

M. Sc. Sustainable Urban Development – Modules at TU Darmstadt

Modulbeschreibung

Modulname					
Urban Construction Technologies					
Modul Nr.	Kreditpunkte	Arbeitsaufwand	Selbststudium	Moduldauer	Angebotsturnus
13-A0-J001	6 CP	180 h	120 h	1 Semester	Jedes Semester
Sprache			Modulverantwortliche Person		
Englisch					
1	<i>Kurse des Moduls</i>				
	<i>Kurs Nr.</i>	Kursname	Arbeitsaufwand (CP)	Lehrform	SWS
	13-A0-J001-se	Urban Construction Technologies	0	Seminar	4
2	Lerninhalt				
	<ul style="list-style-type: none"> • Construction Project Organization • Time Scheduling in Construction Projects • Estimating Methods in Construction • Lean Management - Lean Construction • Health and Safety in Construction • Exposed Concrete Technology • Construction Site Installation in Urban Spaces • Tunneling in Urban Spaces 				
3	Qualifikationsziele / Lernergebnisse				
	<ul style="list-style-type: none"> • Students are basically able to establish construction project organisation • Students are able to classify essential members of construction project organisations • Students have an overview of construction technologies in urban spaces • Students are able to estimate costs basically and to specify bid prices • Students are able to deal with processes in construction • Students are able to create time schedules 				

	<ul style="list-style-type: none"> • Students basically understand and are able to apply the risk assessment methods concerning health and safety in construction projects
4	Voraussetzung für die Teilnahme
5	Prüfungsform Modulabschlussprüfung: <ul style="list-style-type: none"> • Modulprüfung (Fachprüfung, schriftliche Prüfung, Dauer 120 Min, Standard) • Modulprüfung (Studienleistung, mündliche / schriftliche Prüfung, Bestanden/Nicht bestanden)
6	Voraussetzung für die Vergabe von Kreditpunkten
7	Benotung Modulabschlussprüfung: <ul style="list-style-type: none"> • Modulprüfung (Fachprüfung, schriftliche Prüfung, Gewichtung: 1) • Modulprüfung (Studienleistung, mündliche / schriftliche Prüfung, Gewichtung: 0)
8	Verwendbarkeit des Moduls
9	Literatur <ul style="list-style-type: none"> • Motzko C (2017) Formwork and Falsework. In: Mechanics of Materials and Structures for Construction Managers, Construction Managers' Library, Erasmus+ • Motzko et. al. (2011) Process Management - Lean Construction. In: Construction Managers' Library, Leonardo da Vinci • Stokes; Akram (2008) Project Management in Construction. In: Construction Managers' Library, Leonardo da Vinci • Nunnally SW (2010) Construction Methods and Management. Pearson
10	Kommentar

Modulbeschreibung

Modulname					
Infrastructure					
<i>Modul Nr.</i>	<i>Kreditpunkte</i>	Arbeitsaufwand	Selbststudium	Moduldauer	Angebotsturnus
13-02-J003	6 CP	180 h	120 h	1 Semester	Jedes Semester
Sprache			Modulverantwortliche Person		
Englisch					
1	<i>Kurse des Moduls</i>				
	<i>Kurs Nr.</i>	Kursname	Arbeitsaufwand (CP)	Lehrform	SWS
	13-B2-J007-se	System of Infrastructure	0	Seminar	2
	13-K3-J002-se	Solid Waste Management	0	Seminar	2
2	Lerninhalt				
	<p>a) System of Infrastructure</p> <p>Technical and social infrastructures, such as water supply, sewage disposal, electricity supply, waste disposal, transport facilities or educational facilities, are essential prerequisites for the sustainable development of a city. At the same time, they are socio-technical and socio-economic systems with a large number of stakeholders and intensive dependencies between the individual parts. Students learn about the system of urban infrastructures and their dependencies. The contents of other modules, such as "Water in Urban Development", are integrated.</p> <ul style="list-style-type: none"> • Types, parts and stakeholders of infrastructure systems • Infrastructure as socio-technical and socio-economic systems • Determination of infrastructure needs and their implementation, integration of stakeholders in decision processes • Location study and feasibility study for infrastructure • Financing and refinancing of infrastructure <p>b) Solid Waste Management</p> <p>Solid waste management are all the activities and actions required to manage waste from its inception to its final disposal. It includes (among other things) regulations, the generation, collection, transport, treatment and the disposal of waste. Within this module the students will learn about different possibilities to manage waste. The course will give an overview about waste management in developing countries as well as best available technologies. The following topics will be part of the module:</p> <ul style="list-style-type: none"> • Types and origins of waste • Waste collection and transport • Waste treatment technologies (mechanical, biological and thermal treatment) • Hazardous waste management • Design of waste treatment facilities • Case studies of waste management in developing countries 				

