Metropolia University of Applied Sciences

(Metropolia UAS)

and

Hochschule für Technik und Wirtschaft Berlin

(HTW Berlin)

Detailed Module Description of the International Master Programme Construction and Real Estate Management

August 2020

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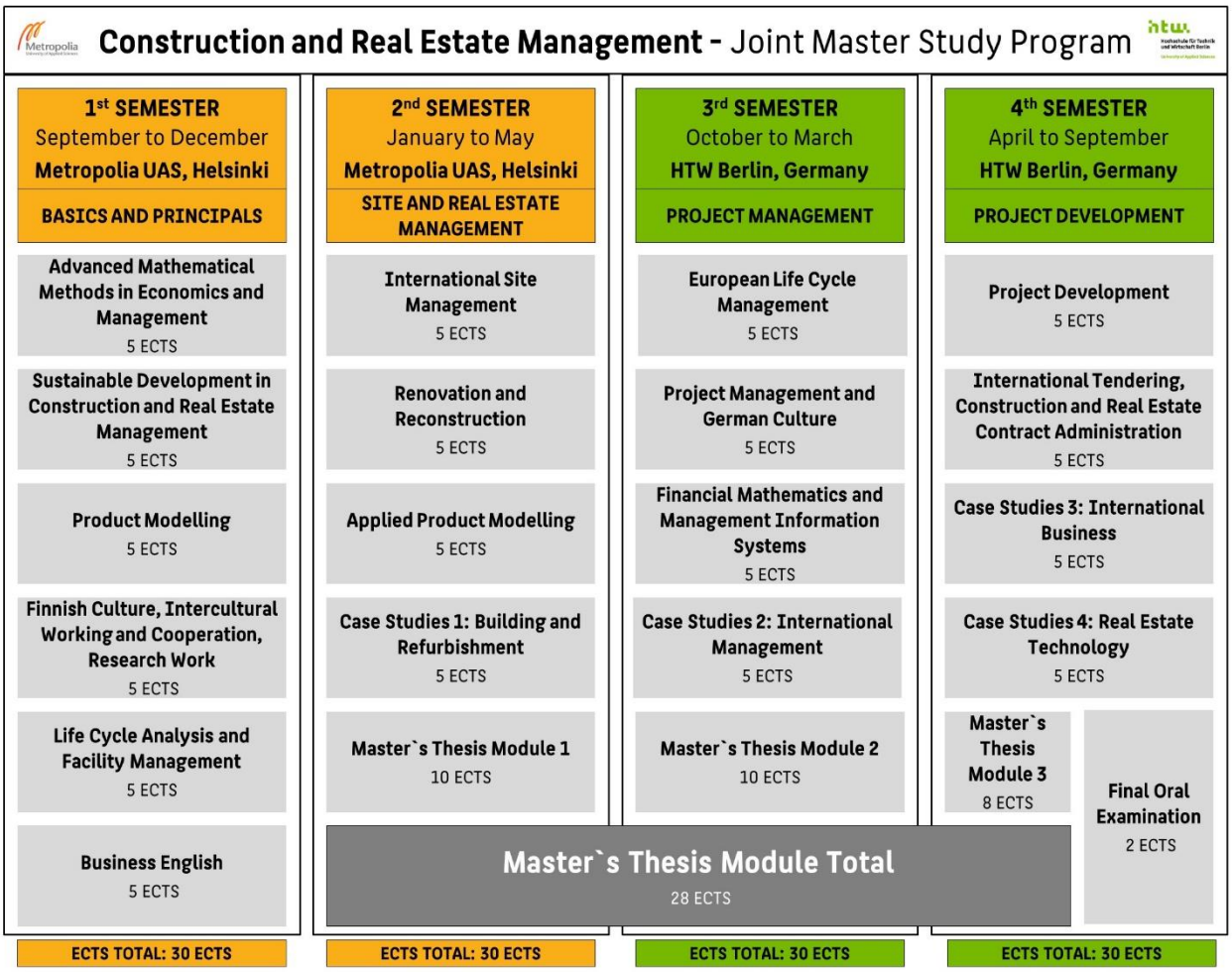
Modul Overview of the ConREM Master Study Program



1 ECTS credit corresponds to a student workload of 30 hours.

Detailed Study Plan Overview of the ConREM Master Study Program

Detailed study plan overview for the modules in the first year of study.

