

CONSTRUCTION ENGINEERING

The curriculum in Construction Engineering, leading to a Bachelor of Science degree can be referenced here: www.catalog.iastate.edu/collegeofengineering/constructionengineering/#curriculumtext (<https://catalog.iastate.edu/previouscatalogs/2025-2026/collegeofengineering/constructionengineering/#curriculumtext>). The Construction Engineering Program is accredited by the Engineering Accreditation Commission of ABET, <https://www.abet.org> (<https://www.abet.org/>), under the commission's General Criteria and Program Criteria for Construction and Similarly Named Engineering Programs.

Student Learning Outcomes

Graduates of the construction engineering curriculum should have at the time of graduation:

1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
3. An ability to communicate effectively with a range of audiences.
4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
5. An ability to function effectively on a team whose members together provide leadership, create a collaborative environment, establish goals, plan tasks, and meet objectives.
6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Program Educational Objectives:

By three to five years after graduation, graduates of the civil, construction, and environmental engineering programs will have

1. Pursued successful careers and expertise in civil engineering, construction engineering, environmental engineering, or a related profession that includes professionalism and increasing responsibility.

2. Collaborated effectively on multi-disciplinary teams to address the needs of society and the environment
3. Pursued lifelong learning, professional development, and licensure as appropriate for their career goals and for developments in the field.

Qualified construction engineering students within 30 credits of completing their degree may apply for concurrent enrollment in the Graduate College. See Civil Engineering (<http://www.ccee.iastate.edu/academics/graduate/>) Graduate Study for more information.

Curriculum in Construction Engineering

Administered by the Department of Civil, Construction and Environmental Engineering; leading to the degree bachelor of science.

Construction Engineering students will initially be considered construction undecided option when starting the degree and are encouraged to choose an option in Construction Engineering before their 5th semester. If not, option courses taken by the student will not be applied until the student chooses an option. Students must pick an option prior to graduation. The four options in the program are building, electrical, infrastructure, and mechanical. The Core courses for each option are the same whereas the option selections of the degree audit will be comprised of different classes that explore the particular focus the students have chosen.

Total credits required: Building Option -128.0, Electrical Option - 127.0, Infrastructure Option - 127.0, Mechanical Option - 127.0 cr.

The Construction Engineering program requires a grade of a C or better for any transfer credit course that is applied to the degree program (but will not be calculated into the ISU cumulative GPA, Basic Program GPA or Core GPA). Note: Department does not allow Pass/Not Pass credits to be used to meet graduation requirements for either required or elective courses.

International Perspectives: 3 cr. ¹

U.S. Cultures and Communities: 3 cr. ¹

Communication Proficiency/Library requirements:

ENGL 1500	Critical Thinking and Communication (Must have a C or better in this course)	3
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ENGL 2500	Written, Oral, Visual, and Electronic Composition (Must have a C or better in this course)	3
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LIB 1600	Introduction to College Level Research	1
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Business Communication Elective: one course of the following with a minimum grade of C.		3
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ENGL 3020	Business Communication
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ENGL 3090	Proposal and Report Writing
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ENGL 3140	Technical Communication
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Total Credits

10

Social Sciences and Humanities: 12 cr.

Social Sciences and Humanities ²	6
International Perspectives ¹	3
U.S. Cultures and Communities ¹	3
Total Credits	12

Basic Program: 24 cr. ³

Minimum GPA of 2.00 required for this set of courses to graduate, (please note that transfer course grades will not be calculated into the Basic Program GPA).³

CHEM 1670	General Chemistry for Engineering Students	4
or CHEM 1770	General Chemistry I	
ENGL 1500	Critical Thinking and Communication (Must have a C or better in this course)	3
ENGR 1010	Engineering Orientation	R
CE 1600	Engineering Problems with Computational Laboratory ³	3
LIB 1600	Introduction to College Level Research	1
MATH 1650	Calculus I	4
MATH 1660	Calculus II	4
PHYS 2310	Introduction to Classical Physics I	4
PHYS 2310L	Introduction to Classical Physics I Laboratory	1
Total Credits		24

Math and Physical Science: 12 cr.

