Description of Module

<table>
<tr><td colspan="7">Module name
German Law of Property and Planning (TU)</td></tr>
<tr><td colspan="2">Modul Nr.</td><td>Credit Points
6 CP</td><td>Hours
180 h</td><td>Independent Learning
120 h</td><td>Duration Semester</td><td>Term
Winter</td></tr>
<tr><td colspan="4">Language
english</td><td colspan="3">Instructor/s
Prof. H. J. Linke (TU)</td></tr>
<tr><td>1</td><td colspan="6">Course of Module
<table>
<tr><th>Course Nr.</th><th>Course Title</th><th>CP</th><th>Forms of instruction</th><th>SWS/ Contact hours (45 min) per week</th></tr>
<tr><td></td><td>German Law of Property and Planning</td><td>6</td><td>Seminar</td><td>4</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
</table></td></tr>
<tr><td>2</td><td colspan="6">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</td></tr>
<tr><td>3</td><td colspan="6">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.</td></tr>
<tr><td>4</td><td colspan="6">Requirements for participation
-</td></tr>
<tr><td>5</td><td colspan="6">Test method
Oral exam (20 minutes) or written (120 minutes)</td></tr>
<tr><td>6</td><td colspan="6">Conditions for Assessment
passed exam
Recommendation: Successful attendance at lectures.</td></tr>
<tr><td>7</td><td colspan="6">Grading
100 % exam</td></tr>
<tr><td>8</td><td colspan="6">Application
M.Sc. SUD</td></tr>
</table>

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	**Comments** Dr. Ngyuen Hieu offers the module at VGU and Prof. Dr.-Ing. H. J. Linke at TU Darmstadt.

Description of Module

<table>
<tr><td colspan="7">Module name
Methodology of Empirical Analysis (TU Da)</td></tr>
<tr><td>Module Nr.</td><td colspan="2">Credit Points
6 CP</td><td>Hours
180 h</td><td>Independent Learning
120 h</td><td>Duration Semester</td><td>Term Winter</td></tr>
<tr><td colspan="4">Language
english</td><td colspan="3">Instructor/s
Prof. Dr. H. J. Linke</td></tr>
<tr><td>1</td><td colspan="6">Course of Module
<table>
<tr><th>Course Nr.</th><th>Course Title</th><th>CP</th><th>Forms of instruction</th><th>SWS/ Contact hours (45 min) per week</th></tr>
<tr><td></td><td>Methodology of Empirical Analysis</td><td>6</td><td>Seminar</td><td>4</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
</table></td></tr>
<tr><td>2</td><td colspan="6">Study Content
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.</td></tr>
<tr><td>3</td><td colspan="6">Learning Outcomes
The course will enable the participants
- 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.</td></tr>
<tr><td>4</td><td colspan="6">Requirements for participation
-</td></tr>
<tr><td>5</td><td colspan="6">Test method
Written assignment and final presentation</td></tr>
<tr><td>6</td><td colspan="6">Conditions for Assessment
Passed exam
Recommendation: Successful attendance at lectures.</td></tr>
<tr><td>7</td><td colspan="6">Grading
Written assignment (70%) and oral presentation and discussion (30%)</td></tr>
<tr><td>8</td><td colspan="6">Application
M.Sc. SUD at TU Darmstadt</td></tr>
<tr><td>9</td><td colspan="6">Literature
▪ C. R. Kothari (2009) Research Methodology: Methods and Techniques, New Age</td></tr>
</table>

	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 Bhattacherjee (2012): *Social Science Research: Principles, Methods, and Practices.* USF Tampa Bay Open Access Textbooks Collection. Book 3.
10	**Comments** Dr. Pham Thai Son offers the module at VGU and Prof. Dr.-Ing. H. J. Linke at TU Darmstadt.

