ARCH 491/591 ENVIRONMENTAL CONTROL SYSTEMS I

Instructors:  
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Meeting Time & Location:  4:00 – 5:50 PM, Tuesdays and Thursdays; White Stag Building, Portland

Credits & Grading:  Four Credits; Pass/No Pass or Graded

Overview:  This course, the first of a two-part series on environmental control systems, focuses on climate control systems for buildings, including both passive (architectural) as well as active (mechanical & electrical) solutions to provide thermal comfort and indoor air quality. These systems have substantial impact on construction and life-cycle costs, space allocation, building performance, as well as occupant health, comfort and productivity across all building types, and can be a major determinant in owner and occupant satisfaction with a building. This course is intended to provide a basic understanding of climate control systems that will enable you both to actively participate in decision-making related to these systems, and to integrate these systems into the design of the building.

Topics Covered Include:
- Climate and Comfort  - HVAC System Types
- Solar Geometry  - Vertical Transportation (elevators and escalators)
- Heat Transfer Basics  - Energy & Economic Analysis
- Ventilation & Indoor Air Quality
- Passive and Active Heating/Cooling strategies

Format:
- Seminar/Lecture format supplemented with readings and site visits to Portland buildings
- Homework assignments, quizzes & final project

Grading:
- 15% for Class Participation  - 25% for Quizzes
- 25% for Homework Assignments  - 35% for Final Project

Required Text:

Supplemental Texts:
- Sun Wind and Light: Architectural Design Strategies by G.Z Brown and Mark DeKay
- The Green Studio Handbook by Alison Kwok and Walter Grondzik
- Thermal Delight in Architecture by Lisa Heschong