

BACHELOR OF SCIENCE IN ARCHITECTURAL ENGINEERING

The objective of the architectural engineering program is to prepare graduates to enter and be successful in the architectural engineering profession. Graduates are expected to become licensed professional engineers, and to reach responsible positions in a wide range of professional settings, including consulting firms, industry, or government. This program will prepare students to begin and successfully complete graduate studies in engineering and/or post-baccalaureate education in a professional degree program. The architectural engineering program provides breadth in core sub-disciplines and depth in areas of specialization. This degree program is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (ABET).

Architectural engineering is a building-oriented discipline that offers students an opportunity to obtain an engineering education specializing in building science, building systems integration, building construction, and structural and computer-aided design.

Professional architectural engineers are concerned with the structural integrity of buildings; the design and analysis of heating, ventilating, and air-conditioning (HVAC) systems; plumbing, fire protection and electrical systems; acoustics; lighting; energy conservation; building science and the study of building performance; and the management of construction resources and schedules. Graduates of the architectural engineering program will be well prepared for careers as consulting engineers, building contractors, construction managers, structural engineers, and knowledgeable specialists in related areas of building design and analysis.

Architectural engineering shares much in common with civil, environmental and mechanical engineering but is distinct in its exclusive concentration on building projects. Architectural engineering students should have an aptitude in and an appreciation of the following areas of knowledge: basic principles of mathematics; physics and chemistry; manual and computer-aided drafting and design; surveying; construction materials; engineering mechanics; structural analysis and design; building science and building systems integration; and professional practice and ethics.

Architecture students who plan to pursue a Master of Engineering in Architectural Engineering degree should take the following courses:

CAE 208	Thermal-Fluids Engineering I	3
CAE 209	Thermal-Fluids Engineering II	3
CAE 383	Electrical and Electronic Circuits	3

Students should consult the Master of Engineering in Architectural Engineering curriculum for additional details.

Required Courses

Code	Title	Credit Hours
Architectural Engineering Requirements		(51)
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 208	Thermal-Fluids Engineering I	3
CAE 209	Thermal-Fluids Engineering II	3
CAE 303	Structural Design I	3
CAE 304	Structural Analysis I	3
CAE 307	Structural Design II	3
CAE 315	Materials of Construction	3
CAE 323	Intro to Geotechnical Engineer	3
CAE 331	Building Science	3
CAE 383	Electrical Electronic Circuits	3
CAE 461	Plumbing/Fire Protection Dsgn	3
CAE 464	HVAC Systems Design	3
CAE 468	Architectural Design	3
CAE 470	Constrctn Methods&Cost Estmg	3
CAE 471	Construction Plan & Scheduling	3
CAE 496	FE Exam Prep	0

Capstone Design Requirement		(3)
CAE 495	Capstone Senior Design	3
CAE Technical Electives		(9)
Select nine credit hours ¹		9
Mathematics Requirements		(21)
CAE 312	Engineering Systems Analysis	3
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
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		(6)
CAE 286	Theory&Concept of Struct Mechcs	3
CAE 287	Mechanics Structural Materials	3
Humanities Requirements		(3)
AAH 119	Hist of World Architecture I	3
or AAH 120	Hist 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		131

¹ All technical electives must be CAE, EG, or ENVE courses at the 400-level or above. Students are limited to only one EG 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.

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	3	CS 104 or 105	2
CHEM 124	4	PHYS 123	4
MATH 151	5	MATH 152	5
Humanities 200-level Course	3	Social Sciences Elective	3
18		17	
		Year 2	
Semester 1	Credit Hours	Semester 2	Credit Hours
CAE 208	3	CAE 209	3
CAE 286	3	CAE 287	3
PHYS 221	4	CAE 312	3
MATH 251	4	MATH 252	4
AAH 119	3	Social Sciences Elective (300+)	3
17		16	
		Year 3	
Semester 1	Credit Hours	Semester 2	Credit Hours
CAE 303	3	CAE 307	3
CAE 304	3	CAE 323	3
CAE 315	3	CAE 464	3
CAE 331	3	IPRO Elective II	3
CAE 383	3	Humanities Elective (300+)	3
IPRO Elective I	3		
18		15	
		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
CAE Technical Elective ¹	3	CAE Technical Elective ¹	3
Humanities Elective (300+)	3	CAE Technical Elective ¹	3
		Social Sciences Elective (300+)	3
15		15	

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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

Code	Title	Credit Hours
Select a minimum of nine credit hours from the following courses:		9
CAE 438	Control of Building Env. Sys.	3
CAE 453	Measurement & Instrumentation	3
CAE 463	Building Enclosure Design	3
CAE 465	Bldg Energy Conserve Techlgys	3
CAE 466	Building Electrical/Lighting	3
CAE 467	Lighting Systems Design	3

Construction and Engineering Management

Code	Title	Credit Hours
CAE 472	Construction Site Operation	3
CAE 473	Construction Contract Admin	3
EG 430	Intro Building Info Modeling	3

Fire Protection and Life Safety

Code	Title	Credit Hours
CAE 422	Sprinklers Standpipes Fire Pum	3
CAE 424	Intro Fire Dynamics	3
CAE 425	Fire Protection & Life Safety	3

Structural Engineering

Code	Title	Credit Hours
CAE 411	Structural Analysis II	3
CAE 431	Steel Design	3
CAE 432	Concrete and Foundation Design	3