

Sustainable Building Systems (SBSY)

SBSY 5100. Sustainable Design and Technologies in Construction. (4 Hours)

Covers theory of sustainability and green building procedures; sustainable design and construction practices; use of appropriate materials and systems with low environmental impact for creating energy-efficient buildings; green construction practices, including reducing pollution, emissions, and construction waste; and U.S. Green Building Council's LEED rating system. May be helpful to students preparing for the LEED Green Associate examination.

SBSY 5200. Sustainable Engineering Systems for Buildings. (4 Hours)

Focuses on the design and construction of sustainable mechanical/electrical/plumbing (MEP) systems in buildings. Covers MEP documentation, plumbing water supply, HVAC systems, electrical power supply and distribution, lighting systems, low-voltage electrical systems, and estimating and planning for these specialty areas. Addresses sustainable design and construction practices for MEP, including minimization of energy consumption and carbon footprint. Requires one semester of building physics, environmental systems, or equivalent.

SBSY 5250. Building Performance Simulation. (4 Hours)

Studies principles of building performance simulations and the application of these tools to improve the design and operation of buildings. Covers the basic principles of simulation and uses a spectrum of available tools for early stage modeling, daylight estimation, analysis of comfort, and whole building validation. Introduces interpretation and validation of results and code-mandated protocols.

Prerequisite(s): SBSY 5200 with a minimum grade of C-

SBSY 5300. Information Systems for Integrated Project Delivery. (4 Hours)

Focuses on new software systems for increasing efficiency of project delivery and facilitating design and construction integration through the use of BIM (Building Information Modeling) and related technologies. Exposes students to various software systems, including hands-on cases of BIM use, 4D (construction drawings linked to schedule) modeling, and 5D models (4D + cost). Covers the impact of new technology on project delivery, including owner's perspective, advantages, and disadvantages. Also covers use and background of common industry systems to apply BIM concepts to construction projects.

SBSY 5400. Sustainable Building Systems Seminar. (0 Hours)

Features prominent speakers from the sustainable building design and construction industry to showcase new building technologies, tools, and projects and to discuss national and international trends in the industry. Offers students an opportunity to meet innovators and key players advancing the field of sustainable building systems. May be repeated without limit.

SBSY 5500. Deep Energy Retrofitting for Commercial Buildings. (4 Hours)

Explores deep energy retrofits of existing buildings to meet stringent energy performance targets and reduce greenhouse gas emissions. Covers analysis, planning, design, implementation, and evaluation of retrofit interventions using building audits, sensing, forensic analysis, surveys, cost estimating, and simulation. Integrates students' prior knowledge and experience in architectural engineering, building science, energy analysis, and economic decision-making.

SBSY 6962. Elective. (1-4 Hours)

Offers elective credit for courses taken at other academic institutions. May be repeated without limit.

SBSY 7945. Master's Project. (4 Hours)

Offers students an opportunity for individual participation in an advanced research project in an area of sustainable building systems engineering. Topic is determined by the student and their advisor. Students complete individual laboratory, literature, and/or computational investigation; analysis of results; and preparation of a definitive report.

SBSY 7986. Research. (0 Hours)

Offers students an opportunity to conduct full-time research under faculty supervision.

SBSY 7990. Thesis. (4 Hours)

Offers analytical and/or experimental research conducted by arrangement with and under the supervision of the department.

Prerequisite(s): SBSY 7945 with a minimum grade of C-

SBSY 7996. Thesis Continuation - Half-Time. (0 Hours)

Offers continued thesis work conducted under the supervision of a departmental faculty member.