APPROVED BY SENATE
02/10/2020

Date Submitted: 01/07/20 10:30 am

Viewing: 10KP0106BS : Civil Engineering, BS

Last approved: 08/12/19 8:32 am

Last edit: 01/22/20 11:15 am

Changes proposed by: Brooke Newell

Catalog Pages Using this Program	Civil Engineering, BS

In Workflow

1. **U Program Review**
2. **1251 Head**
3. **KP Committee Chair**
4. **KP Dean**
5. **University Librarian**
6. **Provost**
7. **Senate EPC**
8. Senate
9. U Senate Conf
10. Board of Trustees
11. IBHE
12. DMI

Approval Path

1. 01/07/20 11:51 am
   Deb Forgacs (dforgacs): Approved for U Program Review
2. 01/13/20 2:49 pm
   Jim LaFave (jlafave): Approved for 1251 Head
3. 01/13/20 3:17 pm
   Michael Hirschi (mch): Approved for KP Committee Chair
4. 01/13/20 3:34 pm
   Candy Deaville (candyd): Approved for KP Dean
5. 01/13/20 4:08 pm
   John Wilkin (jpwilkin):

Approved for University Librarian
6. 01/22/20 10:53 am
Kathy Martensen (kmartens): Approved for Provost

History

1. Dec 13, 2018 by Deb Forgacs (dforgacs)
2. Apr 25, 2019 by Deb Forgacs (dforgacs)
3. Aug 12, 2019 by Deb Forgacs (dforgacs)

Proposal Type

Proposal Type:
Major (ex. Special Education)

This proposal is for a:
Revision

Proposal Title:

if this proposal is one piece of a multi-element change please include the other impacted programs here. *example: A BS revision with multiple concentration revisions*

Gen Ed table revisions, removal of a few science elective courses ~~degree audit update.UG Lists degree audit update.~~

EP Control Number	**EP.20.91**
Official Program Name	Civil Engineering, BS
Effective Catalog Term	Fall 2020
Sponsor College	Grainger College of Engineering

Sponsor Department	Civil and Environmental Engineering
Sponsor Name	
Sponsor Email	
College Contact	College Contact Email

Program Description and Justification

Justification for proposal change:

Updated for Academic Catalog 2020-21

Corresponding Degree	BS Bachelor of Science

Is this program interdisciplinary?

No

Academic Level	Undergraduate
Will you admit to the concentration directly?	
Is a concentration required for graduation?	
CIP Code	140801 - Civil Engineering, General.

Is This a Teacher Certification Program?

No

Will specialized accreditation be sought for this program?

No

Admission Requirements

Desired Admissions Term

Provide a brief narrative description of the admission requirements for this program. Where relevant, include information about licensure requirements, student background checks, GRE and TOEFL scores, and admission requirements for transfer students.

Describe how critical academic functions such as admissions and student advising are managed.

Enrollment

Describe how this revision will impact enrollment and degrees awarded.

None

Estimated Annual Number of Degrees Awarded

Year One Estimate	5th Year Estimate (or when fully implemented)

What is the matriculation term for this program?
Fall

Delivery Method

Is this program available on campus and online? **No**

This program is available:
On Campus

Budget

Are there budgetary implications for this revision? No

Will the program or revision require staffing (faculty, advisors, etc.) beyond what is currently available?
No

Additional Budget Information

Attach File(s)

Resource Implications

Facilities

Will the program require new or additional facilities or significant improvements to already existing facilities?

No

Technology

Will the program need additional technology beyond what is currently available for the unit?

No

Non-Technical Resources

Will the program require additional supplies, services or equipment (non-technical)?

No

Resources

Faculty Resources

Please address the impact on faculty resources including any changes in numbers of faculty, class size, teaching loads, student-faculty ratios, etc. Describe how the unit will support student advising, including job placement and/or admission to advanced studies.

None

Library Resources

Describe your proposal's impact on the University Library's resources, collections, and services. If necessary please consult with the appropriate disciplinary specialist within the University Library.

None

Instructional Resources

Will there be any reduction in other course offerings, programs or concentrations by your department as a result of this new program/proposed change?

No

Does this new program/proposed change result in the replacement of another program?

No

Does the program include other courses/subjects impacted by the creation/revision of this program?

No

Financial Resources

How does the unit intend to financially support this proposal?

Will the unit need to seek campus or other external resources?

No

Attach letters of support

Will an existing tuition rate be used or continue to be used for this program?

Yes

Program Regulation and Assessment

Briefly describe the plan to assess and improve student learning, including the program's learning objectives; when, how, and where these learning objectives will be assessed; what metrics will be used to signify student's achievement of the stated learning objectives; and the process to ensure assessment results are used to improve student learning. (Describe how the program is aligned with or meets licensure, certification, and/or entitlement requirements, if applicable).

Is the career/profession for graduates of this program regulated by the State of Illinois?

No

Program of Study

"Baccalaureate degree requires at least 120 semester credit hours or 180 quarter credit hours and at least 40 semester credit hours (60 quarter credit hours) in upper division courses" (source: https://www.ibhe.org/assets/files/PrivateAdminRules2017.pdf). For proposals for new bachelor's degrees, if this minimum is not explicitly met by specifically-required 300- and/or 400-level courses, please provide information on how the upper-division hours requirement will be satisfied.

All proposals must attach the new or revised version of the Academic Catalog program of study entry. Contact your college office if you have questions.

Revised programs Attach a side-by-side comparison with the existing program AND, if the revision references or adds "chose-from" lists of courses students can select from to fulfill requirements, a listing

of these courses, including the course rubric, number, title, and number of credit hours.

Catalog Page Text

Catalog Page Text: Description of program for the catalog page. This is not official content, it is used to help build the catalog pages for the program. Can be edited in the catalog by the college or department.