1. Semester (in Helsinki)

				I		II		III				
No.	**Module Designation**	**Type**	**WSH**	**Mode**	**Cr**	**Mode**	**Cr**	**Mode**	**Cr**	**Level**	**CP**	**RP**
M1.1	Advanced Mathematical Methods in Economics and Management	SL	4	CM	**5**	-	-	-	-	2a	-	-
M1.2	Sustainable Development in Construction and Real Estate Management	PS	2	EM	**5**	-	-	-	-	2a	-	-
M1.3	Product Modelling	SL	4	CM	**5**	-	-	-	-	2a	-	-
M1.4	Life Cycle Analysis and Facility Management	SL	4	CM	**5**	-	-	-	-	2a	-	-
M1.5	Business English	SL	4	CM	**5**	-	-	-	-	2a	-	-
M1.6	Finnish Culture, Intercultural Working, Cooperation and Research Work			CM	**5**	-	-	-	-	2a	-	-
M 1.6.1	Finnish Culture	SL	1									
M 1.6.2	Intercultural Working, Cooperation and Research Work	PA	2									
	Total per semester		**17/4**		**30**		**0**		**0**			

2. Semester (in Helsinki)

				I		II		III				
No.	**Module Designation**	**Type**	**WSH**	**Mode**	**Cr**	**Mode**	**Cr**	**Mode**	**Cr**	**Level**	**CP**	**RP**
M2.1	International Site Management	SL/SA	3/1	CM	**5**	CM	**5**	-	-	2a	-	-
M2.2	Renovation and Reconstruction	SL/SA	3/1	CM	**5**	EM[*2)]	**5**	-	-	2a	-	-
M2.3	Applied Product Modelling	SL/PA	3/1	CM	**5**	CM	**5**	-	-	2b	-	1.3
M2.4	Case Studies 1: Building and Refurbishment	PS	2	EM	**5**	EM[*2)]	(5)	-	-	2a	-	-
M2.5	Master's Thesis (1) [*1)]			CM	**10**	CM	**15**	-	-	2a	-	-
	Total per semester		**9/5**		**30**		**30**		**0**			

Study plan overview for the modules in the second year of study.

3. Semester (in Berlin)

				I		II		III				
No.	**Module Designation**	**Type**	**WSH**	**Mode**	**Cr**	**Mode**	**Cr**	**Mode**	**Cr**	**Level**	**CP**	**RP**
M3.1	European Life Cycle Management	SL	4	CM	**5**	CM	**5**	CM	**5**	2a	-	-
M3.2	Project Management and German Culture	SL/PA	3/1	CM	**5**	CM	**5**	CM	**5**	2a	-	-
M3.3	Financial Mathematics and Management Information Systems			CM	**5**	EM[*3)]	**5**	EM[*3)]	**5**	2a	-	-
M3.3.1	Financial and Investment Planning	SL/PA	2/1									
M3.3.2	Management Information Systems	SL/PA	2/1									
M3.4	Case Studies 2: International Management	PS	3	EM	**5**	EM[*3)]	(5)	EM[*3)]	(5)	2a	-	-
M2.5	Master's Thesis (2) [*1)]			CM	**10**	CM	**13**	CM	**15**			
M4.5	Final Oral Examination			**-**	**-**	CM	**2**	-	**-**	2b	s. §	-
	Total per semester		**11/6**		**30**		**30**		**30**			

4. Semester (in Berlin)

				I		II		III				
No.	**Module Designation**	**Type**	**WSH**	**Mode**	**Cr**	**Mode**	**Cr**	**Mode**	**Cr**	**Level**	**CP**	**RP**
M4.1	Project Development	SL/PA	3/1	CM	**5**	-	-	CM	**5**	2a	-	-
M4.2	International Tendering, Construction and Real Estate Contract Administration	SL	4	CM	**5**	-	-	CM	**5**	2a	-	-
M4.3	Case Studies 3: International Business	PS	3	EM	**5**	-	-	EM[*4)]	**5**	2a	-	-
M4.4	Case Studies 4: Real Estate Technology	PS	3	EM	**5**	-	-	EM[*4)]	(5)	2a	-	-
M2.5	Master's Thesis (3) [*1)]			CM	**8**	-	-	CM	**13**			
M4.5	Final Oral Examination			CM	**2**	**-**	**-**	CM	**2**	2b	s. §	-
	Total per semester		**7/7**		**30**		**0**		**30**			
	Overall total		**44/22**		**120**		**60**		**60**			

[*1)] The Master Thesis is going to be written during the 2 or 3 semesters of the master programme

[*2)] A module from the modules 2.2 Renovation and Reconstruction and 2.4 Case Studies 1: Building and Refurbishment is to be chosen.

[*3)] A module from the modules 3.3 Financial Mathematics and Management Information System and Case Studies 2: International Management is to be chosen.

