Date Submitted: 01/14/22 11:34 am

Viewing: BS-CE : Bachelor of Science in Civil Engineering

Last approved: 03/25/21 6:50 pm

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Changes proposed by: bstephe5

Catalog Pages
Using this Program

[Bachelor of Science in Civil Engineering](#)

Program Status	Active
Requestor	Name Brent Stephens E-mail bstephe5@iit.edu
Origination Date	2022-1-14 ~~2021-2-1~~
Is this an interdisciplinary program?	No
Academic Unit	Civil Archl Environ Engrg
College	Armour College of Engineering
Program Title	Bachelor of Science in Civil Engineering
Effective Academic Year	2022 ~~2021~~ - 2023 ~~2022~~ Effective Term Fall 2022
Academic Level	Undergraduate
Program Type	Degree
Degree Type	Bachelor of Science (BS)
CIP Code	

In Workflow

1. CAEE Chair
2. Academic Affairs
3. Undergraduate Academic Affairs
4. AC Dean
5. Undergraduate Studies Committee Chair
6. Faculty Council Chair
7. Academic Affairs

Approval Path

1. 01/14/22 11:38 am Brent Stephens (bstephe5): Approved for CAEE Chair
2. 01/14/22 12:20 pm Patty Johnson Winston (winston): Approved for Academic Affairs
3. 01/14/22 12:59 pm Joseph Gorzkowski (jgorzkow): Approved for Undergraduate Academic Affairs
4. 01/14/22 12:59 pm Kenneth Christensen (kchristensen1): Approved for AC Dean

History

1. Oct 18, 2017 by clmig-jwehrheim

2. Nov 8, 2017 by
   Sarah Pariseau
   (sparisea)
3. Apr 27, 2018 by
   Sarah Pariseau
   (sparisea)
4. Mar 25, 2021 by
   Brent Stephens
   (bstephe5)

14.0801 - Civil Engineering, General.

Is there more than one Academic Unit proposer?

No

Program Code   BS-CE

Program Attribute

Total Program   131
Credit Hours

Please provide a
summary and
rationale for the
requested program
revision.

adding ENVE 401 requirement to better meet industry and licensure needs ~~Changing CAE 221 requirement to accommodate a new course and add flexibility; it is required to meet our ABET requirement for an "additional science elective".Adding CAE 496 FE Exam review requirement (0 hours).Changing a footnote to encourage more CAE/ENVE technical electives instead of EG courses (more engineering-focused) and another footnote with language around the FE exam registration requirement.Minor changes to acceptable specialization electives as well.~~

Program Narrative and Justification

Narrative description of how the institution determined the need for the program. For example, describe what need this program will address and how the institution became aware of that need. If the program is replacing a current program(s), identify the current program(s) that is being replaced by the new program(s) and provide details describing the benefits of the new program(s). If the program will be offered in connection with, or in response to, an initative by a governmental entity, provide details of that initiative.

Narrative description of how the program was designed to meet local market needs, or for an online program, regional or national market needs. For example, indicate if Bureau of Labor Statistics data or State labor data systems information was used, and/or if State, regional, or local workforce agencies were consulted. Include how the course content, program length, academic level, admission requirements, and prerequisites were decided; including information received from potential employers about course content; and information regarding the target students and employers.

Narrative description of any wage analysis the institution may have performed, including any consideration of Bureau of Labor Statistics wage data related to the new program.

Narrative description of how the program was reviewed or approved by, or developed in conjunction with, one or more of the following: a) business advisory committees; b) program integrity boards; c) public or private oversight or regulatory agencies (not including the state licensing/authorization agency and accrediting agency); and d) businesses that would likely employ graduates of the program. For example, describe the steps taken to develop the program, identify when and with whom discussions were held, provide relevant details of any proposals or correspondence generated, and/or describe any process used to evaluate the program.

What are the enrollment estimates?

Year 1   Year 2   Year 3

Attach Additional
Program
Justification
Document(s)

Academic Information

Advising

Since quality advising is a key component of good retention, graduation, and career placement, how will students be mentored? What student professional organizations will be formed? How will the department work with the Career Services office to develop industry connections?

Program Resources

Which program
resources are
necessary to offer
this program?