Description of Module

<table>
<tr><td colspan="7">Module name
GIS and applications to urban development (TU Da)</td></tr>
<tr><td>Module Nr.</td><td>Credit Points
6 CP</td><td>Hours
180 h</td><td>Independent Learning
120 h</td><td>Duration
Semester</td><td colspan="2">Term
Winter</td></tr>
<tr><td colspan="3">Language
english</td><td colspan="4">Instructor/s
Prof. Dr.-Ing. H. J. Linke (TU)</td></tr>
<tr><td>1</td><td colspan="6">Course of Module
<table>
<tr><th>Course Nr.</th><th>Course Title</th><th>CP</th><th>Forms of instruction</th><th>SWS/ Contact hours (45 min) per week</th></tr>
<tr><td></td><td>Basics of GIS</td><td>3</td><td>Seminar</td><td>2</td></tr>
<tr><td></td><td>Using GIS for urban analysis</td><td>3</td><td>Seminar</td><td>2</td></tr>
</table></td></tr>
<tr><td>2</td><td colspan="6">Study Content
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
- 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</td></tr>
<tr><td>3</td><td colspan="6">Learning Outcomes
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.</td></tr>
<tr><td>4</td><td colspan="6">Requirements for participation
Basics of PC handling</td></tr>
</table>

5	**Test method** Computer-based exam (120 min) **or** oral (20 minutes), homework
6	**Conditions for Assessment** pass exam, accept homework
7	**Grading** 70% Examination and 30% Homework
8	**Application** MSc SUD at TU Da
9	**Literature** 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: https://www.youtube.com/watch?v=8SUzVoqUpA0&list=PLVFxXUWb3cXXoDNCMjilFngPOZPyrVWg8
10	**Comments** Dr. Pham Thai Son offers the module at VGU and Prof. Dr.-Ing. H. J. Linke at TU Darmstadt.

Description of Module

<table>
<tr><td colspan="6">Module name
Urban Development and architecture of cities (TU)</td></tr>
<tr><td>Module Nr.</td><td>Credit Points
6 CP</td><td>Hours
180 h</td><td>Independent Learning
120 h</td><td>Duration Semester</td><td>Term Winter</td></tr>
<tr><td colspan="3">Language
english</td><td colspan="3">Instructor/s
Prof. Knaack / Prof. Linke (TU)</td></tr>
<tr><td>1</td><td colspan="5">Course of Module
<table>
<tr><th>Course Nr.</th><th>Course Title</th><th>CP</th><th>Forms of instruction</th><th>SWS/ Contact hours (45 min) per week</th></tr>
<tr><td></td><td>Urban structures (Prof. Linke)</td><td>3</td><td>Seminar</td><td>2</td></tr>
<tr><td></td><td>Typology of buildings (Prof. Knaack)</td><td>3</td><td>Seminar</td><td>2</td></tr>
</table></td></tr>
<tr><td>- 2</td><td colspan="5">Study Content
- 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</td></tr>
<tr><td>3</td><td colspan="5">Learning Outcomes
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 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</td></tr>
</table>

	them to improve the city's images at different scales.
4	**Requirements for participation** -
5	**Test method** Oral exam (20 minutes) **or** written (120 minutes)
6	**Conditions for Assessment** pass exam Recommendation: Successful attendance at seminar.
7	**Grading** 100 % exam
8	**Application** M.Sc. SUD at TU Darmstadt
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	**Comments:** Dr. Huong offers the module at VGU and Prof. Knaack / Prof. Linke at TU Darmstadt.

Description of Module

<table>
<tr><td colspan="7">Module name
English Scientific Writing (TU)</td></tr>
<tr><td colspan="2">Module Nr.</td><td>Credit Points
6 CP</td><td>Hours
180 h</td><td>Independent Learning
120 h</td><td>Duration
Semester</td><td>Term
Winter</td></tr>
<tr><td colspan="3">Language
english</td><td colspan="4">Instructor/s
Language Center TU</td></tr>
<tr><td>1</td><td colspan="6">Course of Module</td></tr>
<tr><td></td><td>Course Nr.</td><td colspan="2">Course Title</td><td>CP</td><td>Forms of instruction</td><td>SWS/ Contact hours (45 min) per week</td></tr>
<tr><td></td><td></td><td colspan="2">English Scientific Writing</td><td>6</td><td>Seminar</td><td>4</td></tr>
<tr><td></td><td></td><td colspan="2"></td><td></td><td></td><td></td></tr>
<tr><td>2</td><td colspan="6">Study Content
- 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.</td></tr>
<tr><td>3</td><td colspan="6">Learning Outcomes
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.
Students know the structure of a scientific manuscript. They can write effectively, concisely, and clearly.
They know how to organise an oral presentation and know how to present scientific contents in an appropriate, well structured, and well understandable way.</td></tr>
<tr><td>4</td><td colspan="6">Requirements for participation</td></tr>
<tr><td>5</td><td colspan="6">Test method
Written assignment, oral presentation</td></tr>
<tr><td>6</td><td colspan="6">Conditions for Assessment
written assignment and oral presentation</td></tr>
<tr><td>7</td><td colspan="6">Grading
65 % written assignment, 35 % oral presentation</td></tr>
<tr><td>8</td><td colspan="6">Application
MSc SUD at VGU</td></tr>
<tr><td>9</td><td colspan="6">Literature
Will be announced</td></tr>
<tr><td>10</td><td colspan="6">Comments
VGU and TU Darmstadt offering the module with similar content.</td></tr>
</table>

