Overview
The course introduces sustainable concepts for building enclosure design in various climate regions. We will first learn from examples of vernacular building and façade designs in hot-arid, hot-humid, and moderate climates and how these concepts may be used in creating modern buildings which use less energy, are more comfortable for users, provide a healthier environment, use extensive day lighting, and provide proper shading. The course will present the key metrics for determining wall enclosure and glazing efficiencies, such as R-/U-values, solar heat gain coefficients, emissivity, transmissivity, radiation and absorption and how they are calculated and applied. The seminar is organized into alternating lecture/discussion and case study sessions.

Course Structure
The seminar consists of the following components:

a) Climate: What do we need to understand, How do we need to incorporate climate parameters. Why is this important. Understanding the Köppen Climate Classification.


c) Advanced modern enclosure systems: Elements, functionality, strategies, materials and limitations. R-/U-values, vapor retarders, air infiltration barriers, glazing types, framing technology. Enclosure layer organization according to climate locations.

d) “Tool Box”:
(1) Introduction to building enclosure assembly analysis software.
(2) Building enclosure analysis using thermal imaging: Physics, terms, field assignment using thermal imaging analysis tools.

The seminar will consist of one Quiz (Midterm) and one Final Exam (Multiple choice), your case study analysis and a field assignment.