	<ul style="list-style-type: none"> • Economics
3	<p>Qualifikationsziele / Lernergebnisse</p> <p>a) System of Infrastructure The course provides students with a coherent understanding of infrastructure systems and the economic background. They are able to</p> <ul style="list-style-type: none"> • develop a financial and institutional system for a special type of infrastructure according to the local framework, • locate special parts of an infrastructure system by using location study and feasibility study, <p>b) Solid Waste Management The course provides students with a coherent understanding of waste management and the economic background. They are able to</p> <ul style="list-style-type: none"> • differentiate between the different waste types and technologies • develop a waste management concept and a pre-planning for a waste treatment facility • provide independent self-reliant solutions for waste/engineering tasks - based on scientific knowledge • cooperate in teams and provide an aligned solution for a waste/engineering task
4	<p>Voraussetzung für die Teilnahme</p> <ul style="list-style-type: none"> • 13-XX-XXXX/13-B2-J001 Vietnamese/German Law of Property and Planning • 13-B2-J002 Methodology of Empirical Analysis • 13-B2-J003 GIS and Applications to Urban Development
5	<p>Prüfungsform</p> <p>Modulabschlussprüfung:</p> <ul style="list-style-type: none"> • Modulprüfung (Fachprüfung, mündliche / schriftliche Prüfung, Dauer 120 Min, Standard)
6	<p>Voraussetzung für die Vergabe von Kreditpunkten</p>
7	<p>Benotung</p> <p>Modulabschlussprüfung:</p> <ul style="list-style-type: none"> • Modulprüfung (Fachprüfung, mündliche / schriftliche Prüfung, Gewichtung: 1)
8	<p>Verwendbarkeit des Moduls</p>
9	<p>Literatur</p> <ul style="list-style-type: none"> • Pollalis, S. (2016): Planning Sustainable Cities: An infrastructure-based approach

	<ul style="list-style-type: none"> • Wellmann, K. / Spiller, M. (2012): Urban Infrastructure: Finance and Management • Bird, R. / Slack, E. (2017): Financing Infrastructure: Who should pay? • Campanaro A. / Dang C.D. (2018): Mobilizing Finance for Local Infrastructure Development in Vietnam - A City Infrastructure Financing Facility • McDFougall, F. / Franke, M / White, PR: (2002) Integrated Solid Waste Management - A Life Cycle Inventory ; Blackwell Sciehnce Ltd., United Kingdom ISBN 0-632-05889-7; www.Blackwell-science.com • Umweltbundesamt (2018): Best practices in municipal waste management. Available at: https://www.umweltbundesamt.de/en/download/14350/Informationssammlung%20%22Be%20w • %C3%A4hrte%20Verfahren%20zur%20kommunalen%20Abfallbewirtschaftung%22
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Modulbeschreibung