Admission
Requirements

Course Requirements

Required Courses

Civil Engineering Requirements		(48)
CAE 100	Intro to Engg Drawing & Design	2
CAE 101	Intro to AutoCAD Draw Design	2
CAE 105	Geodetic Science	3
CAE 110	Professional Practice I	1
CAE 111	Professional Practice II	1
CAE 302	Fluid Mechanics and Hydraulics	3
CAE 303	Structural Design I	3
CAE 304	Structural Analysis I	3
CAE 307	Structural Design II	3
CAE 312	Engineering Systems Analysis	3
CAE 315	Materials of Construction	3
CAE 323	Intro to Geotechnical Engineer	3
CAE 419	Intro Transportation Engg/Dsgn	3
CAE 431	Steel Design	3
CAE 432	Concrete and Foundation Design	3
CAE 457	Geotechnical Foundation Dsgn	3
CAE 470	Constrctn Methods&Cost Estmg	3
CAE 496	FE Exam Prep [1]	0
ENVE 401	Introduction to Water Resource	3
CAE Technical Electives		(9)
~~Select 12 credit hours. [2]~~		~~12~~
Select 9 credit hours [2]		9
CAE Additional Science Requirement		(3)
ENVE 201	Earth Environ Sci [3]	3
or CAE 221	Engineering Geology	
or BIOL 105	Introduction to Biology	
or PHYS 360	Introduction to Astrophysics	
Mathematics Requirements		(18)
MATH 151	Calculus I	5
MATH 152	Calculus II	5
MATH 251	Multivariate & Vector Calculus	4
MATH 252	Introduction to Diff Equations	4

Physics Requirements		(8)
PHYS 123	General Physics I: Mechanics	4
PHYS 221	Gen Physics II: Elect&Magntism	4
Capstone Design Requirement		(3)
CAE 495	Capstone Senior Design	3
Chemistry Requirement		(4)
CHEM 124	Princ of Chemistry I with Lab	4
Computer Science Requirement		(2)
CS 104	Intro to Comp Prgrm for Engrs	2
or CS 105	Intro to Computer Programming	
Engineering Course Requirements		(9)
CAE 286	Theory&Concpt of Struct Mechcs	3
CAE 287	Mechanics Structural Materials	3
MMAE 305	Dynamics	3
Interprofessional Projects (IPRO)		(6)
See Illinois Tech Core Curriculum, section E		6
Humanities and Social Science Requirements		(21)
See Illinois Tech Core Curriculum, sections B and C		21
Total Credit Hours		131

1

All civil engineering students are required to register for the Fundamentals of Engineering (FE) examination during their senior year. The examination is offered by the National Council of Examiners for Engineering and Surveying (NCEES) throughout the year.

2

All technical electives must be CAE, ENVE, or EG courses at the 400-level or above. A maximum of one EG course can be used as a CAEE technical elective.

3

Students are encouraged to take ENVE 201 but other listed additional science electives are acceptable with advisor approval.

Sample Curriculum/Program Requirements

Bachelor of Science in Civil Engineering Curriculum

			Year 1
Semester 1	Credit Hours	Semester 2	Credit Hours
CAE 100	2	CAE 101	2
CAE 110	1	CAE 111	1
CAE 105	3	MATH 152	5
MATH 151	5	CS 104 or 105	2
CHEM 124	4	PHYS 123	4
Humanities 200-level Course	3	Social Sciences Elective	3
	18		17

			Year 2
Semester 1	Credit Hours	Semester 2	Credit Hours
MATH 251	4	MATH 252	4
CAE 286	3	CAE 287	3
ENVE 201, CAE 221, BIOL 105, or PHYS 360[1]	3	CAE 312	3
PHYS 221	4	MMAE 305	3
Humanities or Social Sciences Elective	3	Humanities Elective (300+)	3
	17		16

			Year 3
Semester 1	Credit Hours	Semester 2	Credit Hours
CAE 302	3	CAE 307	3
CAE 303	3	CAE 323	3
CAE 304	3	~~CAEE Technical Elective[2]~~	~~3~~
CAE 315	3	ENVE 401	3
IPRO Elective I	3	IPRO Elective II	3
		Social Sciences Elective (300+)	3
	15		15

			Year 4
Semester 1	Credit Hours	Semester 2	Credit Hours
CAE 419	3	CAE 432	3
CAE 431	3	CAE 495	3
CAE 457	3	CAE 496	0
CAE 470	3	CAEE Technical Elective[2]	3
CAEE Technical Elective[2]	3	CAEE Technical Elective[2]	3
Humanities Elective (300+)	3	Social Sciences Elective (300+)	3
	18		15

Total Credit Hours: 131

[1]
Students are encouraged to take ENVE 201 but other listed additional science electives are acceptable with advisor approval.