Statement for Programs of Study Catalog

Graduation Requirements

Minimum Overall GPA: 2.0

Minimum hours required for graduation: 128 hours
General education: Students must complete the Campus General Education requirements including the campus general education language requirement. One of the SBS courses must be an introductory economics course (ECON 102 or ECON 103).
~~**Overview of Curricular Requirements The curriculum requires 128 hours for graduation and is organized asfollows.Orientation and Professional Development These courses introduce the opportunities and resources your college, department, and curriculum can offer you as you work to achieve your careergoals.They also provide the skills to work effectively and successfully in the engineeringprofession.Foundational Mathematics and Science These courses stress the basic mathematical and scientific principles upon which the engineering discipline isbased.**~~**Orientation and Professional Development**

Course List

Code	Title	Hours
CEE 195	About Civil Engineering	1
CEE 495	Professional Practice	0
ENG 100	Engineering Orientation 1	0
Total Hours		1

Foundational Mathematics and Science

Course List

Code	Title	Hours
CHEM 102	General Chemistry I	3
CHEM 103	General Chemistry Lab I	1
CHEM 104	General Chemistry II	3
CHEM 105	General Chemistry Lab II	1
MATH 221	Calculus I 2	4
MATH 225	Introductory Matrix Theory	2
MATH 231	Calculus II	3
MATH 241	Calculus III	4
MATH 285	Intro Differential Equations	3
PHYS 211	University Physics: Mechanics	4
PHYS 212	University Physics: Elec & Mag	4
PHYS 213	Univ Physics: Thermal Physics	2
Total Hours		34

Civil Engineering Technical Core

Course List

Code	Title	Hours
CEE 201	Systems Engrg & Economics	3
CEE 202	Engineering Risk & Uncertainty	3
CS 101	Intro Computing: Engrg & Sci	3
SE 101	Engineering Graphics & Design	3
TAM 211	Statics	3
TAM 212	Introductory Dynamics	3
TAM 251	Introductory Solid Mechanics	3
TAM 335	Introductory Fluid Mechanics	4
Total Hours		25

Science Elective

Course List

Code	Title	Hours
Science elective, selected in accord with recommendations for the chosen primary field in civil engineering.		3
ATMS 120	Severe and Hazardous Weather	3
CHBE 321	Thermodynamics	4
CHEM 222	Quantitative Analysis Lecture	2
CS 357	Numerical Methods I	3
ECE 205	Electrical and Electronic Circuits	3
GEOL 107	Physical Geology	4
GEOL 118	Natural Disasters	3
ME 200	Thermodynamics	3
STAT 420	Methods of Applied Statistics	3 or 4

Civil Engineering Technical Electives

Students choose primary and secondary fields, of which there are seven traditional areas

~~These courses stress fundamental concepts and basic laboratory techniques that comprise the~~

~~common intellectual understanding~~ of **study and three interdisciplinary programs.** ~~civil engineering.~~ ~~Science Elective This elective allows the student to gain additional depthin science.The course should be selected according to the requirements and recommendations for the selected area of study, which is subject to approval by the faculty Program ReviewCommittee.Civil Engineering Technical Electives This course work is designed to give each student a broad background in the areas of civil engineering through the core courses and to allow each student to develop a focused program through advanced technical electives in chosen primary and secondaryfields.There are seven areas of study whichinclude:Construction Engineering and ManagementConstruction Materials EngineeringEnvironmental EngineeringEnvironmental Hydrology and Hydraulic EngineeringGeotechnical EngineeringStructural EngineeringTransportation Engineering In addition to the areas of study, three interdisciplinary programs can be chosen bystudents.Theyinclude:Sustainable and Resilient Infrastructure SystemsEnergy Water Environment SustainabilitySocietal Risk Management The fundamental principles of civil engineering design and the behavior of civil engineering systems are emphasized throughout the coursework.~~The specific choices of courses in this category are made through the submission **of a Plan** of ~~the Plan of~~ Study, which is subject to approval by the faculty Program Review Committee.

Course List

Code	Title	Hours
Civil engineering technical courses, selected as follows, to at least include:		34
Civil Engineering Core Courses		
The courses that are required and recommended for the primary and secondary fields are listed below. Select at least 5 courses from the following list:		15-16
CEE 300	Behavior of Materials	4
CEE 310	Transportation Engineering	3
CEE 320	Construction Engineering	3
CEE 330	Environmental Engineering	3
CEE 340	Energy and Global Environment	3
CEE 350	Water Resources Engineering	3
CEE 360	Structural Engineering	3
CEE 380	Geotechnical Engineering	3
Primary Field Advanced Technical Electives. Select courses from approved lists for appropriate programs of study within the seven areas or three interdisciplinary programs of civil engineering. Design experience is distributed in 200-level, 300-level, and 400-level CEE courses including integrated design courses. See list below:		12-13
Construction Engineering and Management		
Science Electives Required - NONE		
Science Electives Recommended - See below:		
ATMS 120	Severe and Hazardous Weather	3
ATMS 303	Synoptic-Dynamic Wea Analysis	4
ECE 205	Electrical and Electronic Circuits	3
FIN 221	Corporate Finance	3
GEOL 107	Physical Geology	4
GEOL 118	Natural Disasters	3
GEOL 333	Earth Materials and the Env	4
GEOL 380	Environmental Geology	4
ME 200	Thermodynamics	3

