

Energy and Technology in Architecture (Certificate)

The Graduate Certificate in Energy and Technology in Architecture provides students the opportunity to focus their elective studies through courses and design studio(s) that concentrate on building energy systems along with other building systems.

The program's objectives are to provide educational opportunities for architecture graduate students who wish to acquire knowledge and skills in the design and operation of building system at site and building levels, with an emphasis on energy and materials; to advocate for the importance of energy efficiency over the entire life cycle of a building; and to make our students more competitive in the fields of architectural practice, building engineering, and construction.

This certificate program also provides unique interdisciplinary academic and research opportunities among the College of Design, programs within the College of Engineering, NC Solar Center, and building design industries/organizations (i.e. architecture, engineering, general contracting, real estate companies, and public policy agencies).

Requirements

Students must complete 15 hours of coursework from the course menu, as specified in the certificate application, and have a minimum of 3.00 GPA on all certificate coursework. All grades on courses taken towards the certificate program in courses numbered 400 and above are included in the GPA. Courses at the 300 level and below are not eligible for certificate credit and subsequently do not affect the graduate GPA.

The minimum grade to receive certificate credit can be no lower than B-. Students who take letter-graded 400-, 500-, and 700-level courses do not have the option of taking the courses for 'credit only' if they intend for the course to be part of the graduate certificate. Transfer credit from other institutions is not allowed for the graduate certificate. All course work must be registered through NC State University.

All certificate requirements must be completed within four (4) calendar years, beginning with the date that the student commences courses applicable to the certificate, unless a more restrictive time limit has been established by the program or academic college/school.

A student may obtain more than one certificate. Each certificate must have a least nine (9) credit hours that are unique to it.

Other Information

Students in this certificate program will become part of an academic and professional community that offers a broad range of extracurricular activities, including the NC Solar Center GreenBuild Lecture Series, visiting lecturers, and colloquia.

Note that academic success might have a strong bearing on admission to a degree program, but completion of the certificate program in no way guarantees entry into a graduate degree program. For more information regarding course requirements and the application process, please contact the certificate program coordinator.

Energy and Technology in Architecture Program Website (<https://design.ncsu.edu/admissions/certificates/>)

Admissions

Applicants must complete an application form to be considered for the certificate program. To qualify for admission to the graduate certificate in Energy and Technology in Architecture, students must be enrolled in (or have completed) a professional program in architecture. At the time of application, students must have a 3.00 grade point average (GPA) in their professional degree program.

Applicant Information

- **Delivery Method:** On-Campus
- **Entrance Exam:** None
- **Interview Required:** None

Application Deadlines

Please visit The Graduate School Application Deadlines (<https://grad.ncsu.edu/admissions/deadlines/>) page for more information.

Plan Requirements

Code	Title	Hours	Counts towards
Required Courses		9	
ARC 503	Advanced Architectural Design (Series)		
ARC 697	Final Project Research in Architecture ¹		
Elective Courses		6	
See "Elective Courses" listed below			
Total Hours		15	

¹ Students have the option to take a third elective course from "Elective Courses" listed below.

Elective Courses

Code	Title	Hours	Counts towards
Select at least two courses from the lists below:		6	
Approved Focus Studios Courses			
ARC 503	Advanced Architectural Design (Series) (Collaborative Design Studio: Architecture + Engineering)	6	
ARC 503	Advanced Architectural Design (Series) (Airport Design)	6	

ARC 503	Advanced Architectural Design (Series) (High-rise Building Design)	6
ARC 503	Advanced Architectural Design (Series) (Production for Architecture)	6
Approved Focus Elective Courses		
ARC 520	Sustainable Architecture	3
ARC 521	Daylighting and Passive Energy Systems for Architecture	3
ARC 522	Building Energy Efficiency & Renewable Energy	3
ARC 523	Building Energy Modeling and Simulation	3
ARC 524	Building Energy Optimization	3
ARC 530	Tectonics and Craft	3
ARC 534	Design of Architectural Details	3
ARC 535	Experiments in Architecture Prototypes	3
ARC 536	Materials for Design	3
ARC 537	Digital Materials Translations	3
ARC 538	Manufacturing Architecture	3
Electives Available per Certificate Coordinator Approval		
CE 504	Airport Planning and Design	3
HI 540	American Environmental History	3
HI 585	History of American Technology	3
ID 500	Advanced Industrial Design (Series)	6
ID 511	Industrial Design Materials and Processes I	3

ID 512	Industrial Design Materials and Processes II	3
ID 582	Special Topics In Industrial Design	1-6
MAE 589	Special Topics In Mechanical and Aerospace Engineering	1-6
MSE 556	Composite Materials	3
MSE 576	Technology Entrepreneurship and Commercialization I	3
MSE 577	Technology Entrepreneurship and Commercialization II	3

ETA Certificate Course Structure

Certificate students are required to take at least one course in each of the above two categories to achieve the learning outcomes defined for the program.

Code	Title	Hours	Counts towards
Energy-Focused Courses			
ARC 503	Advanced Architectural Design (Series) (Collaborative Design Studio: Architecture + Engineering)	6	
ARC 503	Advanced Architectural Design (Series) (Airport Design)	6	
ARC 520	Sustainable Architecture	3	
ARC 521	Daylighting and Passive Energy Systems for Architecture	3	
ARC 522	Building Energy Efficiency & Renewable Energy	3	
ARC 523	Building Energy Modeling and Simulation	3	
ARC 524	Building Energy Optimization	3	
Material/Tectonic-Focused Courses			

ARC 503	Advanced Architectural Design (Series) (High-rise Building Design)	6
ARC 503	Advanced Architectural Design (Series) (Production for Architecture)	6
ARC 530	Tectonics and Craft	3
ARC 536	Materials for Design	3
ARC 537	Digital Materials Translations	3
ARC 538	Manufacturing Architecture	3
ARC 534	Design of Architectural Details	3
ARC 535	Experiments in Architecture Prototypes	3

Faculty

Full Professors

Soolyeon Cho

David Hill

Wayne Place

Pat Rand

Associate Professors

Dana Gulling

Jianxin Hu

Assistant Professors

Traci Rider