

Module Description

Module name Development Planning and Governance					
Module Nr. 13-EX-J005	Credit Points 6 CP	Hours 180 h	Independent Learning 90 h	Duration 4 weeks	Term Winter
Language English			Instructor/s Dr. Nguyen Hieu		
1	Course of Module				
	Course Nr.	Course Title	CP	Forms of instruction	SWS/ Contact hours (45 min) per week
		Development Planning and Governance	6	Seminar	6
2	Study Content				
	<p>Supporting target groups with the understandings & awareness of legal and institutional framework to govern urban development processes with engagement of different stakeholders in modern democratic society. The discussions will unveil how State, communities, and developer to exercise their powers in addressing the conflict of interests. Students will apply negotiation and mediation skills to navigate through different issues in a case study extracted from reality.</p> <p>Students will discuss following questions:</p> <ul style="list-style-type: none"> ▪ How to differentiate government models and how government and politics work in a democratic/pluralist society? ▪ How to position Vietnamese system amongst typologies of government systems and their reforms? ▪ What makes the essence of local government and metropolitan governance in Vietnam development's context? ▪ What are the influence of (local) governance in planning and development? ▪ How Interest are mediated via government processes on development activities? ▪ How to analyse stakeholders in development games, including mapping out stakeholders and analyse their interests in real development issue? ▪ What are the basics to prepare the negotiation to settle disputes, including to prepare, negotiate, and close a deal in real development issue? ▪ Which calculations are needed to facilitate a deal, including prepare, facilitate, and finalise a mediation case? ▪ What are the meaning of humanity approach to development from government perspective? ▪ What are the ethics of mediator and negotiator in building consensus? ▪ How to develop active listening, effective communication, and making strategies adapting to context? 				

3	<p>Learning Outcomes At the end of the course, students are able to:</p> <ul style="list-style-type: none"> • Differentiate the models of governments and position Vietnam' model amongst major typologies to govern development, especially Germany; • Understand the substance of government in coordinating development activities in local level that links to Vietnam development context; • Understand the influence of government & governance in planning, development; • Navigate the development processes among the stakeholders to address basic development issues: building consensus using negotiation and mediation skills.
4	<p>Requirements for participation Vietnamese Laws of property and planning and Planning Instruments.</p>
5	<p>Test method Written (120 minutes, open book) or oral exam(20 minutes), group work project, home exercises</p>
6	<p>Conditions for Assessment Successful attendance at 80% of seminar, accept home exercises, develop group work project, pass the final exam.</p>
7	<p>Grading 50% for exam, 25% for group work project, 25% for home exercises.</p>
8	<p>Application M.Sc. SUD at VGU</p>
9	<p>Literature Urban Planning Law 2009, Land Law 2013, Environmental Protection Law 2014, Planning Law 2017, Law on Civic Rights to Access Public Information 2016, and related by-laws documents. Books and related literature:</p> <ul style="list-style-type: none"> ▪ Anwar Shah (Editor). Local Governance in Industrial Countries, 2006. ▪ GTZ. Multi-stakeholder management: Tools for Stakeholder Analysis: 10 building blocks for designing participatory systems of cooperation, 2007. ▪ Hubert Heinelt and Nikolaos Hlepas. Typologies of Local Government Systems. ▪ Hubert Heinelt. Governing Modern Societies, 2010. ▪ Marya Axner. Developing Facilitating Skill, 2015. ▪ Richard Faulkner, Corbett Spurin, and Gareth Thomas. Mediation Methods for Mediators and Party Representatives, 2006. ▪ Roger Fisher, William Ury, and Bruce Patton. Getting to YES: Negotiating Agreement Without Giving In - Summary, 1991.
10	<p>Comments</p>

Module Description

Module name Ecological Management in Urban Development					
Module Nr.	Credit Points 6 CP	Hours 180 h	Independent Learning 90 h	Duration 4 weeks	Term Winter
Language english			Instructor/s Dr. Huong (VGU)		

1	Course of Module				
	Course Nr.	Course Title	CP	Forms of instruction	SWS/ Contact hours (45 min) per week
		Ecological Management in Urban Development	6	Seminar.	6
2	<p>Study Content</p> <p>The module aims to provide the students a wide range of knowledge on the ecological system and its relation to the city development. Further how to manage it in the context of urban complexities and dynamics. These include:</p> <ul style="list-style-type: none"> - Urban ecological system (concept, components and its services); - Urban ecology concept, determinants, and methods; - Matters of shrinking and growing cities in relation to the eco-system. <p>In addition, in responding to the environmental problems, which have become more serious in developing countries creating higher burdens on the urban eco-system, several agendas/actions and methods have been set up with the involvement or participation of different stakeholders. The module contents regarding this matter include:</p> <ul style="list-style-type: none"> - Environmental issues and management agendas; - Urban green and its particular importance; and - Sustainable Urban Development towards Eco-cities <p>More importantly, the matter of Urban Heat Island (UHI) integrates the module's contents and the students will study about the urban climatic city in relation to the urban structure and architecture. Besides, as climate change is growing to become a very critical issue all over the world, the module also makes the students to understand the mutual impacts and relationship between the cities and climate change matters. The knowledge includes on mitigation measures, adaptation measures, how to make the cities become more resilient to the impacts of climate change as well as to certain types of disaster in relation to the disturbance of eco-system.</p>				
3	<p>Learning Outcomes</p> <p>The course will equip the students with the skills and knowledge required for the management of ecological system in the context of urban development. The students will be able to understand the importance and complexities of urban ecology and its related matters towards sustainable development. The course will also enable the students to understand the basics of urban climate, the problems of climate change in relation to urban development, and the ways forward for dealing with these.</p>				
4	<p>Requirements for participation</p> <p>-</p>				
5	<p>Test method</p> <p>Written exam (120 minutes), course work and written assignment.</p>				
6	<p>Conditions for Assessment</p> <p>Coursework, written assignment, pass exam Recommendation: Successful attendance at seminar.</p>				