Code	Title	Hours
NPRE 201	Energy Systems	2 or 3
SE 400	Engineering Law	3 or 4
STAT 420	Methods of Applied Statistics	3 or 4
UP 205	Ecology & Environmental Sustainability	3
Civil Engineering Core Courses:		
CEE 300	Behavior of Materials	4
CEE 320	Construction Engineering	3
CEE 360	Structural Engineering	3
CEE 380	Geotechnical Engineering	3
Civil Engineering Core Courses Recommended- None		
Advanced Technical Courses - Required:		
CEE 420	Construction Productivity	3 or 4
CEE 421	Construction Planning (Required Integrated Design Course)	3 or 4
CEE 422	Construction Cost Analysis	3 or 4
CEE 461	Reinforced Concrete I	3
Advanced Technical Courses - Recommended:		
CEE 401	Concrete Materials	4
CEE 424	Sustainable Const Methods	4
CEE 460	Steel Structures I	3
CEE 469	Wood Structures	3 or 4
CEE 480	Foundation Engineering	3
Construction Materials Engineering		
Science Electives Required - None		
Science Electives Recommended:		
GEOL 107	Physical Geology	4
ME 430	Failure of Engrg Materials	3 or 4
MSE 201	**Phases and Phase Relations**	**3**
TAM 427	Mechanics of Polymers	3
TAM 428	Mechanics of Composites	3
Civil Engineering Core Courses Required:		
CEE 300	Behavior of Materials	4
CEE 310	Transportation Engineering	3
Civil Engineering Core Courses Recommended:		
CEE 360	Structural Engineering	3
CEE 380	Geotechnical Engineering	3
Advanced Technical Courses Required:		
CEE 401	Concrete Materials (Required Integrated Design Course)	4

Code	Title	Hours
CEE 405	Asphalt Materials I	3 or 4
Advanced Technical Courses Recommended:		
CEE 406	Pavement Design I	3 or 4
CEE 460	Steel Structures I	3
CEE 461	Reinforced Concrete I	3
CEE 469	Wood Structures	3 or 4
CEE 483	Soil Mechanics and Behavior	4
MSE 401	Thermodynamics of Materials	3
MSE 402	Kinetic Processes in Materials	3
MSE 406	Thermal-Mech Behavior of Matls	3
~~MSE 440~~	~~Mechanical Behavior of Metals~~	~~3~~
~~MSE 445~~	~~Corrosion of Metals~~	~~3 or 4~~
MSE 420	Ceramic Materials & Properties	3
MSE 450	Polymer Science & Engineering	3 or 4
Environmental Engineering		
Science Electives Required - None		
Science Electives Recommended:		
CHEM 222	Quantitative Analysis Lecture	2
CHEM 232	Elementary Organic Chemistry I	3 or 4
CS 357	Numerical Methods I	3
GEOL 107	Physical Geology	4
MCB 300	Microbiology	3
ME 200	Thermodynamics	3
MSE 401	Thermodynamics of Materials	3
STAT 420	Methods of Applied Statistics	3 or 4
Civil Engineering Core Courses Required:		
CEE 330	Environmental Engineering	3
Civil Engineering Core Courses Recommended:		
CEE 350	Water Resources Engineering	3
CEE 380	Geotechnical Engineering	3
Advanced Technical Courses Required - At least one of:		
CEE 437	Water Quality Engineering	3
CEE 440	Fate Cleanup Environ Pollutant	4
CEE 445	Air Quality Modeling	4
CEE 446	Air Quality Engineering	4
Advanced Technical Course Recommended:		
CEE 430	Ecological Quality Engineering	2
CEE 434	Environmental Systems I	3

Code	Title	Hours
CEE 438	Science & Environmental Policy	3
CEE 442	Environmental Engineering Principles, Physical	4
CEE 443	Env Eng Principles, Chemical	4
CEE 444	Env Eng Principles, Biological	4
CEE 445	Air Quality Modeling	4
CEE 447	Atmospheric Chemistry	4
CEE 449	Environmental Engineering Lab (Required Integrated Design Course)	3
CEE 452	Hydraulic Analysis and Design	3
CEE 453	Urban Hydrology and Hydraulics	4
CEE 457	Groundwater	3
Geotechnical Engineering		
Science Electives Required:		
GEOL 107	Physical Geology	4
Science Electives Recommended:		
~~GEOL 333~~	~~Earth Materials and the Env~~	~~4~~
GEOL 333	Earth Materials and the Env	4
GEOL 380	Environmental Geology	4
GEOL 401	Geomorphology	4
GEOL 411	Structural Geol and Tectonics	4
GEOL 440	Sedimentology and Stratigraphy	4
GEOL 470	Introduction to Hydrogeology	4
Civil Engineering Core Courses Required:		
CEE 360	Structural Engineering	3
CEE 380	Geotechnical Engineering	3
Civil Engineering Core Courses Recommended:		
CEE 300	Behavior of Materials	4
CEE 310	Transportation Engineering	3
CEE 320	Construction Engineering	3
CEE 330	Environmental Engineering	3
CEE 350	Water Resources Engineering	3
Advanced Technical Courses Required:		
CEE 483	Soil Mechanics and Behavior	4
CEE 484	Applied Soil Mechanics (Required Integrated Design Course)	3 or 4
Advanced Technical Courses Recommended:		
CEE 457	Groundwater	3
CEE 460	Steel Structures I	3
CEE 461	Reinforced Concrete I	3
CEE 463	Reinforced Concrete II	3 or 4
Structural Engineering		
Science Electives Required - None		
Science Electives Recommended:		
CS 357	Numerical Methods I	3
ECE 205	Electrical and Electronic Circuits	3