Description of Module

<table>
<tr><td colspan="7">Module name
Water in urban development</td></tr>
<tr><td>Module Nr.</td><td>Credit Points
6 CP</td><td>Hours
180 h</td><td>Independent Learning
120 h</td><td>Duration
Semester</td><td>Term
Summer</td></tr>
<tr><td colspan="3">Language
english</td><td colspan="3">Instructor/s
Prof. Engelhart/Prof. Urban
Prof. Lehmann</td></tr>
<tr><td>1</td><td colspan="6">Course of Module
<table>
<tr><th>Course Nr.</th><th>Course Title</th><th>CP</th><th>Forms of instruction</th><th>SWS/ Contact hours (45 min) per week</th></tr>
<tr><td></td><td>Sanitary Environmental Engineering</td><td>3 CP</td><td>Seminare</td><td>2</td></tr>
<tr><td></td><td>Hydraulic Engineering</td><td>3 CP</td><td>Seminare</td><td>2</td></tr>
</table></td></tr>
<tr><td>2</td><td colspan="6">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 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.</td></tr>
<tr><td>3</td><td colspan="6">Learning Outcomes
Water Supply Techniques will enable the students to
- 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.</td></tr>
</table>

	- know the most important technical components of a drinking water supply system and requirements for operation and maintenance. Sanitary Engineering will enable the students to - 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. Hydraulic Engineering will impart knowledge on - 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	**Requirements for participation** -
5	**Test method** Written exam, 120 min
6	**Conditions for Assessment** pass exam Recommended: Successful attendance at seminar.
7	**Grading** 100 % exam
8	**Application** M.Sc. SUD
9	**Literature** 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. Jyioti (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
10	**Comments**

Description of Module

<table>
<tr><td colspan="7">Module name
Economic assessment and life cycle assessment methods</td></tr>
<tr><td>Module Nr.</td><td colspan="2">Credit Points
6 CP</td><td>Hours
180 h</td><td>Independent Learning
120 h</td><td>Duration
Semester</td><td>Term
Summer</td></tr>
<tr><td colspan="4">Language
English</td><td colspan="3">Instructor/s
Prof. Linke
Prof. Schebek</td></tr>
<tr><td>1</td><td colspan="6">Course of Module
<table>
<tr><th>Course Nr.</th><th>Course Title</th><th>CP</th><th>Forms of instruction</th><th>SWS/ Contact hours (45 min) per week</th></tr>
<tr><td></td><td>Economic assessment methods</td><td>3</td><td>Seminar</td><td>2</td></tr>
<tr><td></td><td>Life Cycle assessment</td><td>3</td><td>Seminar</td><td>2</td></tr>
</table></td></tr>
<tr><td>2</td><td colspan="6">Study Content
a) Economic assessment methods
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.
- 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
b) Life cycle assessment
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:
- 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</td></tr>
</table>

3	**Learning Outcomes** a) Economic assessment methods The course provides students with a coherent understanding of economic assessment methods. They are able to : - 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, b) Life cycle assessment The course provides students with a coherent understanding of life cycle assessment methods. They are able to: - 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	**Requirements for participation** Vietnamese/German Law of Property and Planning, Methodology of Empirical Analysis, GIS, basic knowledge on mass and energy balance.
5	**Test method** Oral exam (20 minutes) **or** written (120 min) (to be announced at beginning of semester)
6	**Conditions for Assessment** pass exam Recommendation: Successful attendance at seminar.
7	**Grading** 100 % exam
8	**Application** M.Sc. SUD
9	**Literature** Isaac, D. / O'Leary, J. (2012): Property Valuation Principles Anthony Boardman / David Greenberg (2013): Cost-Benefit Analysis 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	**Comments**