7	Grading 70% for exam, 20% for written assignment, and 10% for course work (in-class assignment).
8	Application M.Sc. SUD at VGU
9	Literature Angel, Sh. (2012) Planet of Cities. Ed. By Lincoln Institute of Land Policy. Massachusetts. Alberti, M. (2008). Advances in Urban Ecology: Integrating Humans and Ecological Processes in Urban Ecosystems - ISBN-13: 978-0-387-75509-0 Gartland, L. (2008) Heat Islands: Understanding and Mitigating Heat in Urban Areas – (ISBN-13:978-1-84407-250-7) Girardet, H. (2013) Towards the Regenerative City. Cities and Climate Change of the World Future Council. 2013. Herrmann, D. L. et al. (2016) Sustainability for Shrinking Cities. Sustainability ,Vol.8, p.911. Hill, A., Lindner, Ch. (2013) Global Urbanisation and Megacities. IPCC (2014) Climate Change 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change Jenkis, M; Gorges, R. (Eds.) (2014) Compact Cities: Sustainable Urban Forms for Developing Countries. Millennium Ecosystem Assessment (MEA) (2005) Ecosystems and Human Well-being: Synthesis. Island Press, Washington, DC. Newman, P. ; Beatley, T; and Boyer, H. (2009) Resilient Cities: Responding to Peak Oil and Climate Change. Schett, S. (2011-12) An Analysis of Shrinking Cities. Urban Ecology WS 2011/12 UN (2014) World Urbanization Prospects. Department of Economic and Social Affairs. UNU/IAS (2003) Defining an Ecosystem Approach to Urban Management and Policy Development. Japan, Tokyo. World Bank (2011) Guide to Climate Change Adaptation in Cities
10	Comments Dr. Huong offers the module at VGU in the 3 rd semester of the study program.

Module Description

Modul name					
English Scientific Writing					
Module no.	Credit points	Workload	Self-study	Duration	Frequency
41-21-0552	6 CP	180 h	120 h	1 Semester	Every semester
Language of instruction			Person responsible for the module		
Englisch					
1	Courses of the module				
	Course no.	Course name	Workload (CP)	Form of instruction	Contact hours
	41-21-0550-ku	English Scientific Writing	0	Kurs	4

2	<p>Study content</p> <ul style="list-style-type: none"> - Structuring a scientific paper: abstract, introduction, methods, results, discussion; - Writing style: punctuation, parallelism, paragraph flow, conciseness, common mistakes; - Presentation techniques: structure, presentation of tables and figures, presentation style, pronunciation; - Quotation in papers and presentations.
3	<p>Learning outcomes</p> <p>The course aims to teach the fundamentals of effective scientific writing and presenting. The course will enable the students to write scientific papers and give scientific talks.</p> <p>Students know the structure of a scientific manuscript. They can write effectively, concisely, and clearly.</p> <p>They know how to organise an oral presentation and know how to present scientific contents in an appropriate, well structured, and well understandable way.</p>
4	<p>Requirements for participation</p> <p>None</p>
5	<p>Forms of examination</p> <p>Bausteinbegleitende Prüfung:</p> <ul style="list-style-type: none"> • [41-21-0550-ku] (Studienleistung, Sonderform, Dauer 90 min, Standard) <p>Study Achievement: Portfolio / Presentation</p>
6	<p>Requirements on the award of credit points</p> <p>Passing the study achievement</p>
7	<p>Grading</p> <p>Bausteinbegleitende Prüfung:</p> <ul style="list-style-type: none"> • [41-21-0550-ku] (Studienleistung, Sonderform, Gewichtung: 100%)
8	<p>Usability of the module</p>
9	<p>Literature</p> <p>Will be announced</p>
10	<p>Comment</p>

Module Description

Modul name

German Law of Property and Planning

Module no.	Credit points	Workload	Self-study	Duration	Frequency
13-B2-J001	6 CP	180 h	120 h	1 Semester	Every semester
Language of instruction Englisch			Person responsible for the module Prof. Dr. Hans-Joachim Linke		
1	Courses of the module				
	Course no.	Course name	Workload (CP)	Form of instruction	Contact hours
	13-B2-J001-se	German Law of Property and Planning	0	Seminar	4
2	Study content 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	Learning outcomes 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.				
4	Requirements for participation				
5	Forms of examination Modulabschlussprüfung: <ul style="list-style-type: none"> • Modulprüfung (Studienleistung, Präsentation, Bestanden/Nicht bestanden) • Modulprüfung (Fachprüfung, Klausur, Dauer 90 min, Standard) 				
6	Requirements on the award of credit points passed exam Recommendation: Successful attendance at lectures.				
7	Grading Modulabschlussprüfung: <ul style="list-style-type: none"> • Modulprüfung (Studienleistung, Präsentation, Gewichtung: 0) • Modulprüfung (Fachprüfung, Klausur, Gewichtung: 1) 				

8	Usability of the module
9	Literature 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	Comment

Module Description

Modul name					
GIS and Applications to Urban Development					
Module no.	Credit points	Workload	Self-study	Duration	Frequency
13-B2-J003	6 CP	180 h	120 h	1 Semester	Every 2. semester
Language of instruction			Person responsible for the module		
Englisch			Prof. Dr. Hans-Joachim Linke		
1	Courses of the module				
	Course no.	Course name	Workload (CP)	Form of instruction	Contact hours
	13-B2-J003-vl	Basics of GIS	0	Vorlesung	2
	13-B2-J004-ue	Using GIS for Urban Analysis	0	Übung	2
2	Study content				
	<p>The objective of the module is to adopt GIS techniques to tasks of urban planning and analysis. The course teaches the structure of GIS and the practice-based handling of GIS-Software, using ESRI-products. Therefore, the students will be introduced to</p> <ul style="list-style-type: none"> - Basic introduction and handling of GIS, - Geospatial objects and information modelling: editing of vector and raster based geographic data, - Spatial reference and spatial reference systems, - Data capture from different sources, i.e. aerial images, 				