Code	Title	Hours
GEOL 107	Physical Geology	4
GEOL 118	Natural Disasters	3
ME 200	Thermodynamics	3
Civil Engineering Core Courses:		
CEE 300	Behavior of Materials	4
CEE 360	Structural Engineering	3
CEE 380	Geotechnical Engineering	3
Civil Engineering Core Courses Recommended:		
CEE 320	Construction Engineering	3
Advanced Technical Courses Required:		
CEE 460	Steel Structures I	3
CEE 461	Reinforced Concrete I	3
CEE 465	Design of Structural Systems (Required Integrated Design Course)	3
CEE 470	Structural Analysis	4
Advanced Technical Courses Recommended - None		
Transportation Engineering		
Science Electives Required - None		
Science Electives Recommended:		
CS 357	Numerical Methods I	3
ECE 205	Electrical and Electronic Circuits	3
GEOL 107	Physical Geology	4
ME 200	Thermodynamics	3
ME 340	Dynamics of Mechanical Systems	3.5
MSE 401	Thermodynamics of Materials	3
SE 320	Control Systems	4
STAT 420	Methods of Applied Statistics	3 or 4
Civil Engineering Core Courses Required:		
CEE 300	Behavior of Materials	4
CEE 310	Transportation Engineering	3
Civil Engineering Core Courses Recommended:		
CEE 320	Construction Engineering	3
CEE 330	Environmental Engineering	3
CEE 350	Water Resources Engineering	3
CEE 360	Structural Engineering	3
CEE 380	Geotechnical Engineering	3
Advanced Technical Courses: You must select one course from each of the three Areas below and one course from the recommended list.		
Area 1 - Facilities		
CEE 405	Asphalt Materials I	3 or 4
CEE 406	Pavement Design I	3 or 4
CEE 407	Airport Design	3 or 4

Code	Title	Hours
Area 2 - Systems:		
CEE 407	Airport Design	3 or 4
CEE 415	Geometric Design of Roads (Required Integrated Design Course)	4
CEE 416	Traffic Capacity Analysis	3 or 4
CEE 418	Public Transportation Systems	3 or 4
Area 3 - Railroad:		
CEE 408	Railroad Transportation Engrg	3 or 4
CEE 409	Railroad Track Engineering	3 or 4
CEE 410	Railway Signaling & Control	3 or 4
CEE 411	RR Project Design & Constr	3 or 4
Recommended:		
CEE 401	Concrete Materials	4
CEE 405	Asphalt Materials I	3 or 4
CEE 406	Pavement Design I	3 or 4
CEE 407	Airport Design	3 or 4
CEE 408	Railroad Transportation Engrg	3 or 4
CEE 409	Railroad Track Engineering	3 or 4
CEE 410	Railway Signaling & Control	3 or 4
CEE 411	RR Project Design & Constr	3 or 4
CEE 412	High-Speed Rail Engineering	3 or 4
CEE 415	Geometric Design of Roads	4
CEE 416	Traffic Capacity Analysis	3 or 4
CEE 417	Urban Transportation Planning	4
CEE 418	Public Transportation Systems	3 or 4
~~CEE 498~~	~~Special Topics (Section HRP)~~	~~1 to 4~~
~~CEE 498~~	~~Special Topics (Section HRM)~~	~~1 to 4~~

Water Resources Engineering and Science

Science Electives Required - None

Code	Title	Hours
Science Electives Recommended:		
CS 357	Numerical Methods I	3
GEOL 107	Physical Geology	4
ME 200	Thermodynamics	3
Civil Engineering Core Courses Required:		
CEE 350	Water Resources Engineering	3
Civil Engineering Core Courses Recommended:		
CEE 300	Behavior of Materials	4
CEE 320	Construction Engineering	3
CEE 330	Environmental Engineering	3
CEE 360	Structural Engineering	3
CEE 380	Geotechnical Engineering	3
Advanced Technical Courses Required (Choose one):		
CEE 452	Hydraulic Analysis and Design	3
CEE 453	Urban Hydrology and Hydraulics (Required Integrated Design Course)	4
Advanced Technical Courses Recommended:		
CEE 432	Stream Ecology	3 or 4
CEE 433	Water Technology and Policy	3 or 4
CEE 434	Environmental Systems I	3
CEE 437	Water Quality Engineering	3
CEE 450	Surface Hydrology	3
CEE 451	Environmental Fluid Mechanics	3
CEE 452	Hydraulic Analysis and Design	3
CEE 453	Urban Hydrology and Hydraulics	4
CEE 457	Groundwater	3
CEE 458	Water Resources Field Methods	4
CEE 498	Special Topics (Section EH)	1 to 4
Energy-Water-Environment Sustainability		
Science Electives Required:		
ME 200	Thermodynamics	3-4
or CHBE 321	Thermodynamics	
Science Electives Recommended - None		
Civil Engineering Core Courses Required:		
CEE 340	Energy and Global Environment	3
Civil Engineering Core Courses Recommended:		
CEE 330	Environmental Engineering	3
CEE 350	Water Resources Engineering	3
Advanced Technical Courses Required:		
CEE 493	Sustainable Design Eng Tech (Must also select 3 courses from recommended list below)	4
Advanced Technical Courses Recommended:		
ABE 436	Renewable Energy Systems	3 or 4

Code	Title	Hours
ARCH 441	Heat and Moisture in Buildings	3
CEE 424	Sustainable Const Methods	4
CEE 433	Water Technology and Policy	3 or 4
CEE 434	Environmental Systems I	3
CEE 437	Water Quality Engineering	3
CEE 446	Air Quality Engineering	4
CEE 449	Environmental Engineering Lab	3
CEE 450	Surface Hydrology	3
CEE 452	Hydraulic Analysis and Design	3
CEE 453	Urban Hydrology and Hydraulics	4
CEE 457	Groundwater	3
CEE 498	Special Topics (Section EH)	1 to 4
ENG 471	Seminar Energy & Sustain Engrg	1
ME 400	Energy Conversion Systems	3 or 4
NPRE 402	Nuclear Power Engineering	3 or 4
NPRE 475	Wind Power Systems	3 or 4
Societal Risk and Hazard Mitigation		
Science Electives Required - None		
Science Electives Recommended:		
FIN 230	Introduction to Insurance	3
GEOL 118	Natural Disasters	3
LAW 301	Introduction to Law	2 or 3
NRES 287	Environment and Society	3
STAT 420	Methods of Applied Statistics	3 or 4
Civil Engineering Core Courses Required:		
CEE 340	Energy and Global Environment	3
Civil Engineering Core Courses Recommended:		
CEE 300	Behavior of Materials	4
CEE 310	Transportation Engineering	3
CEE 320	Construction Engineering	3
CEE 330	Environmental Engineering	3
CEE 350	Water Resources Engineering	3
CEE 360	Structural Engineering	3
CEE 380	Geotechnical Engineering	3
Advanced Technical Courses Required:		
CEE 491	Decision and Risk Analysis (and select 3 from the recommended list below)	3 or 4
Advanced Technical Courses Recommended:		