Modulname					
Green Building Design					
<i>Modul Nr.</i>	<i>Kreditpunkte</i>	Arbeitsaufwand	Selbststudium	Moduldauer	Angebotsturnus
13-D1-J001	6 CP	180 h	120 h	1 Semester	Jedes Semester
Sprache			Modulverantwortliche Person		
Englisch					
1	<i>Kurse des Moduls</i>				
	<i>Kurs Nr.</i>	Kursname	Arbeitsaufwand (CP)	Lehrform	SWS
	13-D1-J001-se	Green Building Design II	0	Seminar	4
2	<p>Lerninhalt</p> <p>The module focuses on basics of Green Buildings such as</p> <ul style="list-style-type: none"> • Basics of housing concepts, construction, and building technology • Constructive design • Green skins • Green Building balancing • Objectives of health and ecology • Resource-efficiency considering also energy, water, aeration and materials <p>Focusing on recent topics of building construction and design contents, including self-developed reports. Discussing specific scientific queries regarding materials (e.g. glass, steel, timber, different insulation materials and others) and construction modes (e.g. adaptive construction parts, active /passive walls, climatization, energy delivery and others).</p> <p>The course offers an extensive insight into the building's ecological behaviour including individual details of structural design. Discussing basic ecological and economical aspects, which are important for design and construction of the buildings as well. Examining selected case studies within the student's assignments showing the basic principles of construction and design.</p>				
3	<p>Qualifikationsziele / Lernergebnisse</p> <p>After the successful completion of the module, the students will be able to understand and apply the constructive, technical and physical relations of the relevant solutions used in the construction industry for Green Buildings. The students will have the ability to detect different solutions of Green Buildings according to scientific principles by editing subject-specific problems independently. They will be able according to a special situation to decide and justify an individual solution and to explain this decision following scientific basics factually and comprehensive.</p>				
4	<p>Voraussetzung für die Teilnahme</p> <p>Basic knowledge on building construction.</p>				
5	<p>Prüfungsform</p> <p>Modulabschlussprüfung:</p>				

	<ul style="list-style-type: none"> • Modulprüfung (Studienleistung, mündliche / schriftliche Prüfung, Bestanden/Nicht bestanden) • Modulprüfung (Fachprüfung, mündliche Prüfung, Dauer 20 Min, Standard) • Modulprüfung (Fachprüfung, schriftliche Prüfung, Standard)
6	Voraussetzung für die Vergabe von Kreditpunkten
7	Benotung Modulabschlussprüfung: <ul style="list-style-type: none"> • Modulprüfung (Studienleistung, mündliche / schriftliche Prüfung, Gewichtung: 0%) • Modulprüfung (Fachprüfung, mündliche Prüfung, Gewichtung: 10%) • Modulprüfung (Fachprüfung, schriftliche Prüfung, Gewichtung: 90%)
8	Verwendbarkeit des Moduls
9	Literatur <ul style="list-style-type: none"> • Bean, D.: Ecological building systems. Stuttgart: W. Kohlhammer GmbH 2004 • Bendel, C.: All-rounder photovoltaic building integration - innovative technology with cost reduction potential. Institute for solar energy supply technology (ISET) e.v., Association at the University of Kassel • Fouad, N.: Energetic renovation of buildings. Building physics calendar 2010 (10 yr). Berlin: Ernst & son Publishing House 2010 • Holzmann, G. M. W.: Natural and herbal material. Wiesbaden: Vieweg Teubner Verlag 2009 • Abrecht, G.: Water - supply, demand and usage in past and present. Rowohlt Taschenbuch GmbH 1985 • Mötzl H., t. t.: Ecology of the material. Krems: Springer Verlag 2008 • Jehle, C.: Photovoltaics: Electricity from the Sun. C. f. Müller 2008 • Rice J., M. W.: Solar facade systems. Fraunhofer IRB 2005 • Bauer M., p. M.: Green building. Callwey Verlag 2007 • Minke G., & Krick B., Manual straw-bale construction - foundations, construction, examples. Eco publishers Staufen • Grape Marc leap, M.: New building with the Sun. Vienna New York: Springer 1999 • Pfammatter, Ulrich: Building for a changing culture and climate: world atlas of sustainable architecture. Berlin 2014

	<ul style="list-style-type: none">• Hammann, Ralph E.: Creative engineering, architecture and technology. Berlin 2013• Contal, Marie-Hélène: Sustainable Design: towards a new ethic in architecture and town planning. Basel 2009• Hebel, Dirk: Building from waste: recovered materials in architecture and construction. Basel 2014• Others will be announced
10	Kommentar