	<ul style="list-style-type: none"> - Visualization and map design, - Spatial analysis with GIS to understand urban development related issues (for example catchment analysis, overlaying, spatial analysis, network analysis, etc.), - Understanding the potential of GIS for local, regional and global applications: from surveying, urban planning and environment to construction or transport.
3	<p>Learning outcomes</p> <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	<p>Requirements for participation</p> <p>Basics of PC handling</p>
5	<p>Forms of examination</p> <p>Modulabschlussprüfung:</p> <ul style="list-style-type: none"> • Modulprüfung (Fachprüfung, Klausur, Dauer 90 min, Standard) • Modulprüfung (Studienleistung, Hausübungen, Arbeitsblätter, Bestanden/Nicht bestanden)
6	<p>Requirements on the award of credit points</p> <p>pass exam, accept homework</p>
7	<p>Grading</p> <p>Modulabschlussprüfung:</p> <ul style="list-style-type: none"> • Modulprüfung (Fachprüfung, Klausur, Gewichtung: 1) • Modulprüfung (Studienleistung, Hausübungen, Arbeitsblätter, Gewichtung: 0)
8	<p>Usability of the module</p>
9	<p>Literature</p> <p>Online tutorials for ArcGIS 10.1 http://resources.arcgis.com/en/help/main/10.1/</p> <p>GIS Applications across industries https://www.esri.com/en-us/industries/index</p> <p>YouTube channels: https://youtu.be/8SUzVoqUpA0</p>
10	<p>Comment</p>

Module Description

Modul name					
Green Building Design II					
Module no. 13-D1-M008	Credit points 6 CP	Workload 180 h	Self-study 120 h	Duration 1 Semester	Frequency Every 2. semester
Language of instruction Englisch			Person responsible for the module Prof. Stefan Schäfer		
1	Courses of the module				
	Course no.	Course name	Workload (CP)	Form of instruction	Contact hours
	13-D1-0017-vl	Green Building Design II	0	Vorlesung	2
	13-D1-0018-ue	Green Building Design II - Exercise	0	Übung	2
2	Study content Constructional topics, based on current building activities with an emphasis on self-developed concepts will be deeply processed in the form of a seminar. This includes targeted research questions about materials (e.g. steel, glass, and insulation) and technologies (e.g. air conditioning, energy supply and distribution, controlling of building envelopes). Selected examples of structures and own student projects relevant design principles are developed on the basis of selected building examples. With supervised student projects also outstanding, existing buildings and their construction are examined - also including classic historical buildings.				
3	Learning outcomes After the successful completion the course students will understand the relationship of the relevant solutions used in the construction industry for Green Building Design. They possess both technological and physical aspects. The students will have the ability to detect different solutions, to find out, to explain factual and understandable, to make decisions and to justify. The students will have the ability to work independently on subject-specific problems according to scientific principles.				
4	Requirements for participation It is recommended to attend the courses Basics of Building Construction - Part I or Building Construction.				
5	Forms of examination Modulabschlussprüfung: <ul style="list-style-type: none"> • Modulprüfung (Fachprüfung, Sonderform, Dauer 15 min, Standard) • Modulprüfung (Studienleistung, Hausübungen, Arbeitsblätter, Bestanden/Nicht bestanden) Subject Examination: Report and Presentation (15 min.)				

6	Requirements on the award of credit points Successful Participation in the Module Final Examination
7	Grading Modulabschlussprüfung: <ul style="list-style-type: none"> • Modulprüfung (Fachprüfung, Sonderform, Gewichtung: 1) • Modulprüfung (Studienleistung, Hausübungen, Arbeitsblätter, Gewichtung: 0)
8	Usability of the module
9	Literature Script for the course Green Building Design as well as year-by-year readers on various specialist topics. For further literature recommendations see www.kgbauko.de
10	Comment Green Building Design II can be completed independently of the Green Building Design I module! Module offer in summer semester. It is strongly recommended to take all examinations (Sonderform and Hausübung) in the semester in which the module is offered.

Module Description

Modul name					
Infrastructure planning					
Module no. 13-K4-M007	Credit points 6 CP	Workload 180 h	Self-study 120 h	Duration 1 Semester	Frequency Every 2. semester
Language of instruction Englisch			Person responsible for the module Prof. Dr. Hans-Joachim Linke		
1	Courses of the module				
	Course no.	Course name	Workload (CP)	Form of instruction	Contact hours
	13-B2-J006-se	Economic Assessment Methods	0	Seminar	2
	13-B2-J007-se	System of Infrastructure	0	Seminar	2
2	Study content				
	The module consists of the lecture “System of Infrastructure” and “Economic Assessment Methods”.				
	“System of Infrastructure” gives insights into technical and social infrastructures, such as water supply, sewage disposal, electricity supply, waste disposal, transport facilities or educational facilities. The social and economic importance of infrastructures as well as current challenges of urban and rural development will be presented (e.g. demographical change, climate change). Characteristics of large-technical systems, in the practice used planning models and national as				

	<p>well as EU-wide coordination of spatial planning interests on different levels are contents of the module. The interdependencies between infrastructure sectors, current changes of the infrastructure supply caused through technical innovations, liberalisation and privatisation processes as well as environmental modernisation are topics that will be examined by the students in the course. Next to that point, planning processes of infrastructure projects will be analysed, considering a requirement research, the implementation of political interests, the examination of the location, the feasibility study and the financing and refinancing of the project.</p> <p>With a focus on valuation methods, the course “Economic Assessment Methods” provides students with the basics and the application of common economic evaluation methods that are needed for decision-makers of large infrastructure projects. Next to financial mathematical principles, the most used economical valuation methods as cost-benefit-analysis, value-benefit analysis and cost-effectiveness analysis will be presented in the lecture. The students also get to know property value and international methods of valuation like the asset value method, the discounted Cash flow and the residual value method. Next to these points, also economic valuation methods for environmental assets are content of the course. The course imparts basic knowledge of infrastructure project management and takes a look at application methods of agile management that are useful for construction projects.</p>
3	<p>Learning outcomes</p> <p>The course provides students with a coherent understanding of infrastructure systems and the economic background.</p> <p>The students have the knowledge to develop a financial and institutional system for a special type of infrastructure according to the local framework.</p> <p>The students are able to locate special parts of an infrastructure system by using location study and feasibility study.</p> <p>The module also provides students with a coherent understanding of economic assessment methods.</p> <p>They students learn how to select and apply the economic valuation procedure that applies in individual cases.</p> <p>The students have the competences to select and apply the ecological valuation procedure that applies in individual cases.</p> <p>The students are able to value properties by using international methods of valuation.</p>
4	<p>Requirements for participation</p> <p>Recommended: Basics of Spatial Planning</p>
5	<p>Forms of examination</p> <p>Modulabschlussprüfung:</p> <ul style="list-style-type: none"> • Modulprüfung (Fachprüfung, Klausur, Dauer 120 min, Standard) • Modulprüfung (Studienleistung, Hausübungen, Arbeitsblätter, Bestanden/Nicht bestanden)
6	<p>Requirements on the award of credit points</p>