Description of Module

<table>
<tr><td colspan="7">Module name
Infrastructure</td></tr>
<tr><td>Module Nr.</td><td>Credit Points
6 CP</td><td>Hours
180 h</td><td>Independent Learning
120 h</td><td>Duration
Semester</td><td colspan="2">Term
Summer</td></tr>
<tr><td colspan="3">Language
English</td><td colspan="4">Instructor/s
Prof. H. J. Linke
Prof. L. Schebek</td></tr>
<tr><td>1</td><td colspan="6">Course of Module
<table>
<tr><th>Course Nr.</th><th>Course Title</th><th>CP</th><th>Forms of instruction</th><th>SWS/ Contact hours (45 min) per week</th></tr>
<tr><td></td><td>System of infrastructure</td><td>3</td><td>Seminar</td><td>2</td></tr>
<tr><td></td><td>Solid waste management</td><td>3</td><td>Seminar</td><td>2</td></tr>
</table></td></tr>
<tr><td>2</td><td colspan="6">Study Content
a) System of Infrastructure
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.
- 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

b) Solid Waste Management

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:

- 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</td></tr>
</table>

	- Case studies of waste management in developing countries - economics
3	**Learning Outcomes** a) System of Infrastructure The course provides students with a coherent understanding of infrastructure systems and the economic background. They are able to - 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, **b) Solid Waste Management** The course provides students with a coherent understanding of waste management and the economic background. They are able to - 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	**Requirements for participation** Vietnamese/German Law of Property and Planning, Methodology of Empirical Analysis, GIS, Vietnamese/German Law of Waste Management
5	**Test method** Oral exam (20 minutes) **or** written (120 min) (to be announced at beginning of semester)
6	**Conditions for Assessment** pass exam Recommendation: Successful attendance at seminar.
7	**Grading** 100 % exam
8	**Application** M.Sc. SUD
9	**Literature** Pollalis, S. (2016): Planning Sustainable Cities: An infrastructure-based approach 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%22Bew%C3%A4hrte%20Verfahren%20zur%20kommunalen%20Abfallbewirtschaftung%22

10	**Comments**

Description of Module

<table>
<tr><td colspan="7">Module name
Ecological Management in Urban Development</td></tr>
<tr><td>Module Nr.</td><td>Credit Points
6 CP</td><td>Hours
180 h</td><td>Independent Learning
90 h</td><td>Duration
4 weeks</td><td colspan="2">Term
Winter</td></tr>
<tr><td colspan="3">Language
english</td><td colspan="4">Instructor/s
Dr. Huong (VGU)</td></tr>
<tr><td>1</td><td colspan="6">Course of Module
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<tr><th>Course Nr.</th><th>Course Title</th><th>CP</th><th>Forms of instruction</th><th>SWS/ Contact hours (45 min) per week</th></tr>
<tr><td></td><td>Ecological Management in Urban Development</td><td>6</td><td>Seminar.</td><td>6</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
</table></td></tr>
<tr><td>2</td><td colspan="6">Study Content
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:
- 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.
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:
- Environmental issues and management agendas;
- Urban green and its particular importance; and
- Sustainable Urban Development towards Eco-cities
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.</td></tr>
<tr><td>3</td><td colspan="6">Learning Outcomes
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,</td></tr>
</table>

	and the ways forward for dealing with these.
4	**Requirements for participation** -
5	**Test method** Written exam (120 minutes), course work and 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 or TU Darmstadt
9	**Literature** Angel, Sh. (2012) Planet of Cities. Ed. By Lincoln Institute of Land Policy. Massachuetts. 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; Gurges, 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 3rd semester of the study program.

Description of Module

<table>
<tr><td colspan="7">Module name
Urban Rural Partnerships</td></tr>
<tr><td colspan="2">Module Nr.</td><td>Credit Points
6 CP</td><td>Hours
180 h</td><td>Independent Learning
90 h</td><td>Duration
4 weeks</td><td>Term
Winter</td></tr>
<tr><td colspan="4">Language
english</td><td colspan="3">Instructor/s
Dr. Huong (VGU)</td></tr>
<tr><td>1</td><td colspan="6">Course of Module
<table>
<tr><th>Course Nr.</th><th>Course Title</th><th>CP</th><th>Forms of instruction</th><th>SWS/ Contact hours (45 min) per week</th></tr>
<tr><td></td><td>Urban Rural Partnerships</td><td>6</td><td>Seminar</td><td>6</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
</table></td></tr>
<tr><td>2</td><td colspan="6">Study Content
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:
- 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
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.</td></tr>
<tr><td>3</td><td colspan="6">Learning Outcomes
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.</td></tr>
<tr><td>4</td><td colspan="6">Requirements for participation
-</td></tr>
</table>