[*4)] A module from the modules 4.3 Case Studies 3: International Business and 4.4 Case Studies 4: Real Estate Technology is to be chosen.

Legend:

Form of Teaching:

SL = Seminar-based teaching/ lectures
SA = Supervised Activities
PCA = PC Activities
PA = Practical Activities
PS = (Project -)Seminar

Module Type:

CM = Compulsory Module
EM = Elective Module Optional Module
WSH = Weekly study hours

LP = Credits (ECTS)

General:

RP	Recommended Prerequisite (modules for which the completion of previous modules is recommended)	CP	Compulsory Prerequisite (modules for which the completion of previous modules is compulsory)
	Credits (ECTS)	WSH	Weekly Study Hours
Cr			
Lev	Level (2a = no prerequisite/2b = with prerequisite)		

Note:

The first and second semester is to be completed at Metropolia UAS and the third and fourth semester at HTW Berlin. In general the modules delivered at Metropolia UAS including the examinations has to be taken and passed at Metropolia UAS and those delivered at HTW Berlin including the examinations has to be taken and passed at HTW Berlin.

ConREM Module Coordinators – Overview

Module number	Module Name	Module Coordinator/ Responsible Person
M1.1	Advanced Mathematical Methods in Economics and Management	Senior Lecturer, Ari Koistinen, M. Sc.
M1.2	Sustainable Development in Construction and Real Estate Management	Senior Lecturer, Paula Naukkarinen. PhD
M1.3	Product Modelling	Senior Lecturer, Sunil Suwal, M. Sc. (ConREM)
M1.4	Life Cycle Analysis and Facility Management	Principal Lecturer Hannu Hakkarainen, Lic.Sc. (Tech) (resp.person)
M1.5	Business English	Senior Lecturer, Sonja Holappa. MA
M1.6	Finnish Culture, Intercultural Working, Cooperation and Research Work	Senior Lecturer, Jonita Martelius
M2.1	International Site Management	Principal Lecturer Mika Lindholm, Lic.Sc. (Tech)
M2.2	Renovation and Reconstruction	Principal Lecturer Hannu Hakkarainen, Lic.Sc. (Tech)
M2.3	Applied Product Modelling	Senior Lecturer, Sunil Suwal, M. Sc. (ConREM)
M2.4	Case Studies 1: Building and Refurbishment	Principal Lecturer Hannu Hakkarainen, Lic.Sc. (Tech) (resp.p)
M2.5	Master's Thesis (1)	Principal Lecturer Hannu Hakkarainen, Lic.Sc. (Tech) Principal Lecturer Mika Lindholm, Lic.Sc. (Tech) Prof. Dr.-Ing. Nicole Riediger
M3.1	European Life Cycle Management	Prof. Dr.-Ing. Nicole Riediger Prof. Dr.-Ing. Roode Liias
M3.2	Project Management and German Culture	Prof. Dr.-Ing. Nicole Riediger Felicitas Proksch, M.A.
M3.3	Financial Mathematics and Management Information Systems	Prof. Dr.-Ing. Dieter Bunte Prof. Dr.-Ing. Markus Krämer
M3.4	Case Studies 2: International Management	Dipl.-Ing. Arndt Wittchen Ammar Al-Saleh, M.Sc.
M4.1	Project Development	Prof. Dr.-Ing. Nicole Riediger
M4.2	International Tendering, Construction and Real Estate Contract Administration	Dr. Jan Bünnemeyer
M4.3	Case Studies 3: International Business	Ira Lemm, M.A. Papon Kumar Dev, M.Sc. Martin Meyer, M.Sc. Urb.
M4.4	Case Studies 4: Real Estate Technology	Prof. Dr.-Ing. Nicole Riediger
M4.5	Final Oral Examination	Prof. Dr.-Ing. Nicole Riediger

M1.1 Advanced Mathematical Methods in Economics and Management

Module Name	**M1.1 Advanced Mathematical Methods in Economics and Management**
Module Coordinator	**Ari Koistinen**
Semester	1. Semester
Duration	1 semester
Status	Compulsory Module
Module Frequency	Winter term only
ECTS Credits	5
Taught Contact Time (weekly hours per semester)	4
Learning Outcomes and Competences	The student • is able to use methods of statistical analysis in applications relating to economics and management • can apply probability distributions in reliability engineering • understands the principles of optimization and regression, and has basic knowledge of most common optimization algorithms • is able to build simple decision models and knows how to assess risk and uncertainty in modelling.
Level	2a
Obligatory Prerequisite Modules	None
Recommended Prerequisite Modules	None
Examination Type	The module coordinator(s) at the beginning of the semester shall present in written form the explicit examination requirements of the module to the students. If this does not occur, the hereby presented examination requirements will be the operative one(s): • 4 Written individual assignments (2 pages): all together 40% • Final Written Examination (90 min): 60%
Examination Grading	Depending on marks
Associated Units	Advanced Mathematical Methods in Economics and Management (SL)
Module Applicability	None
Recognised Modules	None
Further Information	**On-site Evaluation scale: 5-0** (Finnish system), that is equivalent to the Evaluation scale: 1-5 (German system)

