

Reformation of the Curricula on Built Environment in the Eastern Neighbouring Area (CENEAST)

Partner 07 Module 08 ENG

Module Title: Green Built Environment			University module code:	
Level ⁱ : Bachelor	Credit Value ⁱⁱ : 6	ECTS Value ⁱⁱⁱ : 6	Length (in Semesters) ^{iv} : Single semester	Semester(s) in which to be offered: Winter semester/ Summer semester
Existing/new module ^v : New module	Title of Module being replaced (<i>if any</i>): —		With effect from ^{vi} : 09/2013	
Originating School: MGSU Moscow		Module Co-ordinator(s): Prof. A. Balakina, Prof. M. Eichner		
Programme(s) in which to be offered:				
Pre-requisites (<i>between levels</i>):			Co-requisites (<i>within a level</i>):	
Indicative learning hours: 180		Percentage taught by School(s) other than originating School ^{vii} : 0%		
<p>Aims of Module:</p> <p>The aim of the new bachelor module is to develop comprehensive knowledge in the field of energy efficiency and sustainability in built and future urban environments with emphasis on housing and settlement development. Technical, artistic, analytical and architectural knowledge and skills will be provided along fundamental knowledge of sustainable building quality aspects, emerging materials and innovative construction technology. Learning to use digital tools for urban analytics and space creation forms the basis for housing building design and sustainable urban transformation strategies during the course. Participants will be trained in ecological design strategies, considering energy-saving, economic, social, technical and process-oriented aspects of construction as just important as high architectural quality.</p> <p>The interdisciplinary bachelor module “Green Built Environment” aims on “eco-sustainable housing environment and building design” and refers in particular to undergraduate students in the fields of architecture, civil engineering, environmental engineering, as well as qualified graduates of related disciplines which receive specialist’s knowledge, depending on individual basic knowledge.</p>				
<p>Intended Learning Outcomes</p> <p><u>Knowledge and Understanding</u></p> <p>On successful completion of this module, a student will be able to:</p> <ul style="list-style-type: none"> • Understanding design and valuing strategies for sustainable living environments and housing buildings. • Applying theoretical and practical knowledge about eco-sustainable standards in architecture and resource saving building construction. 				

- Bringing together environmental, economic, social and cultural aspects for describing and designing sustainable and social housing buildings and urban environments in a modern and human sense.
- Understanding the basics of international building quality certificates for eco-sustainable planning approaches and using it as a tool to support sustainability in the design and realization process of residential environments.
- Being able to design small buildings according basic principles of sustainable construction, considering construction details, ecologic materials, energy-saving, resource saving and social aspects of contemporary architecture. Preparing all necessary planning documentation and technical information required in architects every days working practice.
- Gaining basic expertise in digital form-finding and application of digital tools for the support of design and planning process.
- Receiving methodological skills for independent and project-specific sustainable solutions to be able to develop a custom housing environment of high architectural standard and applying standard eco-sustainability valuation.

Transferable/Key Skills and other attributes

On completion of the module a student will have had the opportunity to:

- Real space experience in excursions and field study of innovative buildings and housing environments in Russia and international;
- Lecture: Teaching the relevance of eco-sustainability in architecture and urban development;
- Discussion: Current issues on energy-saving and resource saving in urban space and cityscape. Participation in interdisciplinary group discussions and workshops on sustainable contemporary problems;
- Tools: Using computer and different software as instrument for analysis, simulation and spacial creation;
- Sustainable standards: Getting familiar with latest European eco-sustainable certification systems for housing buildings.
- Design method: Applying a “research based design method” and a “step by step sustainable evaluation” of different project scales, urban environments and building quality aspects.
- Sustainable research: Carrying out sustainable research parallel to design projects and using research results as foundation for the design project;

Module mark calculation:^{viii}

Assessment components (in chronological order of submission/examination date)

Type of assessment ^{ix}	Weighting%	Duration (if exam)	Word count (if essay/dissertation):	Component pass required ^x
Final assessment Component 1 (practical): Design project on individual program part of the semester group theme;	70%		—	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Final assessment Component 2 (theoretical): Final research report on individual sustainable research thesis;	30%		9000	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>