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 or TU Darmstadt
9	Literature Bulderberga, Z. (2011) Urban Rural Partnership for Regional Development. Social Research No.1 (22), 14-24. Christopher Coles / Jonathan Mitchell (2011): Markets and Rural Poverty: Upgrading in Value Chains. Hans Clauzing / Nuno Clauzing (2016): Urban farming. Karsten Grunewald / Olaf Bastian (2015): Ecosystem Services - Concept, Methods and Case Studies Peter Dannenberg / Elmar Kulke (2015): Economic Development in Rural Areas: Functional and Multifunctional Approaches (The Dynamics of Economic Space) Robert Riddell (2004): Sustainable Urban Planning. Blackwell Publishing. Part II, chapter 4 & 5. Shams Uddin (2013): Economic valuation of Sundarbans mangrove ecosystems-Bangladesh Tacoli, C. (2003) The links between urban and rural development. Environment&Urbanization, Vol. 15, No. 1, April 2003. UN-Habitat (2016) Urban Rural Linkages. Habitat III Issues Papers. UN (2014) World Urbanization Prospects - The 2014 Revision. New York, United Nations, Department of Economic and Social Affairs.
10	Comments Dr. Huong offers the module at VGU in the 3rd semester of the study program.

Stand Senatsbeschluss (20.09.2013)
v3.0 APB 5.

Description of Module

<table>
<tr><td colspan="7">Module name
Instruments of Spatial Planning</td></tr>
<tr><td>Module Nr.</td><td>Credit Points
6 CP</td><td>Hours
180 h</td><td>Independent Learning
90 h</td><td>Duration
4 weeks</td><td colspan="2">Term
Winter</td></tr>
<tr><td colspan="3">Language
english</td><td colspan="4">Instructor/s
Dr. Pham Thai Son (Part 1), Dr. Nguyen Ngoc Hieu (part 2)</td></tr>
<tr><td>1</td><td colspan="6">Course of Module
<table>
<tr><th>Course Nr.</th><th>Course Title</th><th>CP</th><th>Forms of instruction</th><th>SWS/ Contact hours (45 min) per week</th></tr>
<tr><td></td><td>Instruments of Spatial Planning</td><td>6</td><td>Seminars</td><td>6</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
</table></td></tr>
<tr><td>2</td><td colspan="6">Study Content
- 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)</td></tr>
<tr><td>3</td><td colspan="6">Learning Outcomes
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:
- Understand the concept of spatial planning in relation to the conventional urban planning</td></tr>
</table>

	- 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	**Test method** Written exam (120 min), In-class assignment, home exercise
6	**Conditions for Assessment** accept home exercise, in-class assignment, pass exam Recommendation: Successful attendance at seminar.
7	**Grading** Final written exam (60%) In-class assignment (20%) and home exercise (20%)
8	**Application** MSc SUD at VGU or TUD
9	**Literature** Elke Pahl-Weber, Dietrich Henckel (Editors) (2008). The Planning System and Planning Terms in Germany: A Glossary. *(Reading part: 1.2 + 1.3 + 1.4 + 1.5, page 38 - page 57)* RehabiMed (2007). RehabiMed Method: Traditional Mediterranean Architecture II. Rehabilitation Building. *(Reading part: Tool 13 Defining legal and planning instruments, page 211 - page 224)* ACT Government (2016). Guidelines for Transport Impact Assessment. Florida Department of Transport (2014). Transportation Site Impact Handbook: Estimating the Transportation Impacts of Growth. World Bank (2004). Involuntary Resettlement Sourcebook: Planning and Implementation in Development Projects. ANJECT (2007). Transfer of Development Rights: A Market-Driven Planning Tool. Arthur C. Nelson, Rick Pruetz, and Doug Woodruff (2012). The TDR Handbook: Designing and Implementing Successful Transfer of Development Rights Programs Yu-Hung Hong (2014). Land Readjustment. Yu-Hung Hong, and Barrie Needham (2007). Analyzing Land Readjustment: Economics, Law, and Collective Action Anh Tran Thi Lan, and Minh Nguyen Du (2014). Urban Development in Vietnam Context and LP/LR Applicability Implication. 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 Quang Nguyen (2014). Participatory and Inclusive Land Readjustment for Addressing Informal Resettlements and Managing Urban Extension in Vietnam. Vinh Vũ Thị (2014). Thu gom và tái điều chỉnh đất trong các dự án nâng cấp đô thị Việt Nam. 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. ITDP (2014). TOD Standard 2.1