Code	Title	Hours
CEE 406	Pavement Design I	3 or 4
CEE 416	Traffic Capacity Analysis	3 or 4
CEE 417	Urban Transportation Planning	4
CEE 437	Water Quality Engineering	3
CEE 440	Fate Cleanup Environ Pollutant	4
CEE 449	Environmental Engineering Lab	3
CEE 460	Steel Structures I	3
CEE 461	Reinforced Concrete I	3
CEE 465	Design of Structural Systems	3
CEE 472	Structural Dynamics I	3 or 4
CEE 498	Special Topics (Section WE)	1 to 4
IE 410	Advanced Topics in Stochastic Processes & Applications	3 or 4
NPRE 442	Radioactive Waste Management	3
SE 450	Decision Analysis I	3 or 4
STAT 425	Applied Regression and Design	3 or 4
STAT 429	Time Series Analysis	3 or 4
STAT 430	Topics in Applied Statistics	3 or 4
UP 438	Disasters and Urban Planning	4
Sustainable and Resilient Infrastructure Systems		
Science Electives Required - None		
Science Electives Recommended:		
ATMS 120	Severe and Hazardous Weather	3
CS 357	Numerical Methods I	3
ENSU 300	Environmental Sustainability	3
ESE 140	Climate and Global Change	3
ESE 320	Water Planet, Water Crisis	3
ESE 482	Challenges of Sustainability	3
FIN 221	Corporate Finance	3
GEOG 103	Earth's Physical Systems	4
NPRE 201	Energy Systems	2 or 3
NRES 439	Env and Sustainable Dev	3
SE 320	Control Systems	4
STAT 420	Methods of Applied Statistics	3 or 4
UP 406	Urban Ecology	4
Civil Engineering Core Courses Required:		

Code	Title	Hours
CEE 340	Energy and Global Environment	3
Civil Engineering Core Courses Recommended:		
CEE 300	Behavior of Materials	4
CEE 310	Transportation Engineering	3
CEE 320	Construction Engineering	3
CEE 330	Environmental Engineering	3
CEE 350	Water Resources Engineering	3
CEE 380	Geotechnical Engineering	3
Advanced Technical Courses Required:		
CEE 491	Decision and Risk Analysis (And select 3 courses from the recommended list below)	3 or 4
Advanced Technical Courses Recommended:		
ABE 436	Renewable Energy Systems	3 or 4
CEE 401	Concrete Materials	4
CEE 406	Pavement Design I	3 or 4
CEE 408	Railroad Transportation Engrg	3 or 4
CEE 409	Railroad Track Engineering	3 or 4
CEE 416	Traffic Capacity Analysis	3 or 4
CEE 417	Urban Transportation Planning	4
CEE 418	Public Transportation Systems	3 or 4
CEE 421	Construction Planning	3 or 4
CEE 424	Sustainable Const Methods	4
CEE 434	Environmental Systems I	3
CEE 453	Urban Hydrology and Hydraulics	4
CEE 458	Water Resources Field Methods	4
CEE 465	Design of Structural Systems	3
CEE 493	Sustainable Design Eng Tech	4
CEE 498	Special Topics (Section PS)	1 to 4
MSE 489	Matl Select for Sustainability	3 or 4
UP 466	Energy & the Built Environment	4
UP 480	Sustainable Design Principles	2
General Civil Engineering		
Science Electives Required - Choose one course from recommended list below:		
Science Electives Recommended:		
GEOL 107	**Physical Geology**	**4**
CHEM 222	Quantitative Analysis Lecture	2

Code	Title	Hours
CHEM 232	Elementary Organic Chemistry I	3 or 4
~~ME 200~~	~~Thermodynamics~~	~~3~~
ME 200	Thermodynamics	3
STAT 400	Statistics and Probability I	4
Civil Engineering Core Courses Required - Should take 7 courses from list below:		
CEE 300	Behavior of Materials	4
CEE 310	Transportation Engineering	3
CEE 320	Construction Engineering	3
CEE 330	Environmental Engineering	3
CEE 340	Energy and Global Environment	3
CEE 350	Water Resources Engineering	3
CEE 360	Structural Engineering	3
CEE 380	Geotechnical Engineering	3
Advanced Technical Courses Required - Option I: Pick no more than one course from each area below such that the sum of the core and advanced courses is at least 34 credit hours. Option II: Pick 2 courses from one area and no more than one course from each of the remaining areas to total 34 credit hours.		
Construction:		
CEE 420	Construction Productivity	3 or 4
CEE 421	Construction Planning	3 or 4
CEE 422	Construction Cost Analysis	3 or 4
Environmental:		
CEE 437	Water Quality Engineering	3
CEE 440	Fate Cleanup Environ Pollutant	4
CEE 446	Air Quality Engineering	4
Geotechnical:		
CEE 480	Foundation Engineering	3
CEE 483	Soil Mechanics and Behavior	4
Materials:		
CEE 401	Concrete Materials	4
Structures:		
CEE 460	Steel Structures I	3
CEE 461	Reinforced Concrete I	3
Transportation:		
CEE 405	Asphalt Materials I	3 or 4
CEE 406	Pavement Design I	3 or 4
CEE 407	Airport Design	3 or 4