	Passed assignment and passed exam Recommendation: successful attendance at lectures
7	Grading Modulabschlussprüfung: <ul style="list-style-type: none"> • Modulprüfung (Fachprüfung, Klausur, Gewichtung: 1) • Modulprüfung (Studienleistung, Hausübungen, Arbeitsblätter, Gewichtung: 0)
8	Usability of the module
9	Literature Materials will be announced at the beginning of the lecture.
10	Comment

Module Description

Module name Masterthesis					
Module Nr. 13-00- MTSU	Credit Points 24 CP	Hours 720 h	Independent Learning 700 h	Duration 6 months	Term Summer
Language english			Instructor/s Prof. TU Darmstadt and SUD senior lecturers		
1	Course of Module				
	Course Nr.	Course Title	CP	Forms of instruction	SWS/ Contact hours (45 min) per week
		Master-Thesis	24	Master thesis	
2	Study Content The aim of the thesis is to apply scientific methods and knowledge to specific problems encountered in practice and issues of sustainable urban development. The student has to decide between the introduced research methodologies by the study program, and by using them, what are the advantages and disadvantages of these methods.				

3	Learning Outcomes Students acquire the <ul style="list-style-type: none"> • ability to independently conduct scientific research and problem analysis, • ability to identify and structure a research topic in a scientific environment, • ability to independently plan, conduct and presentation of a research project
4	Requirements for participation A student can release the master thesis, if he/she has to pass only modules of totally 12 CP (meaning 2 modules of 6 CP each).
5	Test method Written thesis, presentation of the results of 20 minutes and discussion of the results of 20 minutes.
6	Conditions for Assessment Presentation of the results obtained in a mid-term revision, written thesis, presentation of the results (20 minutes), discussion of the results (20 minutes).
7	Grading 80 % written result and 20 % presentation and discussion
8	Application MSc SUD at VGU or TUD
9	Literature Working schedule of Master-Thesis (developed by Prof. Linke and Dr. Son) Anon Bhattacharjee (2012): Social Science Research: Principles, Methods, and Practices. USF Tampa Bay Open Access Textbooks Collection. Book 3. C.R. Kothari (2004): Research Methodology: Methods and techniques. New Age International (P) Ltd., Publishers. Elisabete A. Silva, Patsy Healey, Neil Harris, and Pieter Van den Broeck (2015), Handbook of Planning Research, Routledge, 572p
10	Comments

Module Description

Module name Instruments of Spatial Planning					
Module Nr.	Credit Points 6 CP	Hours 180 h	Independent Learning 90 h	Duration 4 weeks	Term Winter
Language english			Instructor/s Dr. Pham Thai Son (Part 1), Dr. Nguyen Ngoc Hieu (part 2)		
1	Course of Module				

Course Nr.	Course Title	CP	Forms of instruction	SWS/ Contact hours (45 min) per week
	Instruments of Spatial Planning	6	Seminars	6
2	<p>Study Content</p> <ul style="list-style-type: none"> - Spatial planning: definition of spatial planning, spatial planning and urban planning, purpose of spatial planning, basic elements of spatial planning - System of spatial planning: case studies of Germany and Asian countries. - Principles of Spatial Planning: key principles, principles of spatial planning in Germany. - Environmental Impact Assessment (EIA) and Strategic Environmental Assessment (SEA) in spatial planning. - Site analysis in spatial planning: site planning, site selection and programming, site inventory and analysis, SWOT analysis. - Overview of instruments for spatial planning: planning implementation strategies (Planning system and implementation, Regulatory approach, Collaborative approach) - Administrative instruments: legally binding plan, other administrative instruments (Traffic Impact Assessment (TIA), relocation and compensation, development freeze, temporary development regulations) - Collaborative Instruments: Transfer of Development Rights (TDR), Land Pooling and Readjustment (LPR), Transit Oriented Development (TOD). - Seminar on 'Advanced planning tools': Adaptive Strategic Planning, Implementation Oriented Planning (MOTA Model) 			
3	<p>Learning Outcomes</p> <p>The course will equip the students with the skills and knowledge required for the spatial planning of city and its neighbourhoods. They will become familiar with different planning methods and/or instruments, know how to assess and analyse the settlement structures with respect to ecological, socio-economic, and administrative dimensions. The students will also learn about the ecological, social and economic fundamentals of spatial planning as well as about the major constraints of sustainable urban development. In more specific, the learning objectives mainly include:</p> <ul style="list-style-type: none"> - Understand the concept of spatial planning in relation to the conventional urban planning 			
	<ul style="list-style-type: none"> - Understand the basic elements and principles of spatial planning through different case studies - Understand the rationale of choosing appropriate implementing tools to deal with different planning issues - Understand the basics and familiarize essential skills to apply administrative and collaborative tools to Vietnam's situation - Know how to incorporate implementation tools and strategies in a case study. 			
4	Requirements for participation			
5	<p>Test method</p> <p>Written exam (120 min), In-class assignment, home exercise</p>			

