

GREEN BUILDING TECHNOLOGY: DEEP ENERGY RETROFIT

Instructor:	Donald Corner	262 Onyx Bridge
Meeting Time and Place:	Monday and Wednesday mornings. Room TBA	
Format:	Investigative seminar.	
Credit Hours and Grading:	4 credit hours, optional grading.	
Prerequisites:	ARCH 4/570, 4/561, 4/562, 4/591. 4/592	
Co-requisites:	ARCH 4/571 or consent of the instructor.	
Recommended Texts:	There will be materials placed on reserve for this course. Much of the assigned reading will be gathered as the seminar progresses.	

COURSE DESCRIPTION:

The continuing objective of this class is to examine contemporary building techniques in the context of the environmental challenges in our future. The selected focus for this term will be retrofit strategies for existing buildings to reach low to no net energy consumption.

COURSE OBJECTIVES:

The State of California has established a goal of zero net energy consumption for new residences by the year 2020 and for new commercial buildings by 2030. Perhaps Oregon will establish comparable goals. In fact, we can go further. We must develop the tools needed to reach similar targets with existing buildings as well as new construction. European estimates place new construction at only 1% of the building stock, whereas 2% of the entire building stock is renovated each year. By 2030, 50% of European buildings will have been renovated and the occupants of the entire building stock will have changed more than twice. California has begun work on net zero energy goals as buildings change ownership, but implementation is difficult. We must have tools and examples that inspire and facilitate voluntary improvements. The need to focus on existing buildings has been amplified by the continuing credit crisis. Building owners will be in search of ways to extend the life of their present facilities, while deferring new construction. This calls for the development and dissemination of energy strategies that are particularly tuned to the characteristic building types that make up our existing inventory. To date, research and implementation programs have favored new construction wherein it is typically less expensive to install a new product or process that conserves or produces energy.

COURSE REQUIREMENTS:

Students will be asked to investigate retrofit strategies that apply to one of four building types: mid-rise offices, schools, warehouses (including big-box retail) and suburban multi-family housing. Case study buildings will be identified and energy concepts tested through carefully bounded design applications. Some energy modeling may be required. This course offers advanced elective study in building technology as required in the professional curriculum. The listed prerequisites will be checked. Many of the project requirements of this course will be completed in teams. The posted hours will be used for meetings of the whole group and for consultations with the teams. As a seminar devoted to a process of investigation, the path to be followed will continue to evolve as the investigation proceeds. Contemporary case studies and inquiry by design will be staples of the course.