response:

f. Will this proposal change the number of hours required for degree completion? **YES**
Note: THECB Semester Credit Hour Change Form required, download from URL:
http://www.thecb.state.tx.us/reports/DocFetch.cfm?DocID=2419&format=doc
If yes, explain: Yes, with the increased number of hours in 171P to 371P and the removal of a Math/Science/Engineering elective the net will decrease by one.

5. COLLEGE/SCHOOL APPROVAL PROCESS

Department approval date:	April 14, 2017	CAEE Faculty & Chair
College approval date:	May 24, 2017	CSE Degrees & Courses Committee
Dean approval date:	September 18, 2017	CSE Faculty; Sharon L. Wood, Dean

PROPOSED NEW CATALOG TEXT:

BACHELOR OF SCIENCE IN CIVIL ENGINEERING

{No changes up to this point}

Curriculum

Course requirements include courses within the Cockrell School of Engineering and other required courses. In addition, each student must complete the University's core curriculum. In some cases, a course required for the Bachelor of Science in Civil Engineering may also be counted toward the core curriculum; these courses are identified below.

In the process of fulfilling engineering degree requirements, students must also complete coursework to satisfy the following flag requirements: one independent inquiry flag, one quantitative reasoning flag, one ethics and leadership flag, one global cultures flag, one cultural diversity in the US flag, and two writing flags. The independent inquiry flag, the quantitative reasoning flag, the ethics and leadership flag and one writing flag are carried by courses specifically required for the degree; these courses are identified below. Students are advised to fulfill the second writing flag requirement with a course that meets another requirement of the core curriculum. Courses that may be used to fulfill flag requirements are identified in the *Course Schedule*.

Requirements		**Hours**
Civil Engineering Courses		
C E 301	Civil Engineering Systems	3
C E 311K	Introduction to Computer Methods	3
C E 311S	Probability and Statistics for Civil Engineers	3
C E 319F	Elementary Mechanics of Fluids	3
C E 321	Transportation Systems^	3
C E 324P	Properties and Behavior of Engineering Materials^	3
C E 329	Structural Analysis^	3
C E 333T	Engineering Communication (writing flag; ethics and leadership flag)	3
C E 341	Introduction to Environmental Engineering^	3
C E 356	Elements of Hydraulic Engineering^	3
C E 357	Geotechnical Engineering^	3
C E [+]371P	Engineering Professionalism (ethics and leadership flag)	[+]3
Architectural Engineering		
ARE 323K	Project Management and Economics^	3
Chemistry		
CH 301	Principles of Chemistry I (part I science and technology)	3
CH 302	Principles of Chemistry II (part I science and technology)	3
Engineering Mechanics		
E M 306	Statics	3
E M 319	Mechanics of Solids	3

^ Base Level course

Mathematics		
M 408C	Differential and Integral Calculus (mathematics; quantitative reasoning flag)	4
M 408D	Sequences, Series, and Multivariable Calculus	4
M 427J	Differential Equations with Linear Algebra (quantitative reasoning flag)	4
or M 427K	Advanced Calculus for Applications I	
Mechanical Engineering		
M E 210	Engineering Design Graphics	2
Physics		
PHY 103M	Laboratory for Physics 303K	1
PHY 103N	Laboratory for Physics 303L	1
PHY 303K	Engineering Physics I (part II science and technology)	3
PHY 303L	Engineering Physics II	3
Other Required Courses		
E M 311M	Dynamics	3
or M E 320	Applied Thermodynamics	
Approved science elective		3
[~~Approved mathematics, science, or engineering science elective~~		~~3~~]
[~~Level I~~] Technical electives (some courses carry an independent inquiry flag)		18[~~15~~]
[~~Level II elective (independent inquiry flag)~~		~~3~~]
Remaining Core Curriculum		
RHE 306	Rhetoric and Writing (English Composition)	3
E 316L	British Literature (humanities; [~~in E 316L, 316M, 316N, and 316P~~] some sections carry a global cultures or cultural diversity flag)	3
or E 316M	American Literature (humanities; some sections carry a global cultures or cultural diversity flag)	
or E 316N	World Literature (humanities; some sections carry a global cultures or cultural diversity flag)	
or E 316P	Masterworks of Literature (humanities; some sections carry a global cultures or cultural diversity flag)	
American and Texas government (some sections carry a cultural diversity flag)		6
American history (some sections carry a cultural diversity flag)		6
Social and behavioral science (some sections carry a global cultures and/or cultural diversity flag)		3
Visual and performing arts (some sections carry a global cultures and/or cultural diversity flag)		3
UGS 302	First-Year Signature Course (in UGS 302 all sections carry writing flag; [~~in UGS 303 some sections carry a writing flag~~])	3
or UGS 303	First-Year Signature Course (in UGS 303 some sections carry a writing flag)	
Total Hours		[~~125~~] 124

[~~Level I and Level II~~] Technical Electives

The civil engineering curriculum does not require the student to declare a specific technical area option. However, for the guidance of students with particular interests, [~~level I~~] technical electives in civil engineering are listed in areas of specialization. The [~~15~~] eighteen semester hours of [~~level I~~] technical electives must be chosen from the following civil engineering and architectural engineering courses; in special cases, with the written permission of the department chair, this requirement may be relaxed, provided the student demonstrates in advance that the courses to be substituted for civil engineering or architectural engineering courses are part of a consistent educational plan. To provide a broad general background, at least one technical elective from each of three different areas of specialization must be included in each student's program.