6	<p>Conditions for Assessment accept home exercise, in-class assignment, pass exam Recommendation: Successful attendance at seminar.</p>
7	<p>Grading Final written exam (60%) In-class assignment (20%) and home exercise (20%)</p>
8	<p>Application MSc SUD at VGU</p>
9	<p>Literature</p> <p>Elke Pahl-Weber, Dietrich Henckel (Editors) (2008). The Planning System and Planning Terms in Germany: A Glossary. (<i>Reading part: 1.2 + 1.3 + 1.4 + 1.5, page 38 - page 57</i>)</p> <p>RehabiMed (2007). RehabiMed Method: Traditional Mediterranean Architecture II. Rehabilitation Building. (<i>Reading part: Tool 13 Defining legal and planning instruments, page 211 - page 224</i>)</p> <p>ACT Government (2016). Guidelines for Transport Impact Assessment.</p> <p>Florida Department of Transport (2014). Transportation Site Impact Handbook: Estimating the Transportation Impacts of Growth.</p> <p>World Bank (2004). Involuntary Resettlement Sourcebook: Planning and Implementation in Development Projects.</p> <p>ANJECT (2007). Transfer of Development Rights: A Market-Driven Planning Tool.</p> <p>Arthur C. Nelson, Rick Pruetz, and Doug Woodruff (2012). The TDR Handbook: Designing and Implementing Successful Transfer of Development Rights Programs</p> <p>Yu-Hung Hong (2014). Land Readjustment.</p> <p>Yu-Hung Hong, and Barrie Needham (2007). Analyzing Land Readjustment: Economics, Law, and Collective Action</p> <p>Anh Tran Thi Lan, and Minh Nguyen Du (2014). Urban Development in Vietnam Context and LP/LR Applicability Implication.</p> <p>Fumihisa Miyosh, and Yoshitomo Kubo (2014). A Brief History of Japanese LR Experiences and Examples in Hiroshima City & Examples of Japan's Support to Thailand, Nepal and Columbia on LP/LR</p> <p>Quang Nguyen (2014). Participatory and Inclusive Land Readjustment for Addressing Informal Resettlements and Managing Urban Extension in Vietnam.</p> <p>Vinh Vũ Thị (2014). Thu gom và tái điều chỉnh đất trong các dự án nâng cấp đô thị Việt Nam.</p> <p>Hiroaki Suzuki, Jin Murakami, Yu-Hung Hong, and Beth Tamayose (2015). Financing Transit-Oriented Development with Land Values: Adapting Land Value Capture in Developing Countries.</p> <p>ITDP (2014). TOD Standard 2.1</p>

	<p>Phuc, Luong Minh (2015). Transit-Oriented Development in Ho Chi Minh City: Opportunities & Challenges.</p> <p>Prerna V. Mehta, Neha Mungekar, and Merlyn Mathew (2014). Transit Oriented Development Manual: Delhi TOD Policy & Regulations Interpretation.</p> <p>TBARTA (2012). Transit Oriented Development: Resource Guide</p> <p>Louis Albrechts (2004). Strategic (spatial) planning reexamined.</p> <p>Maria Cerreta, Grazia Concilio, and Valeria Monno (2010). Making Strategies in Spatial Planning: Knowledge and Values.</p> <p>Phi Ho Long, Leon M. Hermans, Wim J.A.M. Douven, Gerardo E. Van Halsema, and Malik Fida Khan (2015). A framework to assess plan implementation maturity with an application to flood management in Vietnam.</p> <p>Phi Ho Long (2016). Implementation-Oriented Planning: Case Study of Ho Chi Minh City Flood Management.</p> <p>UN Habitat (2007). Inclusive and Sustainable Urban Planning: A Guide for Municipalities, Volume 1: An Introduction to Urban Strategic Planning</p> <p>Annandale, David D. (2014) Strategic Environmental Assessment for Spatial Planning Guidance Document. Islamabad: IUCN Pakistan.</p> <p>Cities Alliance (2006) Guide to City Development Strategies - Improving Urban Performance. Washington, The Cities Alliance.</p> <p>Crown (2009) Multi-criteria analysis: a manual. London, Department for Communities and Local Government.</p> <p>Faludi, A. (2008) European Spatial Research and Planning. Lincoln Institute of Land Policy.</p> <p>GIZ (2012) Land Use Planning - Concept, Tools and Applications.</p> <p>LaGro James A. (2008) Site analysis: a contextual approach to sustainable land planning and site design (2nd ed.). John Wiley & Sons, Inc.</p> <p>Leonie Janssen-Jansen, L.; Spaans, M.; Veen, M. (Eds.) (2008) New instruments in spatial planning - An international perspective on non-financial compensation. OTB Research Institute for Housing, Urban and Mobility Studies. The Netherlands</p> <p>Matsumura, S.; Hoa, N.T.; and Kien, T.T (2017) New Approach and Issues for the Urban Planning System in Vietnam – The Practice of the Newly Formulated Urban Regulations in Ho Chi Minh City. Urban and Regional Planning Review, Vol. 4.</p> <p>UNEP (2004) Environmental Impact Assessment and Strategic Environmental Assessment: Towards an Integrated Approach.</p>
10	Comments

Module Description

Modul name					
Methodology of Empirical Analysis					
Module no.	Credit points	Workload	Self-study	Duration	Frequency
13-B2-J002	6 CP	180 h	120 h	1 Semester	Every semester
Language of instruction			Person responsible for the module		
Englisch			Prof. Dr. Hans-Joachim Linke		
1	Courses of the module				

	Course no.	Course name	Workload (CP)	Form of instruction	Contact hours
	13-B2-J002-se	Methodology of Empirical Analysis	0	Seminar	4
2	Study content The scientific analysis and understanding of urban development require 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	Learning outcomes <ul style="list-style-type: none"> - The course will enable the participants to understand basic rules in empirical research. - The students develop a basic understanding of and competence in the use of quantitative and qualitative data in social research. - The students 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. - The students are able to apply these skills to an urban planning and development problem 				
4	Requirements for participation				
5	Forms of examination Modulabschlussprüfung: <ul style="list-style-type: none"> • Modulprüfung (Studienleistung, Präsentation, Bestanden/Nicht bestanden) • Modulprüfung (Fachprüfung, Hausarbeit, Standard) 				
6	Requirements on the award of credit points				
7	Grading Modulabschlussprüfung: <ul style="list-style-type: none"> • Modulprüfung (Studienleistung, Präsentation, Gewichtung: 0) • Modulprüfung (Fachprüfung, Hausarbeit, Gewichtung: 1) 				
8	Usability of the module				
9	Literature 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	Comment