Involved Unit description:

Unit Name	Advanced Mathematical Methods in Economics and Management (SL)
Module Name	M1.1 Advanced Mathematical Methods in Economics and Management
Language	English

Unit Workload	100%
Taught Contact Time (weekly hours per semester)	4
Learning Method	Seminar-based teaching/ lectures (SL)
Unit Content	• Revision on basics concepts of probability. • Reliability analysis. • Sampling and estimation. • Statistical hypothesis testing. • Optimization and regression. • Decision modeling. • Calculation value-at-risk (portfolio) • Use of spreadsheet software in applications relating to the topics of the course.
Literature	• Evans, J.R. 2010 Statistics, Data Analysis and Decision Modeling. Prentice Hall. Additional literature recommendations will be given during the lecturing period.
Further Information	Unit in charge: School of Real Estate and Construction, Metropolia UAS Unit location: Myllypurontie 1, Helsinki

M1.2 Sustainable Development in Construction and Real Estate Management

Module Name	**M1.2 Sustainable Development in Construction and Real Estate Management**
Module Coordinator	**Paula Naukkarinen**
Semester	1. Semester
Duration	1 semester
Status	Elective Module
Module Frequency	Winter term only
ECTS Credits	5
Taught Contact Time (weekly hours per semester)	2
Learning Outcomes and Competences	The student • understands recent environmental changes at local and global levels for sustainable development • can interpret natural preservation and environmental impact statements • can explain the collaborative design process for the built environment and the importance of city planning for traffic, housing, industry, etc. • is able to recognize the importance of social responsibility, including barrier free design for the physical environment and the IT industry and corporate responsibility for business sector • is able to interpret international sustainable development conference results.
Level	2a
Obligatory Prerequisite Modules	none
Recommended Prerequisite Modules	none
Examination Type	The module coordinator(s) at the beginning of the semester shall present in written form the explicit examination requirements of the module to the students. If this does not occur, the hereby presented examination requirements will be the operative one(s): • Oral individual presentation (15 min): 25% • Written individual project report (15 pages): 75%
Examination Grading	Depending on grades
Associated Units	Sustainable Development in Construction and Real Estate Management (PS)
Module Applicability	None
Recognised Modules	None
Further Information	**On-site Evaluation scale: 5-0** (Finnish system), that is equivalent to the Evaluation scale: 1-5 (German system)

Involved Unit description:

Unit Name	Sustainable Development in Construction and Real Estate Management (PS)
Module Name	M1.2 Sustainable Development in Construction and Real Estate Management
Language	English
Unit Workload	100%
Taught Contact Time (weekly hours per semester)	2
Learning Method	(Project -) Seminar (PS)
Unit Content	This module deals with the natural and built environment and its relationship to the ecological, social and economic environment. Clean air, soil, and water effect the quality of life, and pollution levels such as CO2 threaten our global balance. In Civil Engineering, saving energy in buildings and producing energy with renewables is our primary field of study.
Literature	Additional literature recommendations will be given during the lecturing period.
Further Information	Unit in charge: School of Real Estate and Construction, Metropolia UAS Unit location: Myllypurontie 1, Helsinki

M1.3 Product Modelling

Module Name	**M1.3 Product Modelling**
Module Coordinator	**Sunil Suwal**
Semester	1. Semester
Duration	1 semester
Status	Compulsory Module
Module Frequency	Winter term only
ECTS Credits	5
Taught Contact Time (weekly hours per semester)	4
Learning Outcomes and Competences	The student • understands the difference between document based and model based information management in construction projects • can apply information technology effectively in construction process • is able to utilize building information models in design and construction processes and in real estate management • understands the BIM-systems and their possibilities in customer orientation, communication and collaboration with construction stakeholders • is able to develop knowledge management and information flow in construction projects
Level	2a
Obligatory Prerequisite Modules	None
Recommended Prerequisite Modules	None
Examination Type	The module coordinator(s) at the beginning of the semester shall present in written form the explicit examination requirements of the module to the students. If this does not occur, the hereby presented examination requirements will be the operative one(s): • Written individual assignment (2 pages): 10% • Digital individual assignment: 40% • Final individual project report (10 pages): 50%
Examination Grading	Depending on grades
Associated Units	Product Modelling (SL)
Module Applicability	None
Recognised Modules	None
Further Information	**On-site Evaluation scale: 5-0** (Finnish system), that is equivalent to the Evaluation scale: 1-5 (German system)