Code	Title	Hours
CEE 408	Railroad Transportation Engrg	3 or 4
CEE 409	Railroad Track Engineering	3 or 4
CEE 410	Railway Signaling & Control	3 or 4
CEE 411	RR Project Design & Constr	3 or 4
~~CEE 412~~	~~High-Speed Rail Engineering~~	~~3 or 4~~
CEE 412	High-Speed Rail Engineering	3 or 4
CEE 415	Geometric Design of Roads	4
CEE 416	Traffic Capacity Analysis	3 or 4
CEE 417	Urban Transportation Planning	4
CEE 418	Public Transportation Systems	3 or 4
Water Resources:		
CEE 452	Hydraulic Analysis and Design	3
CEE 453	Urban Hydrology and Hydraulics	4
Secondary Field Advanced Technical Electives. Select courses from approved lists to complement the primary area and add breadth to the program of study. See list below:		6
Construction Engineering and Management		
Civil Engineering Core Courses Required:		
CEE 320	Construction Engineering	3
Advanced Technical Courses Required:		
CEE 421	Construction Planning	3 or 4
CEE 420	Construction Productivity	3-4
or CEE 422	Construction Cost Analysis	
Advanced Technical Courses Recommended:		
CEE 424	Sustainable Const Methods	4
Construction Materials Engineering		
Civil Engineering Core Courses Required:		
CEE 300	Behavior of Materials	4
Advanced Technical Courses Required - Pick 2 courses from the recommended list below:		
Advanced Technical Courses Recommended:		
CEE 401	Concrete Materials	4
CEE 405	Asphalt Materials I	3 or 4
~~MSE 406~~	~~Thermal-Mech Behavior of Matls~~	~~3~~
CEE 406	Pavement Design I	3 or 4
Environmental Engineering		

Code	Title	Hours
Civil Engineering Core Courses Required:		
CEE 330	Environmental Engineering	3
Advanced Technical Courses Required - Choose 2 courses from the recommended list below:		
CEE 430	Ecological Quality Engineering	2
CEE 434	Environmental Systems I	3
CEE 437	Water Quality Engineering	3
CEE 438	Science & Environmental Policy	3
CEE 445	Air Quality Modeling	4
CEE 442	Environmental Engineering Principles, Physical	4
CEE 443	Env Eng Principles, Chemical	4
CEE 444	Env Eng Principles, Biological	4
CEE 446	Air Quality Engineering	4
CEE 447	Atmospheric Chemistry	4
CEE 449	Environmental Engineering Lab	3
Geotechnical Engineering		
Civil Engineering Core Courses Required:		
CEE 380	Geotechnical Engineering	3
Advanced Technical Courses Required:		
CEE 480	Foundation Engineering	3-4
or CEE 484	Applied Soil Mechanics	
CEE 483	Soil Mechanics and Behavior	4
~~CEE 484~~	~~Applied Soil Mechanics~~	~~3 or 4~~
Advanced Technical Courses Recommended - NONE		
Structural Engineering		
Civil Engineering Core Courses Required:		
CEE 360	Structural Engineering	3
Advanced Technical Courses Required:		
CEE 460	Steel Structures I	3
CEE 461	Reinforced Concrete I	3
Transportation Engineering		
Civil Engineering Core Courses Required:		
CEE 310	Transportation Engineering	3
Advanced Technical Courses Required: Select 2 courses, each from a different Area		
Area 1 - Facilities:		
CEE 405	Asphalt Materials I	3 or 4
CEE 406	Pavement Design I	3 or 4
CEE 407	Airport Design	3 or 4
Area 2 - Systems:		
CEE 407	Airport Design	3 or 4
CEE 415	Geometric Design of Roads	4

Code	Title	Hours
CEE 416	Traffic Capacity Analysis	3 or 4
CEE 418	Public Transportation Systems	3 or 4
Area 3 - Railroad:		
CEE 408	Railroad Transportation Engrg	3 or 4
CEE 409	Railroad Track Engineering	3 or 4
CEE 410	Railway Signaling & Control	3 or 4
CEE 411	RR Project Design & Constr	3 or 4
~~CEE 412~~	~~High-Speed Rail Engineering~~	~~3 or 4~~
Water Resources Engineering and Science		
Civil Engineering Core Courses Required:		
CEE 350	Water Resources Engineering	3
Advanced Technical Courses Required: 2 courses from the recommended list below:		
Advanced Technical Courses Recommended:		
CEE 432	Stream Ecology	3 or 4
CEE 433	Water Technology and Policy	3 or 4
CEE 450	Surface Hydrology	3
CEE 451	Environmental Fluid Mechanics	3
CEE 452	Hydraulic Analysis and Design	3
CEE 453	Urban Hydrology and Hydraulics	4
CEE 457	Groundwater	3
CEE 458	Water Resources Field Methods	4
CEE 498	Special Topics (Section EH)	1 to 4
Energy-Water-Environment Sustainability		
Civil Engineering Core Courses Required:		
CEE 340	Energy and Global Environment	3
Advanced Technical Courses Required:		
CEE 493	Sustainable Design Eng Tech (and select one course from the recommended list below:)	4
Advanced Technical Courses Recommended:		
ABE 436	Renewable Energy Systems	3 or 4
ARCH 441	Heat and Moisture in Buildings	3
CEE 424	Sustainable Const Methods	4
CEE 433	Water Technology and Policy	3 or 4
CEE 434	Environmental Systems I	3

Code	Title	Hours
CEE 437	Water Quality Engineering	3
CEE 446	Air Quality Engineering	4
CEE 449	Environmental Engineering Lab	3
CEE 450	Surface Hydrology	3
CEE 452	Hydraulic Analysis and Design	3
CEE 453	Urban Hydrology and Hydraulics	4
CEE 457	Groundwater	3
CEE 498	Special Topics (Section EH)	1 to 4
ENG 471	Seminar Energy & Sustain Engrg	1
ME 400	Energy Conversion Systems	3 or 4
NPRE 402	Nuclear Power Engineering	3 or 4
NPRE 475	Wind Power Systems	3 or 4

