



Introduction to Sustainable Architecture

Prof. Dr. Thorsten Schuetze, Sungkyunkwan University

SHORT COURSE DESCRIPTION

The course Introduction to Sustainable Architecture imparts theoretical knowledge and skills for designing and assessing buildings and urban environments according to sustainability criteria. The class modules teach nature- and technology-oriented approaches for sustainable design, construction, operation, and maintenance of buildings and urban settings, both theory-founded and practice-oriented. This course discusses different conventional, new, and innovative methods, strategies, technologies, and trends that students can utilize in design, planning, policy-, and decision-making processes. The emphasis is on gaining basic knowledge of sustainable climate-responsive architecture, urbanism, and integrated system thinking. The course addresses the following topics: General introduction and background of sustainable development, architecture, and urbanism. Properties of building materials and sustainability assessment of materials and processes with Life Cycle Assessment (LCA). Climate-responsive building design for comfortable indoor environments in different climate zones. Optimized daylighting, electric lighting & acoustics. Energy efficiency and indoor air quality aspects in contemporary architecture. Renewable energy production in buildings. Sustainable water and sanitation aspects in architecture and urban developments. Sustainable mobility in contemporary cities. Integrated system approaches for creating synergies and realizing innovative sustainable architecture and urban developments.

READING MATERIALS

Participating students don't need to read specific literature prior to the class. Additional reading materials will be provided before the ISS starts, and all lecture handouts will be provided in Adobe PDF format during the course. Additional reading materials include, for instance:

- The Whole Building Handbook - How to Design Healthy, Efficient and Sustainable Buildings, Varis Bokalders and Maria Block, 2010, Earthscan
- Heating, Cooling, Lighting: Sustainable Design Methods for Architects, Norbert Lechner, 2008, Wiley

COURSE REQUIREMENTS AND GRADING

Students can participate in this course without needing specific preparation before the course. The required know-how to pass the course will be provided during the course. Compulsory for passing this course is sufficient participation (minimum attendance of 80% of all classes) and successfully passing online exams in a quiz format. The exams will be evaluated on a scale from 0 to a maximum of 100 points and require 60 points or more for passing the course.

COURSE SCHEDULE

– WEEK I –

Monday (1 July)

- Introduction to the course (Live online module)

Tuesday (2 July)

- Introduction to Sustainable Architecture (pre-recorded online lecture)

Wednesday (3 July)

- Sustainable material use in contemporary architecture & Life Cycle Assessment (pre-recorded online lecture)

Thursday (4 July)

- Climate & responsive building design for comfortable indoor environments in different climate zones (pre-recorded online lecture)

– WEEK II –

Monday (8 July)

- **Questions and answers (Live online module)**
- Day- & artificial lighting and acoustic aspects for comfortable indoor environments.

Tuesday (9 July)

- Energy efficiency and indoor air quality aspects in contemporary architecture (pre-recorded online lecture)

Wednesday (10 July)

- Renewable energy production aspects in contemporary architecture (pre-recorded online lecture)

Thursday (11 July)

- Sustainable water and sanitation aspects in contemporary architecture (pre-recorded online lecture)

– WEEK III –

Monday (15 July)

- **Questions and answers (Live online module)**
- Sustainable mobility in contemporary cities

Tuesday (16 July)

- Integrated planning and design of Sustainable Architecture 1 (pre-recorded online lecture)

Wednesday (17 July)

- Excursion & Assignment Integrated planning and design of Sustainable Architecture (students visit the Energy Dream Center in Seoul)

Thursday (18 July)

- Integrated planning and design of Sustainable Architecture 2 (pre-recorded online lecture)

– WEEK IV –

Monday (22 July)

Assignment presentation, questions, and answers regarding the online exam (Live online module)

Tuesday (23 July)

Exam preparation module

Wednesday (24 July)

Final Exam and end of the course (online via SKKU i-campus)



Dr.-Ing. Thorsten Schuetze is a Professor of Architectural Design, Sustainable Architecture, and Urbanism at the Departments of Architecture and Global Smart City of SungKyunKwan University (SKKU). He is a registered architect in Germany and works as a consultant, researcher, and lecturer focusing on sustainable architecture and urbanism. Thorsten directs the Sustainable Architecture Integrated Design (SAID) & Urbanism lab (<https://said-lab.skku.edu/>), is a member of scientific committees and editorial boards, and has authored and edited high-impact journal publications. He has also coordinated international research projects and organized conferences and academies. Thorsten has been an active member of the International Forum on Urbanism (IFoU) since his time as an Assistant Professor at TU Delft, The Netherlands, from 2006 to 2012. He received his Ph.D. in 2005 from the Faculty of Architecture and Landscape of Leibniz University Hanover, Germany.

The research focuses on the Integrated Design of Low-Energy, Passive, and Zero Emission Buildings and Districts, Resource Efficiency in Architecture and Planning, Water Sensitive Urban Planning and Design, Urban Resilience, and Climate Adaptation & Mitigation of Climate Change in low-, middle- and high-income countries. His research on decentralized infrastructure systems includes technically and nature-orientated strategies for managing energy, organic wastes, water, greening space and buildings, and producing food and renewable energy.