Involved Unit description:

Unit Name	Product Modelling (SL)
Module Name	M1.3 Product Modelling
Language	English
Unit Workload	100%
Taught Contact Time (weekly hours per semester)	4
Learning Method	Seminar-based teaching/ lectures (SL)
Unit Content	• Theory and practice of building information model based construction process • Modelling and coding systems, information structures and standards • Information flow and the content, structure, format and presentation of the data • Information interchanges between parties in construction projects • Possibilities to utilize building information models in design and construction process and in real estate management • Information as part of the product, and the as-built information at the end of the construction project forming the basis for the use and maintenance of the building
Literature	• BIM Handbook: A Guide to Building Information Modeling for Owners, Managers, Designers, Engineers and Contractors Additional literature recommendations will be given during the lecturing period.
Further Information	Unit in charge: School of Real Estate and Construction, Metropolia UAS Unit location: Myllypurontie 1, Helsinki

M1.4 Life Cycle Analysis and Facility Management

Module Name	**M1.4 Life Cycle Analysis and Facility Management**
Module Coordinator	**Hannu Hakkarainen**
Semester	1. Semester
Duration	1 semester
Status	Compulsory Module
Module Frequency	Every winter term
ECTS Credits	5
Taught Contact Time (weekly hours per semester)	4
Learning Outcomes and Competences	The student • is able to perform Life cycle analysis and life cycle inventory LCI independently • can calculate environmental impacts and the carbon footprint of a building • understands the life cycle effects of building materials • knows how to optimize the use of new and recycled building materials. • can apply facilities management principles in practice and in future planning • is able to understand risk analysis and risk management • can manage Property management, facility management and workplace management skills
Level	2a
Obligatory Prerequisite Modules	None
Recommended Prerequisite Modules	None
Examination Type	The module coordinator(s) at the beginning of the semester shall present in written form the explicit examination requirements of the module to the students. If this does not occur, the hereby presented examination requirements will be the operative one(s): • 5 Written individual assessment (3 pages): 50% • Final Oral Group Work Presentation (25 min): 10% • Final written group work project report (20 pages): 40%
Examination Grading	Depending on grades
Associated Units	Life Cycle Analysis and Facility Management (SL)
Module Applicability	
Recognised Modules	
Further Information	**On-site Evaluation scale: 5-0** (Finnish system), that is equivalent to the Evaluation scale: 1-5 (German system)

Involved Unit description:

Unit Name	Life Cycle Analysis and Facility Management (SL)
Module Name	M1.4 Life Cycle Analysis and Facility Management
Language	English
Unit Workload	100%
Taught Contact Time (weekly hours per semester)	4
Learning Method	Seminar-based teaching/ lectures (SL)
Unit Content	• Main pollution parameters • Target setting for LCA. • Leadership and Corporate Governance. • Steps of life cycle assessment: target setting, inventory analysis, impact analysis and interpretation of results. • Environmental declarations and other data sources. • Calculation tools for LCA. • LCA reporting, building products as an example.
Literature	• Facilities Management - Theory and Practice, K. Alexander, Routledge, 1996 Additional literature recommendations will be given during the lecturing period.
Further Information	Unit in charge: School of Real Estate and Construction, Metropolia UAS Unit location: Myllypurontie 1, Helsinki

M1.5 Business English

Module Name	**M1.5 Business English**
Module Coordinator	**Sonja Holappa**
Semester	1. Semester
Duration	1 semester
Status	Compulsory Module
Module Frequency	Every winter term
ECTS Credits	5
Taught Contact Time (weekly hours per semester)	4
Learning Outcomes and Competences	The studies help the student to gain such skills in English as to allow him/her to acquire information from texts in English and operate professionally in his/her position with clients and colleagues. The competencies involve good interaction skills in client and expert situations and mediation of knowledge from sources to different kinds of genres and documents. The studies support the student to gain a realistic conception of his/her own communication competence and the ability to continue doing so through lifelong learning.
Level	2a
Obligatory Prerequisite Modules	none
Recommended Prerequisite Modules	none
Examination Type	The module coordinator(s) at the beginning of the semester shall present in written form the explicit examination requirements of the module to the students. If this does not occur, the hereby presented examination requirements will be the operative one(s): • Written individual project assignment I (2 pages): 25% • Written individual project assignment II (2 pages): 25% • Final Oral group work presentation (30 min): 50%
Examination Grading	Depending on grades
Associated Units	Business English (SL)
Module Applicability	
Recognised Modules	
Further Information	**On-site Evaluation scale: 5-0** (Finnish system), that is equivalent to the Evaluation scale: 1-5 (German system)

