

Number & Title of Course: ARCH 307 Environmental Control Systems 2 (activity component).

Course Description: Continuation of ARCH 207 plus theory and application of climate, energy use and **thermal** comfort as determinants of architectural form for internally load dominated buildings. Emphasis on architectural and mechanical methods of ventilating, cooling, heating, lighting, acoustics, and water and waste systems. 2 lectures, 2 discussions.

Program Goals & Course Outcomes

- Think critically and creatively about architectural problems.
 - Ability to respond to climate and building orientation in the development of a project design (B2).
- Use a diverse range of skills including writing, speaking, drawing, and modeling to think about and convey architectural ideas.
 - Ability to make technically clear drawings and models illustrating and identifying the assembly of materials, systems, and components appropriate for a building design (B4).
- Understand and apply the technical aspects of architecture, while considering the environmental impact of design decisions.
 - Ability to demonstrate the principles of environmental systems design, how design criteria can vary by geographic region, and the tools used for performance assessment (B6).
 - Understanding the selection and application of building envelope systems (B7).
 - Understanding the selection and application of building service systems (B9).
- Make reasonable decisions based on an architectural understanding of ethics, diversity, and sustainability.
 - Apply sustainable principles by integrating knowledge of climate, site, materials, assemblies as design drivers (SLO 1)
- Engage in lifelong learning.
 - Ability to gather, assess, record, and comparatively evaluate relevant information (A3).
- Work productively in groups
 - Ability to productively collaborate on group projects.

Student Performance Criteria Addressed

A3 Investigative Skills

B2 Site Design

B4 Architectural Design Skills

B6 Environmental Systems

B7 Building Envelope Systems and Assemblies

B9 Building Service Systems

Topical Outline

Climate, energy-use intensity, and site resources (20%)

Lighting (15%)

Thermal comfort and indoor air quality (25%)

Acoustics (10%)

Systems integration (30%)

Prerequisites: see lecture component.

Textbooks/Learning Resources: see lecture component.

Offered: Winter annually.

Faculty assigned: Richard Beller (Lecturer), Andrew Goodwin (Lecturer), Alexander Hirsig (Lecturer), Ansgar Killing (Lecturer), John Lange (Professor), Stephen Lee (Lecturer), Bryan Shields (Lecturer), Stacey White (Lecturer), Barry Williams (Lecturer), Greg Wynn (Lecturer), and Margarida Yin (Lecturer).