<p>Learning and teaching strategies^{xi}:</p> <p>The course is based on teaching in the weekly seminars and discussions/consultations, with interim reviews and presentation. In each semester, students will examine different urban environments. Site related documents and the varying semester program will be provided. The investigation of the site and analyzing drawings and/or reports will be produced according to predetermined rules. A particular focus lies on the research and presentation of sustainable urban intervention and invention. Therefore, drawings and regular online presentation in this subject is of particular importance.</p> <p>Individual research thesis: In practical and theoretical module parts, students will train specialized knowledge in the key categories of architectural sustainability, ranging from innovation in building technology, passive energy-saving solutions, building physics, conceptual building modeling and spatial and social integration in architecture. Students have to define in the first part of the course an individual research thesis on main related sustainable questions and present it with a final research report.</p> <p>Lectures: The weekly held lectures of the module are fundamental part of the module and provide students with general knowledge on all important module aspects. Evaluation systems for the description of sustainability will be presented and discussed. Provided printouts of the lecture topics will guide during the seminars and assist as planning tool, to support practical design of housing environments.</p> <p>Practical seminars: Scientific analyzing methods, the use of digital simulation tools and sustainable material database like EPD's and European guidelines, relevant for sustainability will be combined with practical case studies of best practice buildings, to develop knowledge for every day's practice of a wide range of professionals.</p> <p>Group design project: The module is project orientated; a housing environment project with strong focus on sustainable and integrative social aspects is to be developed during the course. Theoretical obtained knowledge during lecture will be practically applied. Students will work on varying urban contexts and climatic environments and propose alternative and innovative housing building or building complexes, with focus on social and collaborative aspects, leading to new spacial and living qualities for the inhabitants.</p>				
<p>Syllabus outline:</p> <ul style="list-style-type: none"> • Introducing of Sustainable Housing Certification • Design of Sustainable Housing Architecture • Energy Efficient Building Design & Engineering • Sustainable Energy Concepts • Resource efficient urban environments • Energy Efficient Building Envelope • Social, economical and technologic analytics 				
<p>Indicative texts and/or other learning materials/resources:</p> <p><i>Core text:</i></p>				

- Santamouris, Mat (Hg.) (2006): Environmental design of urban buildings. An integrated approach. London: Earthscan.
- Hegger, Manfred; Fuchs, Matthias; Stark, Thomas; Zeumer, Martin: Energie Atlas - Nachhaltige Architektur Institut für Internationale Architektur-Dokumentation, München 2007
- typologie+: Innovativer Wohnungsbau, Peter Ebner, Eva Herrmann, Roman Röllbacher, Markus Kuntscher, Ulrike Wietzorrek

Recommended text:

- Erhorn-Kluttig, Heike et al.: Energetische Quartiersplanung. Methoden Technologien Praxisbeispiele. Stuttgart, 2011

Journals:

- Db deutsche Bauzeitung, Vorsprung Holz, 2013
- Detail Praxis, Photovoltaik, B. Weller, C. Hemmerle, S. Jakubetz, S. Unnewehr, 2009
- Detail Green 1/2013

On-line resources:

- NaWoh, Nachhaltigkeit im Wohnungsbau, Germany 2012, sustainable certification system for housing buildings, online publication, <http://www.nawoh.de/>
- <http://www.novatlantis.ch/2000watt.html>
- <http://www.nachhaltige-quartiere.ch>
- Energiekonzepte und Nachhaltigkeitsberatung | Bürobroschüre ee concept, online publication, http://www.ee-concept.de/publikationen/buerobroschuere_web_es.pdf
- "Leitfaden Nachhaltiges Bauen 2013" engl. guidelines for sustainable architecture 2013, Bundesministerium fuer Verkehr, Bau und Stadtentwicklung, online publication, <http://www.nachhaltigesbauen.de/leitfaeden-und-arbeitshilfen-veroeffentlichungen.html>

Date of completion of this version of Module Specification

Date of approval by the Faculty Programme Approval and Review Sub-committee:

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- ⁱ indicate level (e.g. first, second or third cycle; sub-level if applicable). All qualifications in the European Higher Education Area are located within three cycles - undergraduate; graduate and doctoral studies
 - ⁱⁱ permissible credit values as set out in Institution's Academic Regulations
 - ⁱⁱⁱ European Credit Transfer System
 - ^{iv} indicate 0.5, 1, 1.5 or 2
 - ^v delete as applicable
 - ^{vi} insert month and year of first/next delivery of module
 - ^{vii} identify all participating Schools other than Originating School
 - ^{viii} To be defined
 - ^{ix} please indicate, in chronological order of submission date, each assessment component by type, e.g. examination, oral, coursework, project, dissertation
 - ^x indicate Yes to specify the assessment component(s) to be passed in order to pass the module
 - ^{xi} please note the requirement to give full consideration to issues of equality, diversity and accessibility