



U.S. DEPARTMENT OF

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Energy Efficiency &
Renewable Energy



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Graduate Certificate in Energy Conscious Construction

Certificate Title: Graduate Certificate in Energy Conscious Construction
Department(s) or Program(s): School of Design and Construction
College(s): Voiland College of Engineering and Architecture
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WSU Guidelines:

Reference [WSU Grad School Guidelines for Graduate Certificates](#) (Ch 3A8)

- Graduate certificate programs must use approved undergraduate or graduate coursework, with no more than one-third of the coursework being at the undergraduate (400) level.
- The student may be admitted to the Graduate School as a Graduate Certificate Student and have completed all appropriate prerequisite classes to take graduate coursework.
- Courses graded S/F cannot be used toward major or supporting work for a graduate certificate.
- The maximum time allowed for completion of a certificate is 6 years from the beginning date of the earliest course applied toward the certificate. Students may request an extension of this time as described in Chapter 6, Section F.
- Requirements regarding WSU tenured/tenure-track status and critical mass for faculty supporting the program are the same as those required for degree programs.
- A certificate fee is assessed at the time of completion of the certificate. The student must be enrolled during the semester in which the student applies for a graduate certificate.

Description:

The Graduate Certificate in Energy Conscious Construction (ECC) is offered asynchronously online through WSU Global Campus. This 12-credit Certificate is short-term, making it more affordable to complete and obtain in-demand learning outcomes, giving you the opportunity to enter the market sooner while obtaining advanced training. You will learn the fundamentals of building science, while focusing on the evaluation and integration of environmental control systems; the understanding of current residential energy code requirements and the design methods to exceed these standards; applying modern envelope assemblies into residential building design; and using whole-building simulation software to evaluate design performance.

Students who complete the graduate certificate program with a minimum GPA of 3.0 can apply the 12 credits earned toward the Master's of Energy Conscious Construction (MECC). Students would be eligible to earn an MECC by taking an additional six courses (18 credits).

Summary of Requirements:

Reference [WSU Graduate Certificate Program](#)

To qualify as a part-time certificate student, a prospective student must:

- Have a bachelor's degree from an accredited post-secondary institution.
- Meet all prerequisite course requirements or be able to demonstrate equivalent knowledge and understanding for courses prior to enrollment.
- Be a part-time student.
- Enroll in eligible courses on a space-available basis.
- Be admitted, upon recommendation from the academic unit, to the Graduate School as a certificate student.
- Pay existing graduate tuition and fees.

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- Students on academic probation and students suspended from the university for any reason are not eligible to enroll in certificate courses.

NOTE: Because the certificate programs are designed for part-time study without formal admission to a degree program, international students in the US on student visas are not eligible to enroll solely in certificate courses.

Application Requirements:

New students:

For admission consideration, prospects must have bachelor's degree and the following:

- Complete the online Graduate School general application prior to enrollment in the first course, indicating an interest in a certificate program
- \$75 application fee (nonrefundable)
- One-page resume indicating name and location of all colleges and universities and dates of attendance, all degrees earned, or expected, and dates, and all professional experience (custom requirement).
- One-page statement of Purpose articulating student's background and desire to pursue certificate (custom requirement)
- Names, addresses, emails, and positions of three references (for letters of recommendation)
- Residency information
- Credit card or electronic check information needed for payment.

Current graduate students who wish to pursue a graduate certificate:

- Must be an active graduate student pursuing an advanced degree at Washington State University **Voiland College of Engineering and Architecture.**
- Must submit an Application for [Graduation for Graduate Certificate](#) with the appropriate departmental signatures by the [Application for Degree deadlines.](#)
- Must submit the US\$25 processing fee with the application.

Pursuing Formal Admission to Graduate School:

A part-time graduate certificate student may elect to apply for formal admission to the Graduate School and pursue an advanced degree. Certificate students who decide to pursue a graduate degree from Washington State University should contact the Graduate School at 509-335-1446 or gradsch@wsu.edu. No WSU transcript or application fee is required.

