

Sustainable Design of Buildings, Infrastructure and Urban Scale Development

Subject area: Civil Engineering/Architecture

University:	Technion
Level:	BA4, MA all years, PhD
Teaching mode:	hybrid: some students participate online, other students attend real-life
Instructor(s):	Prof. Spatari Sabrina

Short description

This course reviews current topics in green design of buildings, infrastructure, and cities. Students will learn principles and methods for sustainability evaluation in the design and operation of sustainable buildings, infrastructure and urban environments.

Full description

- Explain how the concept of sustainability is fundamental to planning, design, construction, operation and renewal of resilient and sustainable buildings and infrastructure.
 - Explain the fundamental concepts behind green building rating systems (e.g., LEED and green globes). Distinguish between rating systems and explain how they are applied to describe sustainability in the built environment.
 - Apply systems tools (e.g., LCA, multi-criteria matrix approaches) to evaluate the environmental and economic tradeoffs when selecting materials for building design.
 - Become familiar with the Technion's operational sustainability efforts.
 - Demonstrate the basics of professional technical communication: writing, oral and visual.
- Topics to be covered include: 1) green building materials and construction; 2) tools for sustainable evaluation of geotechnical and earthworks, and infrastructure systems; 2) aspects of building energy efficiency, zero energy buildings and plus energy buildings; 3) indoor air quality; 4) green building rating systems: BREEAM, LEED, green globes and the Israeli Standard 5281; 5) urban metabolism; 6) low impact development/green infrastructure; 7) resilience. Case studies of green certified buildings and projects from around the world will be presented in lectures. Students will choose a topic related to the 7 themes for their term project and presentation.

Learning outcomes

- An ability to evaluate building design from a systematic perspective that considers the life cycle processes that impact the building.

- Knowledge about existing building rating systems and an ability to critique those rating systems.
- An ability to survey research literature, lead discussion among research peers and practice academic writing.

General information

Contact hours per week: 2 weekly hours of lecture
Total workload: 52 (in student hours for the whole course)
ECTS credits: 1.7
Language: English

Course start date: 21 March 2023

Course end date: 31 July 2023

Add. info about start date: Spring semester at Technion begins on March 21st 2023, specific schedule will be posted later on

Weekly teaching day/time: TBD

Time zone: CET +1 (Estonia, Israel)

Further information: Please note that Technion does not work with ECTS. The amount of ECTS which you see in the description is meant to give an indication of the intensity of the course. However, the transcript of records will not be listing ECTS.

Prerequisites: Engineering Economics
Life Cycle Assessment in Civil and Environmental Engineering Systems

Activities and methods: Lectures

Presence on campus:

Final examination

Form: project

Date:

Location/format: online

Re-sit possibility:

Transcript available: on request

Add. info/requirements:

Registration

To register for this course, follow the registration requirements of your **home university** as specified here: www.euroteq.eu/courses-registration.

Administration

Number of places:

Minimum participants:

Internal course code: 018142

Contact: academic@int.technion.ac.il

This course is part of the EuroTeQ Engineering University joint course catalogue 2023. This is a collaborative activity of the partner universities DTU, L'X, TU/e, TalTech, CTU, TUM as well as Technion. Students from these universities can participate in the offered courses. It is the responsibility of the student to check if you fulfil the requirements to participate in a specific course. Students are also advised to check with their home institution how to get recognition of the ECTS credits gained in courses of the EuroTeQ course catalogue. For further information about EuroTeQ Engineering University, visit www.euroteq.eu or get in touch with the above-mentioned point of contact.