One, three-hour course, from the approved list of Math/Science/Engineering Electives may be substituted for a technical elective. This course does not count towards the three different area breadth requirements. The current approved list is available in the departmental undergraduate office.

[~~Each student must take at least one technical area option level II elective. Level II electives may be substituted for technical area option level I electives, but the requirement of at least one technical elective from each of three different areas of specialization still applies.~~]

The following lists reflect current course offerings and are subject to change by the faculty. Current lists are available in the departmental undergraduate office.

[~~Level I~~] Technical Electives

Construction Engineering and Project Management

Architectural Engineering 335, Materials and Methods of Building Construction
Architectural Engineering 358, Cost Estimating in Building Construction
Architectural Engineering 366, Contracts, Liability, and Ethics (carries an ethics and leadership flag)
Architectural Engineering 376, Building Information Modeling for Capital Projects

Infrastructure Materials Engineering
Civil Engineering 351, Concrete Materials
Civil Engineering 366K, Design of Bituminous Mixtures

Environmental Engineering
Civil Engineering 342, Water and Wastewater Treatment Engineering
Civil Engineering 346, Solid Waste Engineering and Management
Civil Engineering 364, Design of Wastewater and Water Treatment Facilities (carries an independent inquiry flag)
Civil Engineering 369L, Air Pollution Engineering
Civil Engineering 369R, Indoor Air Quality
Civil Engineering 370K, Environmental Sampling and Analysis

Geotechnical Engineering
Civil Engineering 360K, Foundation Engineering (carries an independent inquiry flag)
Civil Engineering 375, Earth Slopes and Retaining Structures

Structural Engineering
Architectural Engineering 345K, Masonry Engineering
Architectural Engineering 362L, Structural Design in Wood
Civil Engineering 331, Reinforced Concrete Design
Civil Engineering 335, Elements of Steel Design
Civil Engineering 362M, Advanced Reinforced Concrete Design (carries an independent inquiry flag)
Civil Engineering 362N, Advanced Steel Design (carries an independent inquiry flag)
Civil Engineering 363, Advanced Structural Analysis

Transportation Engineering
Civil Engineering 367G, Design and Evaluation of Ground-Based Transportation Systems (carries an independent inquiry flag)
Civil Engineering 367P, Pavement Design and Performance
Civil Engineering 367T, Traffic Engineering *Water Resources Engineering*
Civil Engineering 367R, Optimization Techniques for Transportation Engineers
Civil Engineering 358, Introductory Ocean Engineering
Civil Engineering 365K, Hydraulic Engineering Design (carries an independent inquiry flag)
Civil Engineering 374K, Hydrology
Civil Engineering 374L, Groundwater Hydraulics

~~[Level II Electives (Design)~~
~~[*Environmental Engineering*~~
~~[Civil Engineering 364, Design of Wastewater and Water Treatment Facilities (carries an independent inquiry flag)~~
~~[*Geotechnical Engineering*~~
~~[Civil Engineering 360K, Foundation Engineering (carries an independent inquiry flag)~~
~~[*Structural Engineering*~~
~~[Civil Engineering 362M, Advanced Reinforced Concrete Design (carries an independent inquiry flag)~~
~~[Civil Engineering 362N, Advanced Steel Design (carries an independent inquiry flag)~~
~~[*Transportation Engineering*~~
~~[Civil Engineering 367G, Design and Evaluation of Ground-Based Transportation Systems (carries an independent inquiry flag)~~
~~[*Water Resources Engineering*~~
~~[Civil Engineering 365K, Hydraulic Engineering Design (carries an independent inquiry flag)~~]

SUGGESTED ARRANGEMENT OF COURSES

First Year

First Term	Hours	**Second Term**	Hours
C E 301	3	CH 302	3
CH 301	3	M E 210	2
M 408C	4	M 408D	4
RHE 306	3	PHY 303K	3
UGS 302 or 303	3	PHY 103M	1
		Social and behavioral sciences or visual and performing arts (may be taken in any semester)	3
	16		16

Second Year

First Term	Hours	**Second Term**	Hours
C E 311K	3	C E 311S	3
E M 306	3	E M 319	3
M 427J or 427K	4	C E 319F	3
PHY 303L	3	C E 333T	3
PHY 103N	1	American history	3
American history	3		
	17		15

Third Year

First Term	Hours	**Second Term**	Hours
C E 324P	3	E M 311M or M E 320	3
Base level course	3	Base level course	3
Base level course	3	Base level course	3
Base level course	3	Base level course	3
E 316L, 316M, 316N, or 316P	3	Social and behavioral sciences or visual and performing arts (may be taken in any semester)	3
	15		15

Fourth Year

First Term	Hours	**Second Term**	Hours
[~~Level I~~] Technical elective	3	C E ~~1~~3371P	~~1~~3
[~~Level I~~] Technical elective	3	[~~Level I~~] Technical elective	3
[~~Level I~~] Technical elective	3	[~~Level I~~] Technical elective	3
Approved science elective	3	[~~Level II~~] Technical elective	3
American and Texas government	3	American government	3
		[~~Approved math, science, or engineering science elective~~]	~~3~~
	15		[16] 15

Total credit hours: [~~125~~] 124