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Sustainable Design – MAAD 1012

SYLLABUS

Description

The course conveys necessary theoretical knowledge and the value system, together with practical skills which are needed to design sustainably. Aspects of ecology, energy, economy, society and culture are considered. Sustainable Design provides specific knowledge on the interaction of the building with its environment. The course deals with large scale boundary conditions influencing architectural design. Concepts of urban and regional design, sustainability and ecology, social equity and cultural context deploy the complexity of mutual influence and dynamic interaction. The course also touches the issue of inclusivity centring on gaps in basic infrastructure provision in informal settlements. The course further zooms in to the actual energy management at household level in informal settlements and their profound impact on the ecology and energy efficiency. Sustainable design measures aimed at mitigating the impacts will be generated.

Course objectives & structure

The course is designed to

- Equip students with the necessary knowledge and the value system which is needed to devise architectural solutions. Aspects of economy, social justice, ecology and energy management will be considered.

- Inform students about the actual gap in basic infrastructure provision in informal settlements and the consecutive energy management issues at household levels.
- Provide students with guidelines for sustainable design together with extraordinary successful examples in terms of energy efficiency, ecology, social acceptance and inclusivity. Issues of material and technology use, design with climate, energy design, alternative energy sources, holistic interpretation of sustainability is presented in lectures.
- A design project aims at the practical application of theoretical knowledge.

Learning Outcomes

Upon completion of the course/module, students will

- comprehend the large-scale boundary conditions influencing architectural design: context, economy, social justice, energy efficiency and ecology;
- be able to understand the complexity of energy management and ecological issues in informal Settlements of developing cities;
- apply sustainable architectural design measures in variable contexts of a city - the formal and informal setting

Student Workload

ECTS – 6

Course Structure

The overall duration of the course is a full semester (12 weeks), to be delivered once a week for three hours

NB. There will be four sessions focused on informal settlements in a city. The first two sessions will focus on the issue of inclusivity centring on gaps in basic infrastructure provision in informal settlements. The actual energy management at household level in informal settlements and their profound impact on the ecology and energy efficiency will be discussed in detail. Two more sessions will be conducted to consult students on the semester project employing sustainable architectural design measures in selected a household in an informal setting of a city responding to the identified gaps and mitigating the impact on the ecology.

Prerequisites

MAAD 1011- Contextual Design course should be completed

Status of Course

Compulsory

Assignments

Reading assignments, exam and project

Grading

NB. Only 50% of the assessment is covered based on the sessions that are concerned with informality

Details	**evaluation weights (%)**
Seminar on the reading assignment: Issues of inclusivity centring on gaps in basic infrastructure provision in informal settlements. The actual energy management at household level in informal settlements and their profound impact on the ecology and energy efficiency.	10%
Project - apply sustainable architectural design measures responding to the energy and ecological issues in an informal setting. Sustainable planning and architectural design measures will be applied in a selected neighbourhood and household in an informal settlement.	40%
Total	50%

Course evaluation

Peer and student evaluation of the course will be conducted by the office for quality Assurance within EiABC. The forms are prepared, distributed and analyzed by the office.

Session 1

Description of content:

The theoretical backgrounds of inclusive development, informal settlements and sustainable energy management will be presented. The topics will further be discussed in the context of Ethiopia and Addis Ababa.

Assignment:

Reading assignment and presentation

Reading materials:

1. Berhe, A.G. (2019). Case Study_ Household Energy Management in Informal Settlements of Addis Ababa. SES_Erasmus+
2. G. P. Hammond and C. I. Jones (2011). “Sustainability criteria for energy resources and technologies,” in Handbook of Sustainable Energy, I. Galarraga, M. Gonzales-Eguino, and A. Marakandya, Eds. Cheltenham: Edward Elgar
3. Expert Journals on Sustainability
4. Ken YEANG: The Green Skyscraper, The Basis for Designing Sustainable
5. Intensive Buildings,2000
6. Arch+: Post Oil City,2011
7. Brian EDWARDS: Rough Guide to Sustainability,2005

Session 2

As a follow-up on the reading assignment, the existing gap on basic infrastructure provision in informal settlements of Addis Ababa will be discussed highlighting the issues of inclusivity. Energy use pattern, access, affordability and sustainable energy management at household level of informal settlements will also be discussed. The relationship between tenure security and access to energy will be addressed. Moreover, the environmental impact of energy deprivation in informal settlements will be deliberated.

Session 3 and 4

The semester project will focus on the provision of sustainable design solutions responding to the identified gaps in a selected household in the informal settlements of Addis Ababa. The projects are expected to respond to the context, propose inclusive neighbourhood planning measures and particular architectural solutions at household level contributing to efficient energy and resource utilization. These feedback sessions will be conducted consecutively on submitted design developments.