Involved Unit description:

Unit Name	Business English (SL)
Module Name	M1.5 Business English (SL)

Language	English
Unit Workload	100%
Taught Contact Time (weekly hours per semester)	4
Learning Method	Seminar-based teaching/ lectures (SL)
Unit Content	• Applying language for engineering studies, career planning and work recruitment • Industrial management: Corporation within working environment, industry and business • Oral interaction practice: Company and product presentations, trade fairs, telephone calls, oral reporting • Written documentation such as short messages, letters, reports and studying relevant texts
Literature	Additional literature recommendations will be given during the lecturing period.
Further Information	Unit in charge: School of Real Estate and Construction, Metropolia UAS Unit location: Myllypurontie 1, Helsinki

M1.6 Finnish Culture, Intercultural Working, Cooperation and Research Work

Module Name	**M1.6 Finnish Culture, Intercultural Working, Cooperation and Research Work**
Module Coordinator	**Jonitas Martelius**
Semester	1. Semester
Duration	1 semester
Status	Compulsory Module
Module Frequency	Every winter term
ECTS Credits	5
Taught Contact Time (weekly hours per semester)	3
Learning Outcomes and Competences	The student • can visualize Nordic and Baltic Finland and its' relationship to Europe today. • understands the Finnish political and cultural history, including Swedish and Russian domination periods • is able to recognize Finnish achievements in architecture, design, sport and music. • is able to develop intercultural understanding and value for cultures, languages and beliefs • understands the principles of group and national identities and the changing nature of culture • is able to recognize commonalities and differences and create connections with others and cultivate mutual respect
Level	2a
Obligatory Prerequisite Modules	none
Recommended Prerequisite Modules	none
Examination Type	The module coordinator(s) at the beginning of the semester shall present in written form the explicit examination requirements of the module to the students. If this does not occur, the hereby presented examination requirements will be the operative one(s): • Final Oral group work presentation (30 min): 100%
Examination Grading	Depending on grades
Associated Units	• Finnish Culture (SL) • Intercultural Working, Cooperation and Research Work (PA)
Module Applicability	
Recognised Modules	
Further Information	**On-site Evaluation scale: 5-0** (Finnish system), that is equivalent to the Evaluation scale: 1-5 (German system)

Involved Unit description:

Unit Name	Finnish Culture (SL)
Module Name	M1.6 Finnish Culture, Intercultural Working, Cooperation and Research Work
Language	English
Unit Workload	30%
Taught Contact Time (weekly hours per semester)	1
Learning Method	Seminar-based teaching/ lectures (SL)
Unit Content	This module introduces Finland to foreign students, showing the special historical, cultural, economic and political issues of Finland. Finland as a neutral country between East and West, and an integral part of the new Europe.
Literature	Additional literature recommendations will be given during the lecturing period.
Further Information	Unit in charge: School of Real Estate and Construction, Metropolia UAS Unit location: Myllypurontie 1, Helsinki

Involved Unit description:

Unit Name	Intercultural Working, Cooperation and Research Work (PA)
Module Name	M1.6 Finnish Culture, Intercultural Working, Cooperation and Research Work
Language	English
Unit Workload	70%
Taught Contact Time (weekly hours per semester)	2
Learning Method	Practical Activities (PA)
Unit Content	This module deals with cultural awareness and intelligence, concept of body distance, communication skills, stereotyping, avoidance and uncer-tainty tolerance, masculinity vs. feminism, and concepts of time. Types of culture, including corporate and professional culture, gender and age culture, religious, regional and class culture will be studied within this module.
Literature	Additional literature recommendations will be given during the lecturing period.
Further Information	Unit in charge: School of Real Estate and Construction, Metropolia UAS Unit location: Myllypurontie 1, Helsinki