	Phuc, Luong Minh (2015). Transit-Oriented Development in Ho Chi Minh City: Opportunities & Challenges. Prerna V. Mehta, Neha Mungekar, and Merlyn Mathew (2014). Transit Oriented Development Manual: Delhi TOD Policy & Regulations Interpretation. TBARTA (2012). Transit Oriented Development: Resource Guide Louis Albrechts (2004). Strategic (spatial) planning reexamined. Maria Cerreta, Grazia Concilio, and Valeria Monno (2010). Making Strategies in Spatial Planning: Knowledge and Values. 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. Phi Ho Long (2016). Implementation-Oriented Planning: Case Study of Ho Chi Minh City Flood Management. UN Habitat (2007). Inclusive and Sustainable Urban Planning: A Guide for Municipalities, Volume 1: An Introduction to Urban Strategic Planning Annandale, David D. (2014) Strategic Environmental Assessment for Spatial Planning Guidance Document. Islamabad: IUCN Pakistan. Cities Alliance (2006) Guide to City Development Strategies - Improving Urban Performance. Washington, The Cities Alliance. Crown (2009) Multi-criteria analysis: a manual. London, Department for Communities and Local Government. Faludi, A. (2008) European Spatial Research and Planning. Lincoln Institute of Land Policy. GIZ (2012) Land Use Planning - Concept, Tools and Applications. LaGro James A. (2008) Site analysis: a contextual approach to sustainable land planning and site design (2nd ed.). John Wiley & Sons, Inc. 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 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. UNEP (2004) Environmental Impact Assessment and Strategic Environmental Assessment: Towards an Integrated Approach.
10	**Comments**

Description of Module

<table>
<tr><td colspan="7">Module name
Urban Transport Planning</td></tr>
<tr><td colspan="2">Module Nr.</td><td>Credit Points
6 CP</td><td>Hours
180 h</td><td>Independent Learning
90 h</td><td>Duration
4 weeks</td><td>Term
Winter</td></tr>
<tr><td colspan="4">Language
english</td><td colspan="3">Instructor/s
Dr. Vu Anh Tuan (VGU)</td></tr>
<tr><td>1</td><td colspan="6">Course of Module
<table>
<tr><th>Course Nr.</th><th>Course Title</th><th>CP</th><th>Forms of instruction</th><th>SWS/ Contact hours (45 min) per week</th></tr>
<tr><td></td><td>Urban Transport Planning</td><td>6</td><td>Seminar</td><td>6</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
</table></td></tr>
<tr><td>2</td><td colspan="6">Study Content
• 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)</td></tr>
<tr><td>3</td><td colspan="6">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.</td></tr>
<tr><td>4</td><td colspan="6">Requirements for participation
Calculus skills (Excel, SPSS, etc.)
Statistical Analysis Techniques (regression, discrete choice model, etc.)
Microecomics and Macroeconomics – Principles of Economics</td></tr>
<tr><td>5</td><td colspan="6">Test method
Assignment report assessment, seminar attendance</td></tr>
<tr><td>6</td><td colspan="6">Conditions for Assessment
accepted full report for the assignment
Attending more than 70% of the module seminar
Conducting the required field trip surveys</td></tr>
<tr><td>7</td><td colspan="6">Grading
Assignment report 70% and seminar attendance 30%</td></tr>
<tr><td>8</td><td colspan="6">Application
M.Sc. SUD at VGU or TU Darmstadt.</td></tr>
</table>

9	**Literature** Urban Transportation Planning, M.D. Meyer and E. J. Miller, 2014 ed. The Lecturer provides the seminar materials.
10	**Comments**

Stand Senatsbeschluss (20.09.2013)
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Description of Module

