Prof. Michael Eichner Moscow State University of Civil Engineering - MGSU

WP2: Requirements of the Ministries of the Partner countries on Module specifications and teaching materials (Module handbook).

Presentation outline

Comparison of following teaching programs:

- **MGSU teaching program (Bachelor) –** Russian government standard
  “SUSTAINABLE PRINCIPLES IN ARCHITECTURE”

- **TEMPUS Module (Bachelor) –** European standard
  “GREEN BUILT ENVIRONMENT”

Comparison

SUSTAINABLE PRINCIPLES IN ARCHITECTURE

Russian government standard

Шифр: 82.2ДВ2.2

МИНИСТЕРСТВО ОБРАЗОВАНИЯ И НАУКИ РОССИЙСКОЙ ФЕДЕРАЦИИ

Федеральное государственное бюджетное образовательное учреждение высшего профессионального образования
«МОСКОВСКИЙ ГОСУДАРСТВЕННЫЙ СТРОИТЕЛЬНЫЙ УНИВЕРСИТЕТ»

РАБОЧАЯ ПРОГРАММА

ДИСЦИПЛИНЫ ПО ВЫБОРУ СТУДЕНТА

ПРИНЦИПЫ ФОРМИРОВАНИЯ УСТОЙЧИВОГО РАЗВИТИЯ В АРХИТЕКТУРЕ

Engl.: "SUSTAINABLE PRINCIPLES IN ARCHITECTURE"

Направление подготовки	270800 – Строительство
Профиль подготовки	Проектирование зданий и сооружений
Квалификация (степень) выпускника	Бакалавр
Форма обучения	Очная

"GREEN BUILT ENVIRONMENT"

European standard

CENEAST

Reformation of the Curricula on Built Environment in the Eastern Neighbouring Area

Module Handbook: Green Built Environment (BA)
"Sustainable architecture and building design"

By: Prof. M. Eichner
University: Moscow State University of Civil Engineering MSUCE
Date: 01.2014

Comparison: Aim and learning outcome

SUSTAINABLE PRINCIPLES IN ARCHITECTURE

Russian government standard

1. Цели освоения дисциплины

The bachelor module "SUSTAINABLE PRINCIPLES IN ARCHITECTURE" provides theoretical and practical knowledge about sustainable design approaches and additional knowledge in adjacent fields like sociology, climatology, technology innovation, digital design tools and much more. Eco-sustainable urban design is mainly understood as urban districts with energy-saving buildings of modern standards, but obviously this is not enough to address global climate saving challenges. Future orientated ecologic design rather means planning from an energy saving, resource saving and social integrating point of view. Innovative knowledge in a big variety of fields is the capital of future architects, requiring weighing and applying of eco-sustainable knowledge in the architectural design process. During the 1 semester course a systematic and innovative approach to future orientated quality standards in architecture will be subject of lectures and seminars, showing new and innovative positions and their practical use in the field of green built environment design.

2. Место дисциплины в структуре основной образовательной программы

The course " SUSTAINABLE PRINCIPLES IN ARCHITECTURE " is part of the optional subject part of the faculty for architecture related to the main part “Architectural planning 1” and “Architectural planning 2” and is a discipline that can be chosen of students between others. The discipline aims on developing general architectural knowledge and design abilities in the field of sustainable architecture, innovative housing buildings and the design of future orientated habitat and provides students with a systematic overview on architectural and sustainable quality aspects as well as innovative research and design strategies and methods for integrated buildings of in the sense of a comprehensive climate-saving and socially sustainable construction of living environments.

Требования к входным знаниям, умениям и навыкам студента

Студент должен знать

Systematic and integrative architectural design method and knowledge on eco-sustainable certification systems for future orientated architecture through lectures, seminars, and the design of a housing building, based on international sustainable architectural planning and certification methods.

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“GREEN BUILT ENVIRONMENT”

European standard

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Comparison: semester and module structure

SUSTAINABLE PRINCIPLES IN ARCHITECTURE

Russian government standard

4. Структура и содержание дисциплины

Общая трудоемкость дисциплины составляет 2 зачетных единиц, 72 часов.

4.1. Структура дисциплины

№ п/п	Лекция (тема) Дисциплины	Семестр	Неделя семестра	Виды учебной работы, включая самостоятельную работу студентов и трудоемкость (в часах)					Формы текущего контроля успеваемости (по неделям семестра) Форма промежуточной аттестации (по семестрам)
				Лекции	ПЗ	ЛР	Кр/Кп	СР	
1	**Lecture 1:** Introduction into sustainable housing architecture + HOUSING QUALITY 1		1	2				4	
2	**Seminar 1:** TYPOLOGY + HOUSING QUALITY 1		2		4			4	
3	**Lecture 2:** Sustainable wooden construction + HOUSING QUALITY 2		3	2				4	
4	**Seminar 2:** STURCTURE + HOUSING QUALITY 2		4		4			4	Защита по 1-ой практич. Работе
5	**Lecture 3:** Solar architecture and renewable energy + TECHNICAL QUALITY		5	2				4	
6	**Seminar 3:** BUILDING SKIN + TECHNICAL QUALITY		6		4			4	Защита по 2-ой практич. Работе
7	**Lecture 4:** Innovative materials and production + ECOLOGICAL QUALITY		7	2				4	
8	**Seminar 4:** MATERIAL + ECOLOGICAL QUALITY		8		4			4	Защита по 3-ой практич. Работе
9	**Lecture 5:** Fascination High-rise +		9	2				4	