Module Description

Modul name					
Multidisciplinary Project					
Module no.	Credit points	Workload	Self-study	Duration	Frequency
13-B2-J004	6 CP	180 h	90 h	1 Semester	Every semester
Language of instruction			Person responsible for the module		
Englisch			Prof. Dr. Hans-Joachim Linke		
1	Courses of the module				
	Course no.	Course name	Workload (CP)	Form of instruction	Contact hours
	13-B2-J008-se	Multidisciplinary Project and Seminar "Sustainable Urban Development"	0	Seminar	6
2	Study content				
	<p>Training methods of integrated research on the urban and neighbourhood scale in a case study. Therefore, the students have to develop in small groups ideas for a sustainable urban development of a confided area of Ho Chi Minh City according to land use planning, green buildings, technical and social infrastructure. They have to develop a process of realising the new development. Therefore, they have to identify the economic, ecologic and social problems of that area as well as the framework of the development of that area (involvement according to the environment). They have to develop a vision for that area and measures for implementing. Therefore, they have to consider ecologic, economic and social aspects. Working on that project they have to show that they are able to use the methodologies, like analytical skills, critical assessment and so on, they learned in several other modules to identify convertible solutions.</p> <p>The students train their soft skills and their ability to work independently in teams. They learn as well the using of project management tools to realize the project during the defined time and with the expected result. With a final report they have to describe the results, they gained during the project.</p>				
3	Learning outcomes				
	<p>The course will enable the students to work in a complex urban development processes by using the methodologies they have learned during the study program. They are able to combine several economic, ecologic and social aspects of an urban sustainable development to get a sustainable planning result as well as to realize these results.</p>				

	The students are well-organised, communicative, open minded, and capable to work independently in such an urban development process.
4	<p>Requirements for participation</p> <ul style="list-style-type: none"> • 13-B2-J001 German/Vietnamese Law of Property and Planning • Economics of Urban Development • 13-XX-JXXX Instruments of Spatial Planning • 13-XX-JXXX Urban Transport Planning • 13-D1-J001 Green Building Design
5	<p>Forms of examination</p> <p>Modulabschlussprüfung:</p> <ul style="list-style-type: none"> • Modulprüfung (Studienleistung, Hausarbeit, Bestanden/Nicht bestanden) • Modulprüfung (Fachprüfung, mündliche Prüfung, Dauer 20 min, Standard)
6	<p>Requirements on the award of credit points</p>
7	<p>Grading</p> <p>Modulabschlussprüfung:</p> <ul style="list-style-type: none"> • Modulprüfung (Studienleistung, Hausarbeit, Gewichtung: 0) • Modulprüfung (Fachprüfung, mündliche Prüfung, Gewichtung: 1)
8	<p>Usability of the module</p>
9	<p>Literature</p> <ul style="list-style-type: none"> • Mind tools (2007) Essential Skills for an Excellent Career, Mind Tools Limited, 224p • http://www.strategyskills.com/insights/articles/why-most-swot-analyses-stink/ • http://creately.com/blog/diagrams/common-swot-analysis-mistakes/ • http://www.whatmakesagoodleader.com/SWOT-Analysis-1.html • Elisabete A. Silva, Patsy Healey, Neil Harris, and Pieter Van den Broeck (2015), Handbook of Planning Research, Routledge, 572p

	<ul style="list-style-type: none"> Cliff Moughtin, Rafael Cuesta, Christine Sarris and Paola Signoretta (1999) Urban design method and techniques, Architectural Press, 207p James A. LaGro, Jr. (2013) Site Analysis: Informing Context-Sensitive and Sustainable Site Planning and Design, 3rd Edition, Wiley\
10	Comment

Module Description

Modul name					
Sustainable Waste Management and Life Cycle Assessment Application					
Module no.	Credit points	Workload	Self-study	Duration	Frequency
13-K3-J021	6 CP	180 h	120 h	1 Semester	Every 2. semester
Language of instruction			Person responsible for the module		
Englisch			Prof. Dr. Liselotte Schebek		
1	Courses of the module				
	Course no.	Course name	Workload (CP)	Form of instruction	Contact hours
	13-K3-0021-ue	Sustainable Waste Management and LCA Application - Exercise	0	Übung	2
	13-K3-0021-vl	Sustainable Waste Management and LCA Application	0	Vorlesung	2
2	Study content				
	<p>This module combines the topics sustainable waste management and life cycle assessment (LCA).</p> <p>In the first part of the lecture, principles of the development of circular economy and waste management concepts in an international context will be taught. The concept of Integrated Sustainable Waste Management which is particularly relevant to design sustainable waste management in urban contexts and in countries in transitions, is presented. Relevant actors of the waste management chain, collection and treatment practices as well as approaches for the evaluation and design of waste management systems (for example benchmarking, LCA) will be addressed.</p> <p>In the second part of the lecture, a practical introduction to the LCA-method will be given. Concerning the content, a special emphasis is put on the LCA application in the field of circular economy and waste management: the assessment of waste streams and waste management systems is explained, typical LCA applications and lessons learnt from the current research are presented and, thus, the role of LCA for sustainable waste management is demonstrated. Methodologically, the focus is on the presentation of specific LCA software and databases as well as the communication of the results for practical decision support for planners, developers and companies. In this respect, the module is an extended course for students with basic knowledge of the LCA method, but it can also be used by students without previous LCA</p>				

	<p>experience.</p> <p>The accompanying exercise includes a case study analysis to identify waste flows and relevant actors of the waste management chain and applies basic approaches for the evaluation the city's waste management system. Methodological aspects of LCA will be demonstrated based on a literatur analysis. A practical exercise is given to introduce an LCA software and its application to model certain aspects for the specific case study. By evaluating the presented case study, knowledge about the environmental impacts of waste collection and treatment from a life cycle perspective is conveyed and decision-making contexts of waste management are clarified.</p> <p>Within the scope of the study achievement, a waste management system (case study from the accompanying exercise) is assessed environmentally using the LCA approach and the LCA software openLCA. The results of the stakeholder and waste stream analysis for the specific case study are also part of the study achievement.</p>
3	<p>Learning outcomes</p> <p>On successful completion of this module, students should be able to:</p> <ol style="list-style-type: none"> 1. Identify and assess relevant elements, aspects and stakeholders of waste management systems and to evaluate them from different perspectives; 2. Apply methodological concepts for the evaluation of waste management systems; 3. Understand the concept of life cycle thinking and implementation steps of an LCA; 4. Implement a basic LCA model using an LCA software and databases 5. Interpret LCA results in a practice-oriented way and communicate them to decision-makers; 6. Develop measures for sustainable waste management; 7. Understand the role of life cycle thinking for the evaluation and optimization of waste management systems.
4	<p>Requirements for participation</p> <p>none</p>
5	<p>Forms of examination</p> <p>Modulabschlussprüfung:</p> <ul style="list-style-type: none"> • Modulprüfung (Studienleistung, Präsentation, Bestanden/Nicht bestanden) • Modulprüfung (Fachprüfung, Klausur, Dauer 90 min, Standard) <p>Study Achievement: Preparation of a group presentation; during the course the presenting groups are selected by the lecturers</p>
6	<p>Requirements on the award of credit points</p> <p>Passing of the examination and the study achievement.</p>
7	<p>Grading</p> <p>Modulabschlussprüfung:</p> <ul style="list-style-type: none"> • Modulprüfung (Studienleistung, Präsentation, Gewichtung: 0)