Societal Risk and Hazard Mitigation

Civil Engineering Core Courses Required - None

Advanced Technical Courses Required:

CEE 491	Decision and Risk Analysis (and select one from the recommended list below:)	3 or 4

Advanced Technical Courses Recommended:

CEE 406	Pavement Design I	3 or 4
CEE 416	Traffic Capacity Analysis	3 or 4
CEE 417	Urban Transportation Planning	4
CEE 437	Water Quality Engineering	3
CEE 440	Fate Cleanup Environ Pollutant	4
CEE 449	Environmental Engineering Lab	3
CEE 460	Steel Structures I	3
CEE 461	Reinforced Concrete I	3
CEE 465	Design of Structural Systems	3
CEE 472	Structural Dynamics I	3 or 4
CEE 498	Special Topics (Section EW)	1 to 4
IE 410	Advanced Topics in Stochastic Processes & Applications	3 or 4
NPRE 442	Radioactive Waste Management	3
SE 450	Decision Analysis I	3 or 4
STAT 425	Applied Regression and Design	3 or 4
STAT 429	Time Series Analysis	3 or 4

Code	Title	Hours
STAT 430	Topics in Applied Statistics	3 or 4
UP 438	Disasters and Urban Planning	4
Sustainable and Resilient Infrastructure Systems		
Civil Engineering Core Courses Required:		
CEE 340	Energy and Global Environment	3
Civil Engineering Core Courses Recommended:		
CEE 300	Behavior of Materials	4
CEE 310	Transportation Engineering	3
CEE 320	Construction Engineering	3
CEE 330	Environmental Engineering	3
CEE 350	Water Resources Engineering	3
CEE 380	Geotechnical Engineering	3
Advanced Technical Courses Required:		
CEE 491	Decision and Risk Analysis (And select one course from the recommended list below:)	3 or 4
Advanced Technical Courses Recommended:		
ABE 436	Renewable Energy Systems	3 or 4
CEE 401	Concrete Materials	4
CEE 406	**Pavement Design I**	**3 or 4**
CEE 408	Railroad Transportation Engrg	3 or 4
CEE 409	Railroad Track Engineering	3 or 4
CEE 416	Traffic Capacity Analysis	3 or 4
CEE 417	Urban Transportation Planning	4
CEE 418	Public Transportation Systems	3 or 4
CEE 421	Construction Planning	3 or 4
CEE 424	Sustainable Const Methods	4
CEE 434	Environmental Systems I	3
CEE 453	Urban Hydrology and Hydraulics	4
CEE 458	Water Resources Field Methods	4
CEE 465	Design of Structural Systems	3
CEE 493	Sustainable Design Eng Tech	4
CEE 498	Special Topics (Section PS)	1 to 4
MSE 489	Matl Select for Sustainability	3 or 4
UP 466	Energy & the Built Environment	4
UP 480	Sustainable Design Principles	2
Global Context		

Code	Title	Hours
Science Electives Recommended:		
CPSC 116	The Global Food Production Web	3
ESE 140	Climate and Global Change	3
ESE 320	Water Planet, Water Crisis	3
ESE 482	Challenges of Sustainability	3
Civil Engineering Core Courses Recommended:		
CEE 330	Environmental Engineering	3
or CEE 350	Water Resources Engineering	
CEE 340	Energy and Global Environment	3
Advanced Technical Courses Recommended: Must take at least 3 credit hours in each of the 2 areas below:		
Knowledge and Skills Needed to Effectively Address Global Issues:		
ACE 451	Agriculture in Intl Dev	3 to 4
ATMS 421	Earth Systems Modeling	4
CEE 438	Science & Environmental Policy	3
CEE 445	Air Quality Modeling	4
CEE 447	Atmospheric Chemistry	4
CEE 450	Surface Hydrology	3
ECON 420	International Economics	2 to 4
Global CEE Design:		
CEE 408	Railroad Transportation Engrg	3 or 4
CEE 417	Urban Transportation Planning	4
CEE 437	Water Quality Engineering	3
CEE 449	Environmental Engineering Lab	3
CEE 465	Design of Structural Systems	3
CEE Multidisciplinary		
Science Electives Recommended: Any recommended science electives from existing CEE Primary and Secondary listed above		
Civil Engineering Core Courses Recommended: Core courses relevant to the student's interests		
Advanced Technical Courses: Students work with CEE Academic Advisors		
Atmosphere Science (Primary Field: Environmental Engineering)		
Civil Engineering Core Courses Required:		
CEE 330	Environmental Engineering	3
Advanced Technical Courses Recommended:		
ATMS 302	Atmospheric Dynamics I	3
ATMS 410	Radar Remote Sensing	4
ATMS 411	Satellite Remote Sensing	4
ATMS 421	Earth Systems Modeling	4
CEE 445	**Air Quality Modeling**	**4**
CEE 447	Atmospheric Chemistry	4
Chemistry (Primary Field: Environmental Engineering)		
Civil Engineering Core Courses Required:		
CEE 330	Environmental Engineering	3
Advanced Technical Courses Recommended:		

