

Sustainability in Building Science (Architecture)

Four courses (16 Credits)

Faculty Steward (ENST and ARCH Chairs, Burchsted and Paley)

Required Courses:

- *ARCH 260 Sustainable Design and Building Science I (4 credits)*
- *ARCH 370 Architectural Systems (4 credits)*

Select one of the following ARCH courses:

- *ARCH 360 Solar Design and Building Science II (4 credits)*
- *ARCH 320* Advanced Architectural Representation (4 credits)*

**(Pre-req ARCH 220 Architectural Representation or permission of instructor)*

Elective Courses:

Select one of the following courses:

- *SPDI 304 Materials: A Life-Cycle View (4 credits)*
- *IENST 150 Global Environmental Change (4 credits)*
- *ENST 250 Principles of Sustainability (4 credits)*
- *INENST 383 Rethinking Energy (4 credits)*

Objectives/Rationale: The proposed Sustainability in Building Science Microcredential prepares students who seek a solid knowledge of sustainability in design of the building envelope, construction materials/methods, and building operations. Students develop a solid understanding of how mechanical systems impact energy performance in buildings (utilization, efficient management, conservation, and green generation).

This microcredential provides students with a theoretical understanding of fundamental concepts and hands-on experience with an entrepreneurial approach. It is the perfect fit for students who prefer the practical and tangible aspects of the built environment.

Outcomes: At the completion of this program, graduates will:

Demonstrate an understanding of sustainable building practices, renewable energy solutions, and efficient mechanical system options that balance client specifications, site conditions, and human factors.

Show they can use building science principles for the solution and documentation of situations encountered during the design, construction, and operation of buildings.

Demonstrate an understanding of the principles and applications of Building Science for energy efficient buildings, regarding problems such as moisture control and indoor air quality.

Be able to design Heating, Ventilation and Air Conditioning systems for commercial buildings and to understand the new developments that relate to high-performance building design and Zero Net Energy buildings.

Show they can integrate renewable energies in buildings and assess the life cycle of building materials, their relative cost-effectiveness, and understand the interactions of the various realms of building design.

Be able to criticize examples in the field of construction and draw logical conclusions from the analysis of different solutions.