	<ul style="list-style-type: none"> • Modulprüfung (Fachprüfung, Klausur, Gewichtung: 1)
8	Usability of the module
9	<p>Literature</p> <p>Baumann, Henrikke; Tillman, Anne-Marie (2004): The hitch hikers's guide to LCA. An orientation in life cycle assessment methodology and application. Lund: Studentlitteratur.</p> <p>Bilitewski, Bernd; Wagner, Jörg; Reichenbach, Jan (2018): Best Practice Municipal Waste Management. Information pool on approaches towards a sustainable design of municipal waste management and supporting technologies and equipment. Texte 40/2018. Hg. v. Umweltbundesamt (UBA), zuletzt geprüft am 30.08.2018.</p> <p>Hauschild M, Rosenbaum R, Olsen SI (eds.). Life Cycle Assessment: Theory and Practice. 1st ed. Cham: Springer International Publishing; 2018.</p> <p>Kaza, Silpa; Yao, Lisa; Bhada-Tata, Perinaz; van Woerden, Frank (2018): What a waste 2.0. A Global Snapshot of Solid Waste Management to 2050. Hg. v. World Bank Group, zuletzt geprüft am 21.09.2018.</p> <p>Wilson, David C.; Rodic, Ljiljana; Cowing, Michael J.; Velis, Costas A.; Whiteman, Andrew D.; Scheinberg, Anne et al. (2015): 'Wasteaware' benchmark indicators for integrated sustainable waste management in cities. In: Waste management (New York, N.Y.) 35, S. 329–342. DOI: 10.1016/j.wasman.2014.10.006.</p>
10	Comment

Module Description

Modul name					
Urban Construction Technologies					
Module no.	Credit points	Workload	Self-study	Duration	Frequency
13-A0-J001	6 CP	180 h	120 h	1 Semester	Every semester
Language of instruction			Person responsible for the module		
Englisch			Prof. Dr. Christoph Motzko		
1	Courses of the module				
	Course no.	Course name	Workload (CP)	Form of instruction	Contact hours
	13-A0-J001-se	Urban Construction Technologies	0	Seminar	4
2	Study content				
	<ul style="list-style-type: none"> • Construction Process Management • Lean Construction • Cast-in-place Concrete Technology • Construction Project Scheduling 				

	<ul style="list-style-type: none"> • Cost Estimating in Construction • Occupational Health and Safety in Construction • Tunnel Construction
3	<p>Learning outcomes</p> <ul style="list-style-type: none"> • Students understand the process concept and are basically able to build up the organization of construction projects • Students understand the principles of Lean Construction and know selected methods • Students have an overview of construction technologies in urban areas • Students are able to estimate the costs in principle and to indicate the prices in construction projects • Students are able to create schedules for construction projects • Students understand and are able to apply the methods of risk assessment in relation to health and safety in construction projects
4	<p>Requirements for participation</p>
5	<p>Forms of examination Modulabschlussprüfung:</p> <ul style="list-style-type: none"> • Modulprüfung (Fachprüfung, schriftliche Prüfung, Dauer 120 min, Standard)
6	<p>Requirements on the award of credit points</p>
7	<p>Grading Modulabschlussprüfung:</p> <ul style="list-style-type: none"> • Modulprüfung (Fachprüfung, schriftliche Prüfung, Gewichtung: 1)
8	<p>Usability of the module</p>
9	<p>Literature</p> <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	Comment

Module Description

Modul name					
Urban Development and Architecture of Cities					
Module no.	Credit points	Workload	Self-study	Duration	Frequency
13-02-J001	6 CP	180 h	120 h	1 Semester	Every semester
Language of instruction			Person responsible for the module		
Englisch			Prof. Dr. Hans-Joachim Linke		
1	Courses of the module				
	Course no.	Course name	Workload (CP)	Form of instruction	Contact hours
	13-B2-J005-se	Urban Structures	0	Seminar	2
	13-M4-J001-se	Typology of Buildings	0	Seminar	2
2	Study content				
	<p>The seminar offers students insights into the theory of urban planning and compares past with current approaches. Urban morphology and urban fabric as well as models and universal concepts of spatial planning will be presented and urban usages with different forms, developments and demands in the context of environmental and infrastructural interests will be covered.</p> <p>In the seminar the development of sustainable spatial structures and the role of planning with instruments and procedures will be analysed. Therefore, the seminar takes a look at the society and its participation as well as its new planning culture of integrated approaches. Content of the module are the concepts of urban design, especially for the public space, and neighbourhood characteristics.</p> <p>On one hand students will examine the architecture of buildings as bricks of the urban environment and on the other hand the city architecture at different levels. The typology of buildings in the urban environment, of housing and of office buildings will be analysed. Next to the typology of building construction, also the typically used materials will be presented.</p>				
3	Learning outcomes				
	<ul style="list-style-type: none"> - 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. - The students know about the main challenges of sustainable developments and construction and they are able to assess planning based on different instruments and procedures. 				