STAT 3050	Engineering Statistics	3
or STAT 2310	Probability and Statistical Inference for Engineers	
MATH 2670	Elementary Differential Equations and Laplace Transforms	4
PHYS 2320	Introduction to Classical Physics II	4
PHYS 2320L	Introduction to Classical Physics II Laboratory	1
Total Credits		12

Construction Engineering Core: 27 cr. Minimum 2.00 GPA for this set of courses to graduate (please note that transfer course grades will not be calculated into the Core GPA):

CONE 2410	Construction Materials and Methods	3
CE 2740	Engineering Statics	3
CE 3320	Structural Analysis I	3
EM 3240	Mechanics of Materials	3
CONE 4220	Construction Cost Estimating and Cost Engineering	3
CONE 4410	Construction Planning, Scheduling, and Control	3
ABE 3780	Mechanics of Fluids	3
CONE 4870	Construction Engineering Design I	3

CONE 4880	Construction Engineering Design II	3
Total Credits		27

Select remaining courses from one of the following options:**Building Option 27 cr:**

CE 3600	Geotechnical Engineering	4
CONE 3220	Construction Equipment and Heavy Construction Methods	3
CONE 3400	Concrete and Steel Construction	3
CE 3330	Structural Steel Design I	3
CE 3340	Reinforced Concrete Design I	3
CE 3830	Design of Portland Cement Concrete	1
CONE 3520	Mechanical Systems in Buildings	3
CONE 3530	Electrical Systems in Buildings	3
EM 3270	Mechanics of Materials Laboratory	1
Engineering Topics Elective ²		3
Total Credits		27

Electrical Option 26 cr:

EE 2010	Electric Circuits	4
EE 2300	Electronic Circuits and Systems	4
EE 3030	Energy Systems and Power Electronics	3
CONE 3520	Mechanical Systems in Buildings	3
CONE 3530	Electrical Systems in Buildings	3
EE 4560	Power System Analysis I	3
EE 4570	Power System Analysis II	3
Engineering Topics Elective ²		3
Total Credits		26

Infrastructure Option 26 cr:

CE 3600	Geotechnical Engineering	4
CONE 3220	Construction Equipment and Heavy Construction Methods	3
CONE 3400	Concrete and Steel Construction	3
CE 3330	Structural Steel Design I	3
CE 3340	Reinforced Concrete Design I	3
CE 3820	Design of Concretes	3
EM 3270	Mechanics of Materials Laboratory	1
Engineering Topics Elective ²		6
Total Credits		26

Mechanical Option 26 cr:

ME 2310	Engineering Thermodynamics I	3
ME 4360	Heat Transfer	4
CONE 3520	Mechanical Systems in Buildings	3
CONE 3530	Electrical Systems in Buildings	3

EE 4420	Introduction to Circuits and Instruments	2
EE 4480	Introduction to AC Circuits and Motors	2
ME 4410	Fundamentals of Heating, Ventilating, and Air Conditioning	3
ME 4420	Heating and Air Conditioning Design	3
Engineering Topics Elective ²		3
Total Credits		26

Additional Required Courses: 26 cr.

CONE 1210	Cornerstone Learning Community: Orientation to Academic Life	1
CONE 1220	Cornerstone Learning Community: Orientation to Professional Life	1
CONE 2220	Contractor Organization and Management of Construction	3
CONE 2510	Mechanical/Electrical Materials and Methods	1
CE 1110	Geomatics	3
CE 1700	Graphics for Civil Engineering	2
IE 3050	Engineering Economic Analysis	3
ENGL 2500	Written, Oral, Visual, and Electronic Composition (Must have a C or better in this course)	3
Law Elective		3
CONE 3800	Engineering Law	
ACCT 2150	Legal Environment of Business	
Business Communication Elective (minimum grade of C)		3
ENGL 3020	Business Communication	
ENGL 3090	Proposal and Report Writing	
ENGL 3140	Technical Communication	
Complete one course from Math or Stat Elective ²		3
Total Credits		26

Co-op/Internships - Optional

- These university requirements will add to the minimum credits of the program unless the university-approved courses are also approved by the department to meet other course requirements within the degree program. U.S. Cultures and Communities and International Perspectives courses may not be taken Pass/Not Pass.
- Choose from department approved list (<https://www.ccee.iastate.edu/undergraduate-programs/construction-engineering/construction-engineering-forms-and-information-by-cohort/>).
- See Basic Program for Engineering Curricula (<https://catalog.iastate.edu/previouscatalogs/2025-2026/collegeofengineering/#basicprogramcurriculertext>) for accepted substitutions for curriculum designated courses in the Basic Program

<https://www.engineering.iastate.edu/classification/students/basic-program/>.