- A determination of the applicability of any of the courses and credits earned while a certificate student will be made at the time of admission at the discretion of the academic department or graduate program where the degree is sought by the student filing a Program of Study as part of the admission material. Department-approved courses will be stipulated as such on the student's Program of Study when it is submitted and will be reviewed by the Graduate School at that time. It is expected that a core disciplinary curriculum will be present on this Program of Study.
- Course work taken as a certificate student may be reviewed as part of the admission-review process, but does not afford any preferential consideration for admittance to a graduate program. The faculty in the graduate program will continue to have the authority to deny admission to any student.

Rationale:

Rising energy prices and energy-inefficient building stock adversely affect households in Washington State and nationally. Nearly one in three Washington households are cost burdened, spending more than 30% of their income on housing¹. In Washington State, more than half of residential buildings were built before 1980² and residential buildings consume 23% of all

¹ Phillips, R. (2020). To dream the impossible dream. Retrieved from <https://news.wsu.edu/2020/07/21/dream-impossible-dream/>

² NEEA. (2019). Residential Building Stock Assessment II: Single-Family Homes Report. Retrieved from <https://neea.org/img/uploads/Residential-Building-Stock-Assessment-II-Single-Family-Homes-Report-2016-2017.pdf>

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energy^{3,4}. Washington State’s residential energy code (WSEC-R) is one of the most advanced in the nation, but for effective implementation by a trained workforce, it must be coupled with accessible education focused on energy-efficient building design, engineering, and construction.

No comprehensive emphasis in this area is currently offered by colleges and universities in the state. Existing courses within the VCEA only address a subset of the competency gaps standing in the way of energy efficiency goals. Effective collaboration with and leverage of WSU Extension Energy Program resources has not been implemented. Specialized courses are scattered across different departments and schools and typically taught at the graduate level. Courses at the undergraduate level offer an overview of energy-efficiency topics but are not designed with the depth and granularity necessary for specialized professional practice. Having design, engineering, and construction management housed within a single college result in shared resources, allowing efficient delivery of the programs we propose. However, to date the benefits of VCEA’s shared structures have not been leveraged for interdisciplinary programs.

For these reasons, the School of Design and Construction at Washington State University is proposing a graduate certificate that creates an interdisciplinary emphasis in building science, focused on high-performing energy-efficient residential building design and construction. In addition to the collaboration with the School of Mechanical and Materials Engineering and the Department of Civil & Environmental Engineering, we are collaborating with the nationally-recognized WSU Extension Energy Program in Olympia, WA, to assist us in developing the content that will be offered to our students.

The launch of this certificate is supported by a \$750,000 grant funded by the United States Department of Energy Building Technologies Office and is expected **Spring 2023**. The 12-credit certificate will be offered completely online through WSU Global Campus and has a total of 4 courses as follows:

Coursework:

No.	Name	Offering	Credits	Notes
SDC 552	Energy Modeling II	Summer	3	New course
ME 579	Advanced Topics in Mechanical Engineering (Environmental Control Systems II)	Summer	3	Use existing course to teach a separate online section
SDC 541	Building Energy Codes, Standards, Rating Systems	Summer	3	New course
ARCH 531	Advanced Tectonics (Envelope Assemblies)	Spring	3	Use existing course to teach a separate online section

Prior to beginning the certificate, students will need to complete a building science fundamentals 3-hour online module. Students in their graduate studies at WSU will be able to fit this Certificate into their plans of studies by completing 3 of the 4 courses over the summer (Environmental Control Systems II + Energy Modeling II + Building Energy Codes, Standards, Rating Systems) and the remaining course (Envelope Assemblies) can be completed during the spring semester.

³ U.S. Energy Information Administration. (2018). Washington State Energy Profile Overview. Retrieved from <https://www.eia.gov/state/?sid=WA#tabs-2>

⁴ Bonlender, B. (2018). 2019 Biennial Energy Report: Issues, Analysis, and Updates. Olympia. Retrieved from www.commerce.wa.gov/energy