Modulbeschreibung

Modulname					
Economic Assessment and Life Cycle Assessment Methods					
<i>Modul Nr.</i>	<i>Kreditpunkte</i>	Arbeitsaufwand	Selbststudium	Moduldauer	Angebotsturnus
13-02-J002	6 CP	180 h	120 h	1 Semester	Jedes Semester
Sprache			Modulverantwortliche Person		
Englisch					
1	<i>Kurse des Moduls</i>				
	<i>Kurs Nr.</i>	Kursname	Arbeitsaufwand (CP)	Lehrform	SWS
	13-B2-J006-se	Economic Assessment Methods	0	Seminar	2
	13-K3-J001-se	Life Cycle Assessment	0	Seminar	2
2	Lerninhalt				
	<p>a) Economic assessment methods</p> <p>Valuation methods are an essential basis for all decision-making. Economic evaluation methods play an important role here. Therefore, this module provides students with the basics and the application of common economic evaluation methods.</p> <ul style="list-style-type: none"> • Financial mathematical principles • Most used economical valuation methods: cost-benefit-analysis, value-benefit analysis, cost-effectiveness analysis • Property value and international methods of valuation: asset value method, Discounted Cash flow, residual value method • Economic valuation methods for environmental assets <p>b) Life cycle assessment</p> <p>Life cycle assessment (LCA) is a structured, comprehensive and internationally standardised method. It quantifies all relevant emissions and resources consumed and the related environmental and health impacts and resource depletion issues that are associated with any goods or services along its whole life cycle: from the extraction of resources, through production, use and recycling, up to the disposal of remaining waste. Thus, it is a powerful decision support tool to avoid burden shifting between processes and/or impact categories. The following topics will be part of the module:</p> <ul style="list-style-type: none"> • Life Cycle Thinking approach • Life Cycle Sustainability Assessment and the role of LCA • LCA standardized methodology – 4 main phases. The ISO 14041 and 14044 frameworks. • Optional steps in LCA: Normalization and weighting – Valuation methodologies in LCA: Distance to target, monetization (environmental control costs or environmental damage costs) and scoring approaches. • Case studies 				

3	<p>Qualifikationsziele / Lernergebnisse</p> <p>a) Economic assessment methods The course provides students with a coherent understanding of economic assessment methods. They are able to :</p> <ul style="list-style-type: none"> • select and apply the economic valuation procedure that applies in individual cases, • select and apply the ecological valuation procedure that applies in individual cases, • value properties by using international methods of valuation, <p>b) Life cycle assessment The course provides students with a coherent understanding of life cycle assessment methods. They are able to:</p> <ul style="list-style-type: none"> • understand the concept and importance of life cycle thinking • conduct an LCA according to the international standards • Select and apply the weighting method that applies in individual cases.
4	<p>Voraussetzung für die Teilnahme</p> <ul style="list-style-type: none"> • 13-B2-J001 German Law of Property and Planning • 13-B2-J002 Methodology of Empirical Analysis • 13-B2-J003 GIS and Applications to Urban Development • basic knowledge on mass and energy
5	<p>Prüfungsform</p> <p>Modulabschlussprüfung:</p> <ul style="list-style-type: none"> • Modulprüfung (Fachprüfung, mündliche / schriftliche Prüfung, Dauer 120 Min, Standard)
6	<p>Voraussetzung für die Vergabe von Kreditpunkten</p>
7	<p>Benotung</p> <p>Modulabschlussprüfung:</p> <ul style="list-style-type: none"> • Modulprüfung (Fachprüfung, mündliche / schriftliche Prüfung, Gewichtung: 1)
8	<p>Verwendbarkeit des Moduls</p>
9	<p>Literatur</p> <ul style="list-style-type: none"> • Isaac, D. / O’Leary, J. (2012): Property Valuation Principles • Anthony Boardman / David Greenberg (2013): Cost-Benefit Analysis

	<ul style="list-style-type: none"> • Barry P. Keating / Maryann O. Keating (2013): Basic Cost Benefit Analysis for Assessing Local Public Projects • Marek Capinski (2010): Mathematics for Finance: An Introduction to Financial Engineering • Hauschild, M./ Rosenbaum, R.K./Olsen, S. (2018): Life Cycle Assessment – Theory and Practice. • Kloepffer, W. / Grahl, B. (2014): Life Cycle Assessment (LCA) – A guide to best practice. • EC-JRC - ILCD Handbook (2010) – free access: http://eplca.jrc.ec.europa.eu/uploads/ILCD-Handbook-General-guide-for-LCA-DETAILED-GUIDANCE-12March2010-ISBN-fin-v1.0-EN.pdf
10	Kommentar