See also: A 4-year plan of study grid showing course template by semester for a building option in Construction Engineering. (<https://catalog.iastate.edu/previouscatalogs/2025-2026/collegeofengineering/constructionengineering/#fouryearplanbuildingoptiontext>)

See also: A 4-year plan of study grid showing course template by semester for an electrical option in Construction Engineering. (<https://catalog.iastate.edu/previouscatalogs/2025-2026/collegeofengineering/constructionengineering/#fouryearplanelectricaloptiontext>)

See also: A 4-year plan of study grid showing course template by semester for a infrastructure option in Construction Engineering. (<https://catalog.iastate.edu/previouscatalogs/2025-2026/collegeofengineering/constructionengineering/#fouryearplaninfrastructureoptiontext>)

See also: A 4-year plan of study grid showing course template by semester for a mechanical option in Construction Engineering. (<https://catalog.iastate.edu/previouscatalogs/2025-2026/collegeofengineering/constructionengineering/#fouryearplanmechanicaloptiontext>)

Construction Engineering, B.S. Building option

First Year

Fall	Credits Spring	Credits
CONE 1210	1 CONE 1220	1
CE 1600	3 CE 1700	2
MATH 1650	4 MATH 1660	4
CHEM 1670	4 ENGL 2500	3
ENGL 1500	3 PHYS 2310	4
ENGR 1010	R PHYS 2310L	1
	LIB 1600	1
	15	16

Second Year

Fall	Credits Spring	Credits
CONE 2220	3 CONE 2410	3
CE 1110	3 CONE 2510	1
PHYS 2320	4 MATH 2670	4
PHYS 2320L	1 CE 2740	3
SSH Elective	3 IE 3050	3
MATH or STAT Elective	3	
	17	14

Third Year

Fall	Credits Spring	Credits
CONE 3220	3 CONE 3400	3
CONE 3520	3 CE 3600	4

CONE 3530	3 CE 3320	3	STAT 2310 or 3050	3 ABE 3780	3
STAT 2310 or 3050	3 ABE 3780	3	EM 3240	3 ECON 1010 or 1020	3
EM 3240	3 EM 3270	1	EE 2010	4 Law Elective (CONE 3800 or ACCT 2150)	3
ECON 1010 or 1020	3 Law Elective (CONE 3800 or ACCT 2150)	3			
				16	16

Fourth Year			Fourth Year		
Fall	Credits	Spring	Fall	Credits	Spring
CONE 4220	3	CONE 4870	CONE 4220	3	CONE 4870
CONE 4410	3	CONE 4880	CONE 4410	3	CONE 4880
CE 3830	1	CE 3340	EE 4560	3	EE 4570
CE 3330	3	International Perspective	CE 3320	3	Business Comm Elective (ENGL 3020 or 3090 or 3140)
Engr Topics Elective	3	Business Comm Elective (ENGL 3020 or 3090 or 3140)	Engineering Topics Elective	3	International Perspective
US Cultures and Communities	3		US Cultures and Communities	3	
	16	15		18	15

Construction Engineering, B.S. Electrical option

First Year			First Year		
Fall	Credits	Spring	Fall	Credits	Spring
CONE 1210	1	CONE 1220	CONE 1210	1	CONE 1220
CE 1600	3	CE 1700	CE 1600	3	CE 1700
MATH 1650	4	MATH 1660	MATH 1650	4	MATH 1660
CHEM 1670	4	ENGL 2500	CHEM 1670	4	ENGL 2500
ENGL 1500	3	PHYS 2310	ENGL 1500	3	PHYS 2310
ENGR 1010	1	R PHYS 2310L	ENGR 1010	1	R PHYS 2310L
	1	LIB 1600		1	LIB 1600
	15	16		15	16

Second Year			Second Year		
Fall	Credits	Spring	Fall	Credits	Spring
CONE 2220	3	CONE 2410	CONE 2220	3	CONE 2410
CE 1110	3	CONE 2510	CE 1110	3	CONE 2510
PHYS 2320	4	MATH 2670	PHYS 2320	4	MATH 2670
PHYS 2320L	1	CE 2740	PHYS 2320L	1	CE 2740
SSH Elective	3	IE 3050	SSH Elective	3	IE 3050
MATH or STAT Elective	3		MATH or STAT Elective	3	
	17	14		17	14