	<ul style="list-style-type: none"> - The students have extensive knowledge about the new stakeholder orientated planning culture and can create implementation strategies with participatory dimensions. - 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.
4	Requirements for participation
5	Forms of examination Modulabschlussprüfung: <ul style="list-style-type: none"> • Modulprüfung (Studienleistung, Präsentation, Bestanden/Nicht bestanden) • Modulprüfung (Fachprüfung, mündliche Prüfung, Dauer 20 min, Standard)
6	Requirements on the award of credit points
7	Grading Modulabschlussprüfung: <ul style="list-style-type: none"> • Modulprüfung (Studienleistung, Präsentation, Gewichtung: 0) • Modulprüfung (Fachprüfung, mündliche Prüfung, Gewichtung: 1)
8	Usability of the module
9	Literature 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	Comment

Module Description

Module name Urban Rural Partnerships					
Module Nr.	Credit Points 6 CP	Hours 180 h	Independent Learning 90 h	Duration 4 weeks	Term Winter
Language english			Instructor/s Dr. Huong (VGU)		
1	Course of Module				
	Course Nr.	Course Title	CP	Forms of instruction	SWS/ Contact hours (45 min) per week
		Urban Rural Partnerships	6	Seminar	6
2	<p>Study Content</p> <p>The module provides knowledge about the various roles and responsibilities of rural functions in metropolitan development in a holistic way and with the skills and abilities to respond to changes. Exploring the roles and contribution of the cities for rural development and emphasizing their negative impacts to the rural areas. By examining a range of rural areas, the module emphasises the importance of multi-scalar approaches, addressing the interaction between urban and rural areas and their development across time and space. The specific contents include:</p> <ul style="list-style-type: none"> - Functions, structure and propositions of rural and urban areas - Relations between urban and rural regions, their interdependencies and linkages - Urban-rural dependency and local economy - Networks, regional and local co-operation and partnership - Macro migration between metropolitan and rural areas and different stages of urbanization process - Valuation of ecosystems - Urban-rural development and scenario analysis <p>By critically examining theory and practice of rural as well as urban-rural development at the international, national and local levels in a variety of contexts, the module seeks to provide students with an understanding of the processes generating sustainable development. It especially discusses how partnership between urban and rural areas in different aspects would bring the benefits to both.</p>				
3	<p>Learning Outcomes</p> <p>The students understand the problems of rural areas in the surrounding of fast growing cities and the interaction as well as interdependencies between these two zones. Regarding local economic development for the rural areas, they know how to identify possible value chain for such rural areas and to realise such a value chain in cooperation with urban areas. Students are able to use valuation methods for ecosystem and its services that are important for sustaining both urban and rural zones.</p>				
4	<p>Requirements for participation</p> <p>-</p>				

5	Test method Written exam (120 minutes), course work, written assignment
6	Conditions for Assessment coursework, written assignment, pass exam Recommendation: Successful attendance at seminar.
7	Grading 70% for exam, 20% for written assignment and 10% for course work (in-class assignment).
8	Application M.Sc. SUD at VGU

Module Description

Module name Urban Transport Planning					
Module Nr.	Credit Points 6 CP	Hours 180 h	Independent Learning 90 h	Duration 4 weeks	Term Winter
Language english			Instructor/s Dr. Vu Anh Tuan (VGU)		
1	Course of Module				
	Course Nr.	Course Title	CP	Forms of instruction	SWS/ Contact hours (45 min) per week
		Urban Transport Planning	6	Seminar	6
2	Study Content <ul style="list-style-type: none"> • Introduction of Urban Transport Systems (0.5 CP) • Integrated Urban-Transport Planning: Concept, Methods, and Examples (including TOD: Transit-Oriented Development, TOR: Transit-Oriented Region, TOC: Transit-Oriented Nation) (1.5 CP) • Sustainable Transport Policy (0.5 CP) • Smart Mobility Management (1 CP) • Traffic Impact Assessment (TIA): Principles and Practices (1.5 CP) • Field Trip and Report (1 CP) 				
3	Learning Outcomes The course provides students with understanding, knowledge and skills on how to make planning and management schemes for an integrated urban and transport development. Students will learn key concepts and methods for planning and analysis through real-world examples. At the end, students applies what they have learnt in conducting an assignment aimed at addressing issues in either developed or developing cities.				

4	Requirements for participation Calculus skills (Excel, SPSS, etc.) Statistical Analysis Techniques (regression, discrete choice model, etc.) Microeconomics and Macroeconomics – Principles of Economics
5	Test method Assignment report assessment, seminar attendance (recommended)
6	Conditions for Assessment accepted full report for the assignment Attending more than 70% of the module seminar (recommended) Conducting the required field trip surveys
7	Grading Assignment report 70% and in-class assignment 30%
8	Application M.Sc. SUD at VGU
9	Literature Urban Transportation Planning, M.D. Meyer and E. J. Miller, 2014 ed. The Lecturer provides the seminar materials.
10	Comments

Module Description

Modul name					
Water in Urban Development					
Module no.	Credit points	Workload	Self-study	Duration	Frequency
13-02-J004	6 CP	180 h	120 h	1 Semester	Every 2. semester
Language of instruction			Person responsible for the module		
Englisch					
1	Courses of the module				
	Course no.	Course name	Workload (CP)	Form of instruction	Contact hours
	13-K0-J001-se	Sanitary Environmental Engineering	0	Seminar	2
	13-L2-J001-se	Hydraulic Engineering	0	Seminar	2
2	Study content				
Sanitary environmental engineering deals with water supply techniques, wastewater discharge in sewer systems and wastewater treatment technologies.					
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.					
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.					
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					

	<p>interaction between the water and the channel. 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. 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>Learning outcomes</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. • 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	<p>Requirements for participation</p>
5	<p>Forms of examination</p> <p>Modulabschlussprüfung:</p> <ul style="list-style-type: none"> • Modulprüfung (Fachprüfung, Klausur, Dauer 90 min, Standard)
6	<p>Requirements on the award of credit points</p>

7	Grading Modulabschlussprüfung: <ul style="list-style-type: none"> • Modulprüfung (Fachprüfung, Klausur, Gewichtung: 1)
8	Usability of the module
9	Literature <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 • Chanson, H. (2004) Hydraulics of Open Channel Flow. Elsevier - 650 pages • CHAUDHRY, M.H. (2007) Open-Channel Flow. Springer Science & Business Media - 523 pages
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