<table>
<tr><td colspan="7">Module Name
Green Building Design</td></tr>
<tr><td colspan="2">Module Nr.</td><td>Credit Points
6 CP</td><td>Hours
180 h</td><td>Independent Learning
120 h</td><td>Duration
Semester</td><td>Term
Summer</td></tr>
<tr><td colspan="4">Language
English</td><td colspan="3">Instructor/s
Prof. Stefan Schäfer
E-Mail: info@kgbauko.tu-darmstadt.de</td></tr>
<tr><td>1</td><td colspan="6">Course of Module
<table>
<tr><th>Course Nr.</th><th>Course Title</th><th>CP</th><th>Forms of instruction</th><th>SWS/ Contact hours (45 min) per week</th></tr>
<tr><td></td><td>Green Building Design II</td><td>6</td><td>Seminar</td><td>4</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
</table></td></tr>
<tr><td>2</td><td colspan="6">Study Content

The module focuses on basics of Green Buildings such as
- 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
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).
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.</td></tr>
<tr><td>3</td><td colspan="6">Learning Outcomes

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</td></tr>
</table>

	comprehensive.
4	**Requirements for participation** Recommendation: Basic knowledge on building construction.
5	**Test method** written report and oral presentation (20 minutes) not graded assignments
6	**Conditions for Assessment** pass written report pass not graded assignments Recommendation: Successful attendance at seminar.
7	**Grading** 90 % written report, 10% oral presentation
8	**Application** MSc SUD at VGU
9	**Literature** - 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 - 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	**Comments**

Description of Module

<table>
<tr><td colspan="7">Module name
Urban Construction Technologies</td></tr>
<tr><td colspan="2">Module Nr.</td><td>Credit Points
6 CP</td><td>Hours
180 h</td><td>Independent Learning
120 h</td><td>Duration
Semester</td><td>Term
Sommer</td></tr>
<tr><td colspan="4">Language
english</td><td colspan="3">Instructor/s
Univ.-Prof. Dr.-Ing. Christoph Motzko</td></tr>
<tr><td>1</td><td colspan="6">Course of Module
<table>
<tr><th>Course Nr.</th><th>Course Title</th><th>CP</th><th>Forms of instruction</th><th>SWS/ Contact hours (45 min) per week</th></tr>
<tr><td></td><td>Urban Construction Technologies</td><td>6</td><td>Seminar</td><td>4</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
</table></td></tr>
<tr><td>2</td><td colspan="6">Study Content
- 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</td></tr>
<tr><td>3</td><td colspan="6">Learning Outcomes
- 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
- Students basically understand and are able to apply the risk assessment methods concerning health and safety in construction projects</td></tr>
<tr><td>4</td><td colspan="6">Requirements for participation
None</td></tr>
<tr><td>5</td><td colspan="6">Test method
Written exam (120 min), exercises</td></tr>
<tr><td>6</td><td colspan="6">Conditions for Assessment
pass exam
pass exercises
Recommendation: Successful attendance at seminar.</td></tr>
<tr><td>7</td><td colspan="6">Grading
100 % written exam</td></tr>
<tr><td>8</td><td colspan="6">Application
MSc SUD at VGU</td></tr>
</table>

9	**Literature** 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	**Comments**

Stand Senatsbeschluss (20.09.2013)
v3.0 APB 5.

Description of Module

<table>
<tr><td colspan="7">Module name
Development Planning and Governance</td></tr>
<tr><td colspan="2">Module Nr.</td><td>Credit Points
6 CP</td><td>Hours
180 h</td><td>Independent Learning
90 h</td><td>Duration
4 weeks</td><td>Term
Winter</td></tr>
<tr><td colspan="4">Language
English</td><td colspan="3">Instructor/s
Dr. Nguyen Hieu</td></tr>
<tr><td>1</td><td colspan="6">Course of Module
<table>
<tr><th>Course Nr.</th><th>Course Title</th><th>CP</th><th>Forms of instruction</th><th>SWS/ Contact hours (45 min) per week</th></tr>
<tr><td></td><td>Development Planning and Governance</td><td>6</td><td>Seminar</td><td>6</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
</table></td></tr>
<tr><td>2</td><td colspan="6">Study Content
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.
Students will discuss following questions:
▪ 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?</td></tr>
<tr><td>3</td><td colspan="6">Learning Outcomes
At the end of the course, students are able to:
• 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</td></tr>
</table>

	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	**Requirements for participation** Vietnamese Laws of property and planning and Planning Instruments.
5	**Test method** Written (120 minutes, open book) or oral exam(20 minutes), group work project, home exercises
6	**Conditions for Assessment** Successful attendance at 80% of seminar, accept home exercises, develop group work project, pass the final exam**.**
7	**Grading** 50% for exam, 25% for group work project, 25% for home exercises.
8	**Application** M.Sc. SUD at VGU or TU Darmstadt.
9	**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: ▪ 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	**Comments**

Stand Senatsbeschluss (20.09.2013)
v3.0 APB 5.