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"GREEN BUILT ENVIRONMENT"

European standard

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Comparison: Teaching method

SUSTAINABLE PRINCIPLES IN ARCHITECTURE

Russian government standard

W E E K 14 - 16	PRAKTIKA 5 Energy efficiency + Urban quality	RESEARCH TASK: - Getting and understanding of basic requirements for the planning and construction of energy-efficient buildings ; - Over view on passive and active building technology components; - History and development of laws and requirements for energy-saving standards of new and reconstructed buildings. - MATERIALS - Filled analyzing sheet "Urban quality" - Filled simplified energy passport, showing the energy use of both buildings in comparison - Sun radiation simulation for different seasons and daytimes; - Wind comfort simulation for different seasons and daytimes; - Comparison of both projects and sustainable report;	2	Prof. Michael Eichner + CAD Assistent

4.4. Лабораторный практикум - не предусмотрен учебным планом

4.5. Самостоятельная работа

№ п/п	Наименование раздела (темы)	Содержание
1	Housing quality 1 + 2	See: PRAKTIKA 1
2	Ecological +Economical quality	See: PRAKTIKA 2
3	Technical + Process quality	See: PRAKTIKA 3

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"GREEN BUILT ENVIRONMENT"

European standard

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Comparison: assessment feedback

SUSTAINABLE PRINCIPLES IN ARCHITECTURE

Russian government standard

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"GREEN BUILT ENVIRONMENT"

European standard

4.6. Разделы дисциплины и междисциплинарные связи

№ п/п	Наименование обеспечиваемых(последующих) дисциплин	№разделов данной дисциплины, необходимых для изучения обеспечиваемых (последующих) дисциплин				
		1	2	3	4	5
1.	Модуль «Архитектурно-конструктивное проектирование	+	+	+	+	+
2.	Реконструкция и реставрация зданий и сооружений	+	+	+	+	-

5. Образовательные технологии

Образовательные технологии:

6. Оценочные средства для контроля успеваемости и учебно-методическое обеспечение самостоятельной работы студентов

6.1 Текущий контроль

6.2. Промежуточная аттестация

Вопросы к зачету

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7. Учебно-методическое и информационное обеспечение дисциплины

а) основная литература:

	Наименование	Автор, название, место издания	Количество	Число обучающихся,

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Comparison: staff details and help

SUSTAINABLE PRINCIPLES IN ARCHITECTURE

Russian government standard

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"GREEN BUILT ENVIRONMENT"

European standard

Программа составлена в соответствии с требованиями Федерального государственного образовательного стандарта высшего профессионального образования с учетом рекомендаций и ПООП ВПО по направлению 270800 «Строительство» и профилю подготовки «Проектирование зданий и сооружений».

Программа одобрена на заседании кафедры «Проектирование зданий» протокол № __ от «___» _____ 2013 г.

Автор	проф., М. Й. Айхнер
Зав. кафедрой «Проектирование зданий»	А.Е.Балакина

Согласование:

Кафедра/подразделение	Должность, степень, звание	Ф.И.О.	Дата	Подпись
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Председатель МК профиля	Проф., к.т.н., доц.	Т.Р.Забалуева		
ЦОСП	Начальник	Е.А.Акимова		

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Comparison: Syllabus and teaching materials

SUSTAINABLE PRINCIPLES IN ARCHITECTURE

Russian government standard

W E E K 4	**Seminar 2:** STURCTURE + HOUSING QUALITY 2	RESEARCH AND DESIGN TASKS:	4	Prof. Michael Eichner
W E E K 5	**Lecture 3:** Solar architecture and renewable energy + TECHNICAL QUALITY	THEORY AND TOPICS: - Passive an active design strategies for solar energy use in buildings including natural ventilation, natural insulation and visual comfort as issues for façade designs. - Low energy house - Passive house – Zero energy house – Plus energy house – Zero emission house – Cradle to cradle house – Bio active house; - Resource-saving technologies and optimization of sun energy use, applied in different innovative architectural solutions. - 6 principles of solar architecture, capturing and storing solar energy, transporting and returning, regulating and sun protecting. - Passive solutions like Glass house, windows orientation or sun wall solutions for energy	2	Prof. Michael Eichner

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“GREEN BUILT ENVIRONMENT”

European standard

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Conclusion

Following aspects of Russian state teaching programs can be subject to improvement:

- Assessment feedback and assessment procedure
- Staff details and help
- Quality and assessment criteria of learning outcome in both programs missing

Thank you!