ARCH4104 Spring 2018 I UNCC School of Architecture
Zero Net Energy Design

Instructor: Zhongjie Lin, Ph.D., Associate Professor (zlin1@uncc.edu)
Schedule: 2:00-5:30pm, M, W, F

One Planet Business Garden, ZEDFactory, 2014

Premise: A Zero Net Energy (ZNE) building or a Zero Energy Development (ZED) refers to a highly energy-efficient building that produces as much renewable energy as (or more than) it uses over the course of a year in operation. The zero net energy design is achieved through the combination of passive design, energy efficient building system, and on site energy generation. This holistic approach points to a new direction in architecture. The pursuit of this vision requires both technical rigor and tremendous creativity and innovation in design. As such, it offers an opportunity for new expressions of form to elegantly resolve energy solutions with program, site, and climate.

Objectives:
1) To be familiar with the concept of and the debates surrounding Zero Net Energy Design;
2) to learn skills of passive design;
3) to review and use the knowledge of energy efficient building system;
4) to explore technologies and options of renewal energy generation;
5) to design a solution synthesizing the knowledge and skills above for specific site and program;
6) to enhance skills of research, conceptualization, and site design.

Methodology:
The studio will start with research on the concept of Zero Net Energy design and conduct precedent analysis of this practice. For design exercise, we will use the parcel adjacent to the site of the fall comprehensive studio. Four programs will be explored by separate groups of students, including shopping center, office complex, hotel, and residential building. The new building should be linked to the vertical farm project designed in the fall studio; and both buildings, and the land they sit on, will be combined in the design of a zero energy solution.

Reference: