

Program Change Request

Date Submitted: 01/17/25 2:04 pm

Viewing: BS-ARCE : Bachelor of Science in Architectural Engineering

Last approved: 05/07/24 1:34 pm

Last edit: 01/17/25 2:04 pm

Changes proposed by: bstephe5

Catalog Pages
Using this Program
[Bachelor of Science in Architectural Engineering](#)

Program Status	Active		
Requestor	Name	Brent Stephens	E-mail
	bstephe5@iit.edu		
Origination Date	<u>2025-1-17</u> 2024-1-30		
Is this an interdisciplinary program?	No		
Academic Unit	Civil Archl Environ Engrg		
College	Armour College of Engineering		
Program Title	Bachelor of Science in Architectural Engineering		
Effective Academic Year	<u>2025</u> 2024 - <u>2026</u>	Effective Term	Fall 2025
Academic Level	Undergraduate		

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. 01/17/25 2:04 pm
Brent Stephens (bstephe5): Approved for CAEE Chair
2. 01/24/25 2:35 pm
Ayesha Qamer (aqamer): Approved for Academic Affairs
3. 02/05/25 11:38 am
Joseph Gorzkowski (jgorzkow): Approved for Undergraduate Academic Affairs
4. 02/05/25 2:36 pm
Hamid Arastoopour (arastoopour): Approved for AC Dean

History

1. Oct 18, 2017 by clmig-jwehrheim
2. Oct 18, 2017 by clmig-jwehrheim

3. Oct 18, 2017 by
clmig-jwehrheim
4. Nov 3, 2017 by
Sarah Pariseau
(sparisea)
5. Apr 27, 2018 by
Sarah Pariseau
(sparisea)
6. Mar 16, 2021 by
Brent Stephens
(bstephe5)
7. Mar 15, 2023 by
Brent Stephens
(bstephe5)
8. May 7, 2024 by
Brent Stephens
(bstephe5)

If all courses in a subject in your department are required, please enter each subject followed by the number ranges in the "Quick Add" field in the pop up box when you click the green plus button below. For example: ARCH 100-499.

What courses will
factor the major
GPA?

Program Type Degree

Degree Type Bachelor of Science (BS)

CIP Code
14.0401 - Architectural Engineering.

Is there more than one Academic Unit proposer?

No

Program Code BS-ARCE

Program Attribute

Total Program 130
Credit Hours

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

Updated elective possibilities, updated structures specialization to allow 3 of 4 courses to give more flexibility, and removed fire protection and life safety specialization since we haven't

offered those courses in several years

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 initiative 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.

Admission Entry Details

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?

Proposed Catalog Entry

Admission
Requirements

Course Requirements

Required Courses

Architectural Engineering Requirements		(50)
CAE 100	Introduction to Engineering Drawing and Design	2
CAE 101	Introduction to AutoCAD Drawing and Design	2
CAE 105	Surveying	2
CAE 110	Professional Practice I	1
CAE 111	Professional Practice II	1
CAE 208	Thermodynamics	3
or MMAE 320	Thermodynamics	
CAE 302	Fluid Mechanics	3
or CAE 209	Fluid Mechanics and Heat Transfer	
or MMAE 313	Fluid Mechanics	
CAE 303	Steel Structures I	3
CAE 304	Structural Analysis I	3
CAE 307	Concrete Structures I	3

CAE 315	Materials of Construction	3
CAE 331	Building Science	3
CAE 383	Electrical and Electronic Circuits	3
CAE 461	Plumbing and Fire Protection Design	3
CAE 464	HVAC Systems Design	3
CAE 466	Building Electrical/Lighting Systems Design ¹	3
or CAE 323	Introduction to Geotechnical Engineering	
CAE 468	Architectural Design	3
CAE 470	Construction Methods and Cost Estimating	3
CAE 471	Construction Planning and Scheduling	3
CAE 496	Fundamentals of Engineering Preparation	0
Capstone Design Requirement		(3)
CAE 495	Capstone Senior Design	3
CAE Technical Electives		(9)
Select nine credit hours ²		9
Mathematics Requirements		(21)
CAE 312	Engineering Systems Analysis	3
MATH 151	Calculus I	5
MATH 152	Calculus II	5
MATH 251	Multivariate and Vector Calculus	4
MATH 252	Introduction to Differential Equations	4
Physics Requirements		(8)
PHYS 123	General Physics I: Mechanics	4
PHYS 221	General Physics II: Electricity and Magnetism	4
Chemistry Requirement		(4)
CHEM 124	Principles of Chemistry I with Laboratory	4
Computer Science Requirement		(2)
CS 104	Introduction to Computer Programming for Engineers	2
or CS 105	Introduction to Computer Programming	
Engineering Course Requirements		(6)
CAE 286	Theory and Concept of Structural Mechanics	3
CAE 287	Mechanics of Structural Materials	3
Humanities Requirements		(3)