M2.1 International Site Management

Module Name	**M2.1 International Site Management**
Module Coordinator	**Mika Lindholm**
Semester	2. Semester
Duration	1 semester
Status	Compulsory Module
Module Frequency	Every summer term
ECTS Credits	5
Taught Contact Time **(weekly hours per semester)**	4
Learning Outcomes and Competences	The student • understands the principles of project management related to construction projects and knows how to make construction and site planning • is able to use planners tool-kit and can apply planning techniques • understands the principles and importance of monitoring and controlling during a construction project
Level	2a
Obligatory Prerequisite Modules	none
Recommended Prerequisite Modules	none
Examination Type	The module coordinator(s) at the beginning of the semester shall present in written form the explicit examination requirements of the module to the students. If this does not occur, the hereby presented examination requirements will be the operative one(s): • Final Written Examination (120 min): 100%
Examination Grading	Depending on grades
Associated Units	• International Site Management (SL) • International Site Management (SA)
Module Applicability	
Recognised Modules	
Further Information	**On-site Evaluation scale: 5-0** (Finnish system), that is equivalent to the Evaluation scale: 1-5 (German system)

Involved Unit description:

Unit Name	International Site Management (SL)
Module Name	M2.1 International Site Management
Language	English
Unit Workload	70%

Taught Contact Time (weekly hours per semester)	3
Learning Method	Seminar-based teaching/ lectures (SL)
Unit Content	Construction project management and Construction planning in context of early decisions and planning techniques including: • Bar charts • Line of balance • Linear programming • Network analysis • Resources • Monitoring and control
Literature	• Construction Planning 2nd revised Edition by Richard H. Neale (Author), David E. Neale (Author), Paul Stephenson (Author) Additional literature recommendations will be given during the lecturing period.
Further Information	Unit in charge: School of Real Estate and Construction, Metropolia UAS Unit location: Myllypurontie 1, Helsinki

Involved Unit description:

Unit Name	International Site Management (SA)
Module Name	M2.1 International Site Management
Language	English
Unit Workload	30%
Taught Contact Time (weekly hours per semester)	1
Learning Method	Supervised Activities (SA)
Unit Content	• Construction project management and Construction planning • Exercises for putting planning into practice, reading • Case studies
Literature	Additional literature recommendations will be given during the lecturing period.
Further Information	Unit in charge: School of Real Estate and Construction, Metropolia UAS Unit location: Myllypurontie 1, Helsinki

M2.2 Renovation and Reconstruction

Module Name	**M2.2 Renovation and Reconstruction**
Module Coordinator	**Hannu Hakkarainen**
Semester	2. Semester
Duration	1 semester
Status	Compulsory Module
Module Frequency	Every summer term
ECTS Credits	5
Taught Contact Time (weekly hours per semester)	4
Learning Outcomes and Competences	The student is able to understand: • the possibilities of building preservation focused on history of architecture, building materials and structures • structures and materials in buildings that are renovated • the needs and methods for renovation, • deterioration of building materials and structures • phases of renovation process • the importance of building maintenance.
Level	2a
Obligatory Prerequisite Modules	none
Recommended Prerequisite Modules	none
Examination Type	The module coordinator(s) at the beginning of the semester shall present in written form the explicit examination requirements of the module to the students. If this does not occur, the hereby presented examination requirements will be the operative one(s): • Oral group work presentation I (20 min): 20% • Oral group work presentation II (20 min): 20% • Final Written Examination (90 min): 60%
Examination Grading	Depending on grades
Associated Units	• Renovation and Reconstruction (SL) • Renovation and Reconstruction (SA)
Module Applicability	
Recognised Modules	
Further Information	**On-site Evaluation scale: 5-0** (Finnish system), that is equivalent to the Evaluation scale: 1-5 (German system)

Involved Unit description:

Unit Name	Renovation and Reconstruction (SL)
Module Name	M2.2 Renovation and Reconstruction

Language	English
Unit Workload	70%
Taught Contact Time (weekly hours per semester)	3
Learning Method	Seminar-based teaching/ lectures (SL)
Unit Content	• Importance of refurbishments of buildings • Refurbishment needs of buildings • Typical damages and defects in buildings • Life cycle of buildings • Repairing process of buildings • History of architecture, building materials and structures in Europe, especially in Finland • Conservation of buildings and renovation • Condition survey and assessment of buildings and structures • Condition survey and assessment reports • Designing of repairings • Failures and repairing of concrete, timber, and steel structures and rendered facades • Condition assessment of concrete structures and rendered facades • Moisture and mould problems in buildings • Indoor air problems • Examples of renovation works
Literature	• Lecture notes, renovation articles, • Mayine L. Yu: Skins, envelopes and enclosures, concepts for designing building exteriors Additional literature recommendations will be given during the lecturing period.
Further Information	Unit in charge: School of Real Estate and Construction, Metropolia UAS Unit location: Myllypurontie 1, Helsinki

Involved Unit description:

