Description: An advanced course on Integrative Design of Buildings to understand the organizational and functional principles of buildings and their subsystems as a means of accomplishing the desired project goals, and to develop the creative ability of designing buildings of great functional synergy and organizational coherence, thus creating maximal value. Specifically, the course aims at 1) understanding the functional and organizational principles of the requisite building systems, 2) understanding their inter-system relationships, organizational variations, and their implications on overall design and construction, and 3) developing comprehensive integrative design ability for maximum value creation.

Objective: To increase rigor in design reasoning and versatility in creative ability for successful integrative design while 1) acquiring the knowledge in functional and organizational principles of the requisite building systems, their inter-system relationships, and organizational variations for synergetic integration, and 2) enhancing creative ability for successful integrative design.

Strategy: Design knowledge is contextual. Without comprehensive understanding of the context as an integral part of the knowledge, the applicability of any knowledge to a particular design situation cannot be properly assessed. Acquisition of such knowledge requires Experiential Learning, i.e. inductive leaning primarily through repeated experience of complex situations in their entirety, which gradually gives rise to holistic understanding. To facilitate successful acquisition of such knowledge in a limited time, the pedagogic strategy in this course is three-fold: Lectures; CASE (Comprehensive & Accentuated Simulated Experience) studies; and Field Trips. The lectures are heavily reasoning oriented. CASE studies follow, 1) analyzing the specifics of the design of selected world-class buildings, 2) exploring plausible reasoning behind such design decisions under the particular context, and finally, 3) exploring alternative design possibilities under the similar decision environment. Field trips to real buildings complete the cycle, further reinforcing the experiential learning.

Contents: See attached Course Schedule

Class Meetings: Lecture: TR 9:30 – 10:50, Room 17 TBH
CASE Study Disc TR 11:00 – 11:50, Room 17 TBH

Credit Units: 4 Graduate Hours

Grading Bases: CASE Study in Progress: 35% (7 Phases @ 5% each)
CASE Study Final Term Paper: 25%
Examinations: 40%
Class Activity: ±5% max
Within-Group Adjustment: ±5% max

Term Project: A comprehensive CASE study on integrative design of buildings, consisting of:
1) Description of the specific organization of various building systems of the chosen building, their synergetic relationships, and their construction and architectural implications,
2) Exploration of plausible reasoning behind the specific design, including:
   2a) Teleological Explanation, i.e. “What are the Design Objectives that the architect supposedly have intended to accomplish through the particular design, and Why,” and
   2b) Functional Explanation: “How the specifics of the design actually accomplishes such design objectives,”
3) Alternative design possibilities under the similar decision environment for greater value creation. The study must be based on the investigator’s original interpretation of the construction documents and, if applicable, site visits and consultation with the architects and engineers of the building. No second-hand information, published or otherwise, is permitted unless such claims are substantiated or refuted through rigorous reasoning of the students’ own based on the original construction documents. Even the statements by the authoritative parties directly involved in the project must be further substantiated through rigorous reasoning. A set of construction documents will be made accessible for the study.