Third Year			Third Year		
Fall	Credits	Spring	Fall	Credits	Spring
CONE 3520	3	EE 2300	CONE 3220	3	CONE 3400
CONE 3530	3	EE 3030	STAT 2310 or 3050	3	CE 3320
			EM 3240	3	CE 3600

ABE 3780	3 CE 3820	3
ECON 1010 or 1020	3 EM 3270	1
Law Elective (CONE 3800 or ACCT 2150)	3 US Cultures and Communities	3
18		17

Fourth Year

Fall	Credits Spring	Credits
CONE 4410	3 CONE 4870	3
CONE 4220	3 CONE 4880	3
CE 3330	3 CE 3340	3
Engineering Topics Elective	3 Engineering Topics Elective	3
International Perspective	3 Business Comm Elective (ENGL 3020 or 3090 or 3140)	3
15		15

Construction Engineering, B.S. Mechanical option

First Year

Fall	Credits Spring	Credits
CONE 1210	1 CONE 1220	1
CE 1600	3 CE 1700	2
MATH 1650	4 MATH 1660	4
CHEM 1670	4 ENGL 2500	3
ENGL 1500	3 PHYS 2310	4
ENGR 1010	R PHYS 2310L	1
	LIB 1600	1
15		16

Second Year

Fall	Credits Spring	Credits
CONE 2220	3 CONE 2410	3
CE 1110	3 CONE 2510	1
PHYS 2320	4 MATH 2670	4
PHYS 2320L	1 CE 2740	3
ECON 1010 or 1020	3 IE 3050	3
MATH or STAT Elective	3	
17		14

Third Year

Fall	Credits Spring	Credits
CONE 3520	3 EE 4420	2
CONE 3530	3 EE 4480	2
STAT 2310 or 3050	3 CE 3320	3
EM 3240	3 ABE 3780	3

ME 2310	3 Law Elective (CONE 3800 or ACCT 2150)	3
SSH Elective	3 US Cultures and Communities	3
18		16

Fourth Year

Fall	Credits Spring	Credits
CONE 4220	3 CONE 4870	3
CONE 4410	3 CONE 4880	3
ME 4360	4 ME 4420	3
ME 4410	3 Business Comm Elective (ENGL 3020 or 3090 or 3140)	3
Engineering Topics Elective	3 International Perspective	3
16		15

A concurrent bachelor of science/master of science (B.S./M.S.) degree program is available to qualified seniors at Iowa State University.

Go to <https://www.ccee.iastate.edu/prospective-graduate-students/concurrent-programs/> for further information.

Graduate Study

An area of specialization in construction engineering and management is offered within the graduate program of the Department of Civil, Construction and Environmental Engineering. This specialization focuses on project management including and beyond the traditional iron triangle of scope, technical, and schedule to include context and financing, enabling project management of more complex projects. Three graduate degrees including, Master of Engineering (30 credits), Master of Science (30 credits), and Doctor of Philosophy (72 credits) are offered. The Master of Engineering degree is a coursework only option and the other degree programs require a research component at a level adjusted to the degree sought. All degrees are offered on-campus, and some degrees may be completed off-campus through distance education. All degrees require CE 5010, CE 5020, CE 5030, and a minimum of nine additional credits within construction focused CE courses. Course options include but are not limited to:

CE 5010	Preconstruction Project Engineering and Management	3
CE 5020	Construction Project Engineering and Management	3
CE 5030	Construction Finance and Business Management	3
CE 5050	Design of Construction Systems	3
CE 5940A	Special Topics Construction Engineering and Mgt.: Planning and Scheduling	3

CE 5940L	Special Topics Construction Engineering and Mgt.: Advanced Building Construction Topics - LEED for New Construction	3
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Undergraduate students may also qualify for the concurrent Bachelor of Science/Master of Science (B.S./M.S.) degree program. Courses are offered for minor work to students taking major work in other curricula or in interdepartmental programs. A graduate certificate is also available which requires 12 credits of coursework. Courses required for the certificate are CE 5010, CE 5020, and CE 5030. For additional information see Civil Engineering, Graduate Programs, <https://www.ccee.iastate.edu/academics/graduate/>.