Modulbeschreibung

Modulname					
Water in Urban Development					
<i>Modul Nr.</i>	<i>Kreditpunkte</i>	Arbeitsaufwand	Selbststudium	Moduldauer	Angebotsturnus
13-02-J004	6 CP	180 h	120 h	1 Semester	Jedes Semester
Sprache			Modulverantwortliche Person		
Englisch					
1	<i>Kurse des Moduls</i>				
	<i>Kurs Nr.</i>	Kursname	Arbeitsaufwand (CP)	Lehrform	SWS
	13-K0-J001-se	Sanitary Environmental Engineering	0	Seminar	2
	13-L2-J001-se	Hydraulic Engineering	0	Seminar	2
2	<p>Lerninhalt</p> <p>Sanitary environmental engineering deals with water supply techniques, wastewater discharge in sewer systems and wastewater treatment technologies.</p> <p>Water Supply Techniques will give an overview about water sources, water treatment methods, water storage and transport systems as well as about the requirements and criteria for the selection of suitable water supply techniques to meet the most important challenges.</p> <p>Wastewater engineering offers a fundamental knowledge of urban drainage and sewer systems, as well as municipal wastewater and sludge treatment technologies. Basic design criteria for wastewater treatment plants are discussed. We will also evaluate the effects of specific boundary conditions (e.g. wastewater composition, treatment objective, temperature) on the design of wastewater treatment plants and introduce water reuse concepts.</p> <p>Hydraulic Engineering consists of the application of fluid mechanics to water flowing in an isolated environment (pipe, pump) or in an open channel (river, lake, ocean). The course is primarily concerned with open channel flow, which is governed by the interdependent interaction between the water and the channel.</p> <p>Later applications include the design of hydraulic structures, such as flumes, sewage conduits, dams and breakwaters, the management of waterways, such as erosion protection and flood protection, and environmental management, such as prediction of the mixing and transport of pollutants in surface water. Hydroelectric-power development, water supply, irrigation and navigation are some familiar applications of water resources engineering involving the utilization of water for beneficial purposes.</p> <p>More recently, concern for preserving our natural environment and meeting the needs of developing countries has increased the importance of water resources engineering.</p>				
3	<p>Qualifikationsziele / Lernergebnisse</p> <p>Water Supply Techniques will enable the students to</p> <ul style="list-style-type: none"> • recognise the challenges of an urban water supply. • understand the functionality of urban water supply systems. • recognise (in brief) the challenges and possible solutions of rural water supply. <p>Sanitary Engineering will enable the students to</p> <ul style="list-style-type: none"> • gain basic knowledge of urban drainage, wastewater and sludge treatment technology. • recognise and assess influencing factors on wastewater treatment systems and dimensioning of treatment plants. 				

	<ul style="list-style-type: none"> • evaluate drivers for water reuse concepts. <p>Hydraulic Engineering will impart knowledge on</p> <ul style="list-style-type: none"> • application of continuity, energy concept to open-channel flow, design of channels considering uniform flow and flow resistance, non-uniform flow, longitudinal profiles and calculation of water levels, design of channel controls and transitions • Examples and applications: river engineering, flood protection, weirs, hydropower use, inland navigation
4	Voraussetzung für die Teilnahme
5	Prüfungsform Modulabschlussprüfung: <ul style="list-style-type: none"> • Modulprüfung (Fachprüfung, schriftliche Prüfung, Dauer 120 Min, Standard)
6	Voraussetzung für die Vergabe von Kreditpunkten
7	Benotung Modulabschlussprüfung: <ul style="list-style-type: none"> • Modulprüfung (Fachprüfung, schriftliche Prüfung, Gewichtung: 1)
8	Verwendbarkeit des Moduls
9	Literatur <ul style="list-style-type: none"> • Larry W. Mays (2010): Water Resources Engineering • Twort's Water Supply (2009), Sixth Edition by Don D. Ratnayaka, Malcolm J. Brandt, Michael Johnson — pdf free, ISBN: 0750668431,9780750668439 • MWH's Water Treatment: Principles and Design, Third Edition. John C. Crittenden, R. Rhodes Trussell, David W. Hand, Kerry J. Howe and George Tchobanoglous. Copyright © 2012 John Wiley & Sons, Inc.A. B. Pandit, K. K. Jyoti (2012): Drinking Water Disinfection Techniques • Barbara Rose Johnston, Lisa Hiwasaki (2012): Water, Cultural Diversity, and Global Environmental Change: Emerging Trends, Sustainable Futures? • Water Environment Federation (2012): Wastewater Treatment Plant Design Handbook • Metcalf & Eddy Inc., George Tchobanoglous (2013): Wastewater Engineering: Treatment and Resource Recovery: Treatment and Reuse • Joanne E. Drinan, Frank R. Spellman (2012): Water and Wastewater Treatment: A Guide for the Nonengineering Professional • York, L. (2018) Hydraulic Engineering. Willford Print - 245 pages