AAH 119	History of World Architecture I	3
or AAH 120	History of World Architecture II	
Interprofessional Projects (IPRO)		(6)
See Illinois Tech Core Curriculum, section E		6
Humanities and Social Sciences Requirements		(18)
See Illinois Tech Core Curriculum, sections B and C		18
Total Credit Hours		130

1

Students who intend to take electives in structural engineering should take CAE 323 (CAE 466 can still be taken as a technical elective if desired).

2

All technical electives must be CAE, ENVE, or EMGT courses at the 400-level or above. Students are limited to only one EMGT elective course.

All architectural 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.

Sample
Curriculum/Program
Requirements

Bachelor of Science in Architectural 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	2	CS 104 or 105	2
CHEM 124	4	PHYS 123	4
MATH 151	5	MATH 152	5
Humanities 200-level Course	3	Humanities or Social Sciences Elective	3
	17		17
			Year 2
Semester 1	Credit Hours	Semester 2	Credit Hours
CAE 208 or MMAE 320	3	CAE 287	3
CAE 286	3	CAE 302 , 209 , or MMAE 313	3
PHYS 221	4	CAE 312	3
MATH 251	4	MATH 252	4
AAH 119	3	Humanities or Social Sciences Elective	3

17

16

Year 3

Semester 1

Credit
Hours

Semester 2

Credit
Hours[CAE 304](#)

3

[CAE 303](#)

3

[CAE 315](#)

3

[CAE 307](#)

3

[CAE 331](#)

3

[CAE 464](#)

3

[CAE 383](#)

3

[CAE 466](#) or [323](#)¹

3

IPRO Elective I

3

IPRO Elective II

3

Humanities or Social Sciences Elective

3

15

18

Year 4

Semester 1

Credit
Hours

Semester 2

Credit
Hours[CAE 461](#)

3

[CAE 471](#)

3

[CAE 468](#)

3

[CAE 495](#)

3

[CAE 470](#)

3

[CAE 496](#)

0

CAEE Technical Elective²

3

CAEE Technical Elective²

3

Humanities or Social Sciences Elective

3

CAEE Technical Elective²

3

Humanities or Social Sciences Elective

3

15

15

Total Credit Hours: 130

¹

Students who intend to take electives in structural engineering should take CAE 323 (CAE 466 can still be taken as a technical elective if desired).

²

All technical electives must be CAE, ENVE, or EMGT courses at the 400-level or above. Students are limited to only one EMGT elective course.

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

All architectural 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 Architectural 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. Other 400- or 500-level courses may be used towards a specialization with the prior approval of the student's adviser.

Building SYSTEMS ENGINEERING

Select a minimum of nine credit hours from the following courses:

9

CAE 405	Applications of Computational Fluid Dynamics in Engineering	3
CAE 438	Control of Building Environmental Systems	3
CAE 453	Measurement and Instrumentation in Architectural Engineering	3
CAE 454	Building Commissioning	3
CAE 462	Introduction to Sustainable Building Design	3
CAE 463	Building Enclosure Design	3
CAE 465	Energy Conservation in Buildings	3
CAE 466	Building Electrical/Lighting Systems Design	3
CAE 467	Lighting Systems Design	3

Construction and Engineering Management

Select a minimum of nine credit hours from the following courses: 9

CAE 472	Construction Site Operation	3
CAE 473	Construction Contract Administration	3
CAE 474	Introduction to Building Information Modeling	3
EMGT 470	<u>Project Management</u>	<u>3</u>

Structural Engineering

Select a minimum of nine credit hours from the following courses: 9

CAE 411	Structural Analysis II	3
CAE 431	Steel Structures II	3
CAE 432	Concrete Structures II	3
CAE 436	Design of Masonry and Timber Structures	3

Program Outcomes and Assessment Process

What are your learning objectives in this program? Please list each learning objective in the boxes below:

Note: These should be the same as described in your assessment plan at the bottom of this form.

Upload your
assessment plan
here:

Undergraduate Program Requirements

What courses will
factor the major
GPA?

Undergraduate Degree Requirements

Minimum credit 130
hours

Specialization
required?
Optional

Notes about
specialization
requirement

Minor required?
No

Proposed General Curriculum

Degree credit hours 130
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