[2]
All technical electives must be CAE, ENVE, or EG courses at the 400-level or above. A maximum of one EG course can be used as a CAEE technical elective.

This program is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (ABET).

All civil engineering students are required to register for the Fundamentals of Engineering (FE) examination during their senior year. The examination is offered by the National Council of Examiners for Engineering and Surveying (NCEES) throughout the year.

Specialization Requirements

Professional Specializations in Civil Engineering

Students who select an area of specialization must take a minimum of nine credit hours from the following technical electives listed under the respective area of specialization.

Three additional credit hours may be any 400-level CAE course taken with prior approval of the student's adviser and chair.

Environmental ~~Civil-Environmental~~ Engineering

Select a minimum of three courses from the following:		9
~~CAE 401~~	~~Hydraulics, Hydrology, & Appl~~	~~3~~
~~ENVE 401~~	~~Introduction to Water Resource~~	~~3~~
CAE 439	Intro Geographic Info Syst	3
ENVE 402	Introduction to Environmental	3
ENVE 403	Occup Environ Health Safety	3
ENVE 404	Water & Wastewater Engineering	3
ENVE 463	Intro Air Pollution Control	3
Total Credit Hours		9

Construction Engineering and Management

CAE 471	Construction Plan & Scheduling	3
CAE 472	Construction Site Operation	3
CAE 473	Construction Contract Admin	3
Total Credit Hours		9

Geotechnical Engineering

CAE 401	Hydraulics, Hydrology, & Appl	3
CAE 415	Pavement Design	4
CAE 486	Soil Site Improvement	3
Total Credit Hours		10

Structural Engineering

CAE 411	Structural Analysis II	3
Select a minimum of two courses from the following:		6
CAE 408	Bridge Structural Design	3
CAE 410	Intro to Wind/Earthquake Engg	3
CAE 435	Experimental Anlys Structures	3
CAE 436	Dsgn Masonry/Timber Structures	3
CAE 437	Homeland Security Concerns	3
	Other 400- or 500-level courses may be used towards the specialization with the prior approval of the student's adviser.	3
Total Credit Hours		9

Transportation Engineering

Select a minimum of three courses from the following:		9
~~CAE 412~~	~~Traffic Engrg Studies Design~~	~~3~~
~~CAE 415~~	~~Pavement Design~~	~~4~~

CAE 416	Faclty Dsgn Trnsprtn Syst	3
CAE 417	Railroad Engineering & Design	3
~~CAE 430~~	~~Probability Cncpt Ce Dsgn~~	~~3~~
CAE 437	Homeland Security Concerns	3
CAE 439	Intro Geographic Info Syst	3
Total Credit Hours		9

Program Outcomes and Assessment Process

What are the learning goals for this program?

In what semesters will the data be collected to assess this learning goal, and by whom?

Provide the name of the rubric that will be used to assess the extent to which students are achieving this learning goal.

How often and by whom will the data be analyzed? What benchmarks or targets will be used to interpret your results?

Briefly describe the process that will be used to share the results with faculty and use these to motivate program improvement.

Attach Additional
Assessment
Document(s)

Undergraduate Program Requirements

Undergraduate Degree Requirements

Minimum credit   131
hours

Specialization
required?
  Optional

Notes about
specialization
requirement

Minor required?
  No

Proposed General Curriculum

Degree credit hours   131
required

Specialization   9
credit hour
requirement

List Major Course
Requirements

List Mathematics
Requirements

List Science
Requirements

List Computer
Science
Requirements

List Humanities and
Social Sciences
Requirements

List Interprofessional Project (IPRO) Requirements

List Technical Elective Course Options

List Free Elective Credit Hours (if applicable)

Semester-by-semester plan of study for the degree program

Specialization

Report to Faculty Council

Reviewer Comments

Key: 9