	<ul style="list-style-type: none">• Chanson, H. (2004) Hydraulics of Open Channel Flow. Elsevier - 650 pages• CHAUDHRY, M.H. (2007) Open-Channel Flow. Springer Science & Business Media - 523 pages
10	Kommentar

Modulbeschreibung

Modulname German Law of Property and Planning					
<i>Modul Nr.</i> 13-B2-J001	<i>Kreditpunkte</i> 6 CP	Arbeitsaufwand 180 h	Selbststudium 120 h	Moduldauer 1 Semester	Angebotsturnus Jedes Semester
Sprache Englisch			Modulverantwortliche Person		
1	<i>Kurse des Moduls</i>				
	<i>Kurs Nr.</i>	Kursname	Arbeitsaufwand (CP)	Lehrform	SWS
	13-B2-J001-se	German Law of Property and Planning	0	Seminar	4
2	Lerninhalt <ul style="list-style-type: none">• Public and private law Proof of landownership• Rights to land plots• Leasehold and condominium ownership Sale contract for properties• Rights of neighbours Tenancy and leasing law Administrativ law• Planing and constructing law• Instruments and principles of environmental law Protection of nature, landscape and soil• Law of climate protection and environmental energy Protection from emissions and radiation• Basics of Vietnamese law of property and planning				
3	Qualifikationsziele / Lernergebnisse <p>The students are able to identify problems of planning, construction, landownership and environmental law and assign them to a legal area as well as to develop possible solutions.</p>				
4	Voraussetzung für die Teilnahme				
5	Prüfungsform <p>Modulabschlussprüfung:</p> <ul style="list-style-type: none">• Modulprüfung (Fachprüfung, mündliche / schriftliche Prüfung, Dauer 120 Min, Standard)				
6	Voraussetzung für die Vergabe von Kreditpunkten				
7	Benotung <p>Modulabschlussprüfung:</p> <ul style="list-style-type: none">• Modulprüfung (Fachprüfung, mündliche / schriftliche Prüfung, Gewichtung: 1)				
8	Verwendbarkeit des Moduls				
9	Literatur				

	<ul style="list-style-type: none"> • German Administrative Procedure Act German Civil Code • German Closed Substance Cycle Waste Management Act German Environmental Impact Assessment Act • German Federal Building Code German Federal Emission Control Act • German Federal Nature Conservation Act German Federal Regional Planning Act German Federal Water Act • Wilsch, Harald: The German “Grundbuchordnung”: History, Principles and Future about Land Registry in Germany, ZfV 2012 • Basic Vietnam’s Laws: Vietnam Civil Code, 2015, Vietnam Planning Law, 2017, Vietnam Urban Planning Law, 2009; Vietnam Building Law, 2014; Vietnam Land Law 2013, Environmental Protection Law 2014, Planning Law 2017, Housing Law 2014, Vietnam Property Business Law 2015, Public Investment Law 2014, Administrative Sanction Law 2017.
10	Kommentar

