

INTEGRATIVE DESIGN OF THE BUILDING ENVELOPE

GRADUATE CERTIFICATE

In today's world, designers are faced with making decisions that affect building envelope design and/or building performance. This performance may include, but is not limited to, energy, structural, cost, and environmental concerns. To address some of these more technical issues, the School of Architecture offers students the opportunity to pursue a graduate certificate in Integrative Design of the Building Envelope. A graduate certificate is a post-graduate credential that conveys evidence of a more specialized study, in this case, of the performance of systems moderating the interface between interior and exterior of the building skin. The educational value of this graduate-level certificate is gaining the experience of solving complex design problems, while looking at both quantitative and qualitative considerations. Faculty help students learn how to pursue a comprehensive analytical approach using evidence-based research to critically look at a challenging design problem and reach a meaningful objective conclusion.

Eligibility for the Graduate Certificate

CEAT Students with a 3.0 or better GPA are eligible to enroll in the certificate program. Practitioners with an accredited Bachelors or Masters degree in Architecture, Architectural Engineering, and others with baccalaureate degrees from outside of architecture and engineering may apply and will be reviewed on a case-by-case, space-available basis. Undergraduate architecture students in their senior year are eligible to begin work on the certificate after approval of a petition to take graduate coursework by completing the form "Application for Graduate Credit for Graduating Seniors" from the Graduate College.

Estimated Cost of the Study

The certificate is offered at a very low cost and doesn't add time to graduation if current students plan ahead. The cost of the certificate is the difference between the per-credit hour cost of enrollment in undergraduate and graduate courses. Note that the out-of-state increase per hour is more than in-state. The one time fee to apply to the Graduate College is \$50 for US citizens, and \$75 for International students.

The Application Process

Students apply through the Graduate College Office. <https://gradcollege.okstate.edu/prospective-students/application-process.html>
The application requires evidence of degree completion and two letters of recommendation. Deadlines are April 30 for Fall semester entry and November 30 for Spring semester. Neither the GRE nor any other standardized test is required for the certificate program. For International students, the University minimum TOEFL score of 79 / 550 is required.

Students in the program design a program of study in conjunction with a program advisor or the Graduate Program Coordinator (Dr. Tom Spector). The School of Architecture submits a plan of study for the student to the Graduate College for incorporation in the degree requirements that must be met. This action cements the 3-way contract between the student, the School, and the Grad College.

Planning the Coursework

Once students are officially enrolled in the Graduate Certificate Program, they may begin the graduate work. If starting coursework before official acceptance into the Graduate College, the

To learn more about the Graduate Certificate, please contact Professors Homer, Spector, Mansy, or Phillips, or email architecture@okstate.edu.

"Application for Graduate Credit for Graduating Seniors" can be submitted before the beginning of the semester that a course is taken. This coursework may include courses already taken that meet the program requirements depending on the student's major. Students should not commence the 5000-level coursework not utilized for their undergraduate degree until they are enrolled or complete the "Application for Graduate Credit for Graduating Seniors" form.

The Graduate Certificate is 12 credit hours, and may include any three of the following courses totaling nine credit hours:

ARCH 5023 Masonry Analysis and Design (2021)
ARCH 5023 Timbers/Masonry Design and Analysis
ARCH 5093 Real Estate Development
ARCH 5133* Advanced Energy Issues in Architecture
ARCH 5263* Advanced Architecture Tech Seminar
ARCH 5493 Entrepreneurship in Architecture
ARCH 6243 Analysis III
ARCH 6343 Steel III
ARCH 6543 Concrete III
CIVE 5113 Contracts and Specifications
CIVE 5183 Construction Estimating
CIVE 5193 BIM for Constructions
CIVE 5273 Concrete Durability
CIVE 5583 Advanced Construction Materials
CIVE 5873 Air Pollution Control Engineering
FPST 4143 Industrial Ventilation and Smoke Control
FSEP 5033 Risk Analysis
FSEP 5113 Fire and Explosion Hazard Recognition
FSEP 5133 Principles of Process Safety
FSEP 5143 Structural Design for Fire/ Life Safety
FSEP 5163 Industrial, Physical and Bldg Security
FRNS 5103 The Chemistry of Pyrotechnics
FRNS 5113 The Chemistry of Explosives
FRNS 5123 Fire Dynamics in Forensic Investigations
MSE 5013 Advanced Thermodynamics of Materials

*denotes graduate section of existing 4000 level course

MSE 5023 Diffusion and Kinetics
MSE 5033 Composite Materials
MSE 5053 Smart Materials
MSE 5093 Fundamentals of Materials Science
MSE 5174 Fundamentals of Photovoltaics
MSE 5223 Add Manufacturing: Mtls, Methods, Appl

Other graduate level courses not on this list can be reviewed on a case-by-case basis. Not all courses are offered every semester or year, and some are online and/or offered in Tulsa. In addition, some will need instructor approval per the catalog.

Finally, students enroll in a 3-hour directed independent study, supervised by at least two graduate faculty representing two fields of expertise: **ARCH 5003 Advanced Topics in Integrative Design** Independent study. ARCH 5003 is conceived as a mini-thesis project with an in-depth focus on the analysis/design of a building envelope. For past graduates, this work has resulted in published articles, professional presentations, and employment in firms that engage in high-performing building analysis and design.

Finishing the Graduate Certificate

Upon completion of the coursework, the student must confirm that his or her "degree conferred" certification for the student's undergraduate work accompanies the file. Certification of completion of all requirements for the Graduate Certificate is completed by the Graduate College.

Students with an interest in learning more about a variety of issues that can impact building envelope design may achieve their undergraduate degree and the Graduate Certificate in the Integrative Design of the Building Envelope, coordinated seamlessly. This advanced credential may be advantageous in the job search as well as to a future career focused upon the design of high-performance buildings.