Description of Module

<table>
<tr><td colspan="7">Module name
Multidisciplinary Project</td></tr>
<tr><td>Module Nr.</td><td colspan="2">Credit Points
6 CP</td><td>Hours
180 h</td><td>Independent Learning
90 h</td><td>Duration
Semester</td><td>Term
Winter</td></tr>
<tr><td colspan="4">Language
english</td><td colspan="3">Instructor/s
Prof. Hans Joachim Linke
Dr. Pham Thai Son
Dr. Nguyen Ngoc Hieu
Dr. Le Thi Thu Huong</td></tr>
<tr><td>1</td><td colspan="6">Course of Module
<table>
<tr><th>Course Nr.</th><th>Course Title</th><th>CP</th><th>Forms of instruction</th><th>SWS/ Contact hours (45 min) per week</th></tr>
<tr><td></td><td>Multidisciplinary Project and Seminar “Sustainable urban development”</td><td>6</td><td>Seminars</td><td>6</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
</table></td></tr>
<tr><td>2</td><td colspan="6">Study Content
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.

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.</td></tr>
<tr><td>3</td><td colspan="6">Learning Outcomes
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.
The students are well-organised, communicative, open minded, and capable to work independently in such an urban development process.</td></tr>
<tr><td>4</td><td colspan="6">Requirements for participation</td></tr>
</table>

	Law of Property and Planning; Economics of Urban Development; Instruments of Spatial Planning; Transport Planning; Green Buildings;
5	**Test method** Oral exam (20 minutes per student), written assignment
6	**Conditions for Assessment** pass exam, written assignment
7	**Grading** 100 % exam
8	**Application** MSc SUD at VGU
9	**Literature** 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 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	**Comments**

Stand Senatsbeschluss (20.09.2013)
v3.0 APB 5.

Description of Module

<table>
<tr><td colspan="7">Module name
Masterthesis</td></tr>
<tr><td colspan="2">Module Nr.</td><td>Credit Points
24 CP</td><td>Hours
720 h</td><td>Independent Learning
700 h</td><td>Duration
6 months</td><td>Term
Summer</td></tr>
<tr><td colspan="4">Language
english</td><td colspan="3">Instructor/s
Prof. TU Darmstadt and SUD senior lecturers</td></tr>
<tr><td>1</td><td colspan="6">Course of Module
<table>
<tr><th>Course Nr.</th><th>Course Title</th><th>CP</th><th>Forms of instruction</th><th>SWS/ Contact hours (45 min) per week</th></tr>
<tr><td></td><td>Master-Thesis</td><td>24</td><td>Master thesis</td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
</table></td></tr>
<tr><td>2</td><td colspan="6">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.</td></tr>
<tr><td>3</td><td colspan="6">Learning Outcomes
Students acquire the
• 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</td></tr>
<tr><td>4</td><td colspan="6">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).</td></tr>
<tr><td>5</td><td colspan="6">Test method
Written thesis, presentation of the results of 20 minutes and discussion of the results of 20 minutes.</td></tr>
<tr><td>6</td><td colspan="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).</td></tr>
<tr><td>7</td><td colspan="6">Grading
80 % written result and 20 % presentation and discussion</td></tr>
<tr><td>8</td><td colspan="6">Application
MSc SUD at VGU or TUD</td></tr>
<tr><td>9</td><td colspan="6">Literature

Working schedule of Master-Thesis (developed by Prof. Linke and Dr. Son)
Anon Bhattacherjee (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</td></tr>
</table>

	(P) Ltd., Publishers. Elisabete A. Silva, Patsy Healey,Neil Harris, and Pieter Van den Broeck (2015), Handbook of Planning Research, Routledge, 572p
10	**Comments**