Modulbeschreibung

Modulname					
GIS and Applications to Urban Development					
<i>Modul Nr.</i>	<i>Kreditpunkte</i>	Arbeitsaufwand	Selbststudium	Moduldauer	Angebotsturnus
13-B2-J003	6 CP	180 h	120 h	1 Semester	Jedes Semester
Sprache			Modulverantwortliche Person		
Englisch					
1	<i>Kurse des Moduls</i>				
	<i>Kurs Nr.</i>	Kursname	Arbeitsaufwand (CP)	Lehrform	SWS
	13-B2-J003-se	Basics of GIS	0	Seminar	2
	13-B2-J004-se	Using GIS for Urban Analysis	0	Seminar	2
2	Lerninhalt <p>The objective of GIS is to adopt GIS techniques to tasks of urban planning and analysis. The course facilitates the structure of GIS and the practice-based handling of GIS-Software by using ESRI-products. Therefore, the students will be introduced in</p> <ul style="list-style-type: none"> • basic introduction and handling of GIS, • data capture from different sources, i.e. aerial images, • editing of vector and raster based geographic data, • visualization and map design, • using different analysing methods to understand urban development related issues (for example catchment analysis, overlaying, spatial analysis, network analysis, etc.), • using GIS to identify potential and suitable land for future urban development 				
3	Qualifikationsziele / Lernergebnisse <p>The course aims for the basic skills in GIS, based on hands-on seminars. The students can adapt standard GIS workflows to further projects; they may support projects of urban development with GIS techniques from the beginning of data capturing, processing, analysing up to the visualization of the results at the final stage. They can also use GIS for more advanced tasks in urban development and planning such as spatial analysis, catchment area analysis, network analysis, overlaying, etc.</p>				
4	Voraussetzung für die Teilnahme Basics of PC handling				
5	Prüfungsform Modulabschlussprüfung: <ul style="list-style-type: none"> • Modulprüfung (Fachprüfung, mündliche / schriftliche Prüfung, Dauer 120 Min, Standard) • Modulprüfung (Fachprüfung, mündliche / schriftliche Prüfung, Standard) 				
6	Voraussetzung für die Vergabe von Kreditpunkten				
7	Benotung Modulabschlussprüfung:				

	<ul style="list-style-type: none"> • Modulprüfung (Fachprüfung, mündliche / schriftliche Prüfung, Gewichtung: 70%) • Modulprüfung (Fachprüfung, mündliche / schriftliche Prüfung, Gewichtung: 30%)
8	Verwendbarkeit des Moduls
9	Literatur <ul style="list-style-type: none"> • Online tutorials for ArcGIS 10.1 http://resources.arcgis.com/en/help/main/10.1/ • GIS for Urban and Regional Planning http://www.esri.com/industries/planning • Case studies for GIS application http://www.esri.com/industries/planning/success_stories/u_showcase • YouTube channels: [url]https://www.youtube.com/watch?v=8SUzVoqUpA0&list=PLVFXUWb3cXXoDNcmJilFngPOZPyrVWg8[/url]
10	Kommentar

Modulbeschreibung

Modulname					
Methodology of Empirical Analysis					
<i>Modul Nr.</i> 13-B2-J002	<i>Kreditpunkte</i> 6 CP	Arbeitsaufwand 180 h	Selbststudium 120 h	Moduldauer 1 Semester	Angebotsturnus Jedes Semester
Sprache Englisch			Modulverantwortliche Person		
1	<i>Kurse des Moduls</i>				
	<i>Kurs Nr.</i>	Kursname	Arbeitsaufwand (CP)	Lehrform	SWS
	13-B2-J002-se	Methodology of Empirical Analysis	0	Seminar	4
2	Lerninhalt The scientific analysis and understanding of urban development requires the skill to carry out empirical study and analyse empirical data. In urban development, both qualitative and quantitative data are significant. The course equips students with some basic skills in research design and practical skills to assist them in their own research.				
3	Qualifikationsziele / Lernergebnisse The course will enable the participants <ul style="list-style-type: none"> • to understand basic rules in empirical research; • to develop a basic understanding of and competence in the use of quantitative and qualitative data in social research; • to understand the main steps in carrying a research project in social sciences, focusing on urban development issues: identifying research problem, establishing research questions and objectives, choosing relevant research method, drafting research design, collecting and processing data, writing reports • apply these skills to an urban planning and development problem. 				
4	Voraussetzung für die Teilnahme				
5	Prüfungsform Modulabschlussprüfung: <ul style="list-style-type: none"> • Modulprüfung (Fachprüfung, schriftliche Prüfung, Standard) • Modulprüfung (Fachprüfung, mündliche Prüfung, Standard) 				
6	Voraussetzung für die Vergabe von Kreditpunkten				
7	Benotung Modulabschlussprüfung: <ul style="list-style-type: none"> • Modulprüfung (Fachprüfung, schriftliche Prüfung, Gewichtung: 70%) • Modulprüfung (Fachprüfung, mündliche Prüfung, Gewichtung: 30%) 				
8	Verwendbarkeit des Moduls				