Code	Title	Hours
CHEM 232	Elementary Organic Chemistry I	3 or 4
CHEM 315	Instrumental Chem Systems Lab	2
CHEM 332	Elementary Organic Chem II	4
CHEM 420	Instrumental Characterization	2
CHEM 440	Physical Chemistry Principles	4
Chemical Engineering (Primary Field: Environmental Engineering)		
Civil Engineering Core Courses Required:		
CEE 330	Environmental Engineering	3
CEE 350	Water Resources Engineering	3
Advanced Technical Courses Recommended:		
CHBE 321	Thermodynamics	4
CHBE 421	Momentum and Heat Transfer	4
CHBE 422	Mass Transfer Operations	4
CHBE 424	Chemical Reaction Engineering	3
Microbiology (Primary Field: Environmental Engineering)		
Civil Engineering Core Courses Required:		
CEE 330	Environmental Engineering	3
Advanced Technical Courses Recommended:		
MCB 301	Experimental Microbiology	3
MCB 431	Microbial Physiology	3
MCB 450	Introductory Biochemistry	3
CEE 444	Env Eng Principles, Biological	4
Toxicology (Primary Field: Environmental Engineering)		
Civil Engineering Core Courses Required:		
CEE 330	Environmental Engineering	3
Advanced Technical Courses Recommended:		
CHEM 332	Elementary Organic Chem II	4
ENVS 431	Environ Toxicology & Health	3
ENVS 480	Basic Toxicology	3
MCB 450	Introductory Biochemistry	3

Electives

Course List		
Code	Title	Hours
The Grainger College of Engineering Liberal Education course list, or additional courses from the campus General Education lists for Social and Behavioral Sciences or Humanities and the Arts 3		**6**
Free electives. Additional unrestricted course work, subject to certain exceptions as noted by the College, so that there are at least 128 credit hours earned toward the degree. 4		**6**
Total Hours of Curriculum to Graduate		**128**

1

2 MATH 220 *may be substituted, with four of the five credit hours applying toward the degree.* MATH 220 *is appropriate for students with no background in calculus.*

3The Grainger College of Engineering approved liberal education course list can be found

here. Note that these credit hours could carry the required cultural studies designation required for campus general education requirements.

4The Grainger College of Engineering restrictions to free electives can be found here.

~~General Education Requirements~~

~~Course List~~

~~Code~~	~~Title~~	~~Hours~~
~~A minimum of six courses is required, as follows:~~		~~18~~
~~ECON 102~~	~~Microeconomic Principles~~	~~3~~
~~or ECON 103~~	~~Macroeconomic Principles~~	
~~Social and Behavioral Sciences~~		~~3~~
~~Humanities & the Arts~~		~~6~~
~~The Grainger College of Engineering Liberal Education course list, or from the campus General Education lists for Social and Behavioral Sciences or Humanities and the Arts~~		~~6~~
~~Cultural Studies: Non-Western Cultures (1 course)~~		
~~Cultural Studies: U.S. Minorities Cultures (1 course)~~		
~~Cultural Studies: Western/Comparative Cultures (1 course)~~		

~~Non-Primary Language Requirement~~

~~Course List~~

~~Code~~	~~Title~~	~~Hours~~
~~Completion of the third semester or equivalent of a non-primary language is required. Completion of three years of a single language in high school satisfies this requirement.~~		~~0-9~~

~~University Composition These courses teach fundamentals of expository writing.~~

~~Course List~~

~~Code~~	~~Title~~	~~Hours~~
~~Choose one:~~		
~~RHET 105~~	~~Writing and Research~~	
~~CMN 111 & CMN 112~~	~~Oral & Written Comm I and Oral & Written Comm II~~	
~~ESL 111 & ESL 112~~	~~Intro to Academic Writing I and Intro to Academic Writing II~~	
~~ESL 115~~	~~Principles of Academic Writing~~	
~~BTW 261~~	~~Principles Tech Comm~~	~~3~~

~~Free Electives~~

~~Course List~~

~~Code~~	~~Title~~	~~Hours~~
~~Free Electives~~		
~~Free electives. Additional unrestricted course work, subject to certain exceptions as noted by the College, so that there are at least 128 credit hours earned toward the degree.~~		~~6~~
~~Total Hours of Curriculum to Graduate~~		~~128~~

EP Documentation

Attach
Rollback/Approval
Notices

DMI Documentation

Attach Final
Approval Notices

Banner/Codebook
Name
BS:Civil Engineering -UIUC

Program Code: 10KP0106BS

Minor Code	Conc Code	Degree Code	BS Major Code
0106			

Senate Approval
Date

Senate
Conference
Approval Date

BOT Approval
Date

IBHE Approval
Date

Effective Date:

Attached
Document

Justification for
this request

Program Reviewer
Comments
Becky Stillwell (rborden) (01/08/20 3:15 pm): Looks good!

Key: 113

Proposal	Degree	Footnote 1
EP.20.91	BS in Civil Engineering	External transfer students take ENG 300 instead
EP.20.92	BS in Computer Engineering	External transfer students take ENG 300 instead
EP.20.93	BSAG in Agricultural and Biological Engineering	In addition to the Biological and Natural Sciences Elective hours required for Agricultural and Biological Engineering (6 hours), a further 4 hours of biological sciences must be completed to make up a total of 10 hours.
EP.20.94	BS in Agricultural and Biological Engineering	External transfer students take ENG 300 instead
EP.20.95	BS in Agricultural and Biological Engineering: Agricultural Engineering	The extra hour of credit for this course may be used to help meet free elective requirements
EP.20.96	BS in Agricultural and Biological Engineering: Biological Engineering	May be taken for 4 credit hours; the extra hour may be used to help meet free elective requirements
EP.20.97	BS in Computer Science	External transfer students take ENG 300 instead
EP.20.98	BS in Electrical Engineering	External transfer students take ENG 300 instead
EP.20.99	BS in Engineering Mechanics	External transfer students take ENG 300 instead
EP.20.100	BS in Engineering Physics	External transfer students take ENG 300 instead
EP.20.101	BS in Systems Engineering & Design	External transfer students take ENG 300 instead
EP.20.102	BS in Nuclear, Plasma and Radiological Engineering	External transfer students take ENG 300 instead
EP.20.103	BS in Mechanical Engineering	External transfer students take ENG 300 instead
EP.20.104	BS in Materials Science & Engineering	External transfer students take ENG 300 instead
EP.20.105	BS in Industrial Engineering	External transfer students take ENG 300 instead