9	<p>Literatur</p> <ul style="list-style-type: none"> • C. R. Kothari (2009) Research Methodology: Methods and Techniques, New Age Publications, 414p • Ranjit Kumar (2010) Research Methodology: A Step-by-Step Guide for Beginners, SAGE Publications Ltd, 440p • J. Mouton, H.C. Marais(1990) Basic Concepts in the Methodology of the Social Sciences, HSRC Press, 285p • Elisabete A. Silva, Patsy Healey, Neil Harris, and Pieter Van den Broeck (2015), Handbook of Planning Research, Routledge, 572p • Anon Bhattacharjee (2012): Social Science Research: Principles, Methods, and Practices. USF Tampa Bay Open Access Textbooks Collection. Book 3.
10	Kommentar

Modulbeschreibung

Modulname						
Urban Development and Architecture of Cities						
<i>Modul Nr.</i> 13-02-J001	<i>Kreditpunkte</i> 6 CP	Arbeitsaufwand 180 h	Selbststudium 120 h	Moduldauer 1 Semester	Angebotsturnus Jedes Semester	
Sprache Englisch			Modulverantwortliche Person			
1	<i>Kurse des Moduls</i>					
	<i>Kurs Nr.</i>	Kursname	Arbeitsaufwand (CP)	Lehrform	SWS	
	13-B2-J005-se	Urban Structures	0	Seminar	2	
	13-M4-J001-se	Typology of Buildings	0	Seminar	2	
2	Lerninhalt					
	<ul style="list-style-type: none"> • Theory of urban planning from past to present • Urban morphology and urban fabric • Models and universal concepts of spatial planning • Urban usages, their different forms, developments and demands on context, environment and infrastructures • Development of sustainable spatial structures and the role of planning; instruments and procedures • Society and participation, new planning cultures of integrated approaches • Concepts of urban design, especially for the public space, and neighbourhood characteristics • The architecture of buildings as bricks of the urban environment • City architecture at different levels • Typology of buildings in the urban environment • Typology of Housing • Typology of office buildings • Typology of building construction • Materials of building construction 					
	3	Qualifikationsziele / Lernergebnisse				
		The course will provide the students a knowledge on urban planning, urban design and architectural and typological aspects of cities. It will enable the students to understand and to analyse the importance and the demands of different usages in specific locations or urban neighbourhoods. They know about the main challenges of sustainable developments and construction and they are able to assess planning based on different instruments and procedures. They have extensive knowledge				

	<p>about the new stakeholder orientated planning culture and can create implementation strategies with participatory dimensions.</p> <p>The students will also be able to analyse and assess the city, the neighbourhood and buildings from architectural, functional and technical perspectives. Basic urban design skill will help them to improve the city's images at different scales.</p>
4	Voraussetzung für die Teilnahme
5	<p>Prüfungsform</p> <p>Modulabschlussprüfung:</p> <ul style="list-style-type: none"> • Modulprüfung (Fachprüfung, mündliche / schriftliche Prüfung, Dauer 120 Min, Standard)
6	Voraussetzung für die Vergabe von Kreditpunkten
7	<p>Benotung</p> <p>Modulabschlussprüfung:</p> <ul style="list-style-type: none"> • Modulprüfung (Fachprüfung, mündliche / schriftliche Prüfung, Gewichtung: 1)
8	Verwendbarkeit des Moduls
9	<p>Literatur</p> <ul style="list-style-type: none"> • Peter Hall (2002): Urban and Regional Planning. 4th Edition. Routledge Robert Riddell (2004): Sustainable Urban Planning. Blackwell Publishing. Aldo Rossi (1982): The Architecture of the city. The MIT Press. • Kevin Lynch (1990): The Image of the city. The MIT Press. • Jane Jacobs (1961): The death and life of great American cities. A Division of Random House UN Habitat (2012): Urban Planning for City Leaders • Andrea Deplazes (2008): Constructing Architecture • Maarten Meijs (2009): Principles of Construction: Components and Connections
10	Kommentar