Unit Name	Renovation and Reconstruction (SA)
Module Name	M2.2 Renovation and Reconstruction
Language	English
Unit Workload	30%
Taught Contact Time (weekly hours per semester)	1
Learning Method	Supervised Activities (SA)
Unit Content	• Condition survey of damages, condition assessment plan and repair alternatives of an old building • Written report and presentation

Literature	Additional literature recommendations will be given during the lecturing period.
Further Information	Unit in charge: School of Real Estate and Construction, Metropolia UAS Unit location: Myllypurontie 1, Helsinki

M2.3 Applied Product Modelling

Module Name	**M2.3 Applied Product Modelling**
Module Coordinator	**Sunil Suwal**
Semester	2. Semester
Duration	1 semester
Status	Compulsory Module
Module Frequency	Every summer term
ECTS Credits	5
Taught Contact Time **(weekly hours per semester)**	4
Learning Outcomes and Competences	The student • is able to use BIM tools in different roles of construction project stakeholders • is able to make the BIM Execution Plan for construction project • understands the level of development scale in different phases of the process • is able to develop knowledge management and information flow in construction project and for lifecycle management
Level	2b
Obligatory Prerequisite Modules	None
Recommended Prerequisite Modules	1.3 Product Modelling
Examination Type	The module coordinator(s) at the beginning of the semester shall present in written form the explicit examination requirements of the module to the students. If this does not occur, the hereby presented examination requirements will be the operative one(s): • 3 Written individual assignment: 40%. • Final Digital Group work assignment: 40% • Final Oral group work presentation (30 min): 20%
Examination Grading	Depending on grades
Associated Units	• Applied Product Modelling (SL) • Applied Product Modelling (PA)
Module Applicability	
Recognised Modules	
Further Information	**On-site Evaluation scale: 5-0** (Finnish system), that is equivalent to the Evaluation scale: 1-5 (German system)

Involved Unit description:

Unit Name	Applied Product Modelling (SL)
Module Name	M2.3 Applied Product Modelling

Language	English
Unit Workload	70%
Taught Contact Time (weekly hours per semester)	3
Learning Method	Seminar-based teaching/ lectures (SL)
Unit Content	The practical principles, regulations and rules of building information modelling in construction projects. BIM Execution Planning for the construction project: Project goals, BIM uses, information management and exchange, collaboration, project deliverables, quality control, model element responsibilities, reference documents and standards.
Literature	• BIM Handbook: A Guide to Building Information Modeling for Owners, Managers, Designers, Engineers and Contractors Additional literature recommendations will be given during the lecturing period.
Further Information	Unit in charge: School of Real Estate and Construction, Metropolia UAS Unit location: Myllypurontie 1, Helsinki

Involved Unit description:

Unit Name	Applied Product Modelling (PA)
Module Name	M2.3 Applied Product Modelling
Language	English
Unit Workload	30%
Taught Contact Time (weekly hours per semester)	1
Learning Method	Practical Activities (PA)
Unit Content	Problem based learning method applied to case studies with use and effective utilization of building information modelling tools and applications in design phase, construction phase and preparing information content for the life cycle management and real estate management. Computer exercises and practical assignments.
Literature	Additional literature recommendations will be given during the lecturing period.
Further Information	Unit in charge: School of Real Estate and Construction, Metropolia UAS Unit location: Myllypurontie 1, Helsinki

M2.4 Case Studies 1: Building and Refurbishment

Module Name	**M2.4 Case Studies 1: Building and Refurbishment**
Module Coordinator	**Hannu Hakkarainen**
Semester	2. Semester
Duration	1 semester
Status	Elective Module
Module Frequency	Every summer term
ECTS Credits	5
Taught Contact Time **(weekly hours per semester)**	2
Learning Outcomes and Competences	The student • is able to study current events in the construction and real estate field • understands the importance of economics and cultural events • is able to organize research documents using special case studies.
Level	2a
Obligatory Prerequisite Modules	none
Recommended Prerequisite Modules	none
Examination Type	The module coordinator(s) at the beginning of the semester shall present in written form the explicit examination requirements of the module to the students. If this does not occur, the hereby presented examination requirements will be the operative one(s): • Final Group Work project report (30 pages): 75% • Final Group Work presentation (20 min): 25%
Examination Grading	Depending on grades
Associated Units	Building and Refurbishment (PS)
Module Applicability	
Recognised Modules	
Further Information	**On-site Evaluation scale: 5-0** (Finnish system), that is equivalent to the Evaluation scale: 1-5 (German system)

Involved Unit description:

Unit Name	Building and Refurbishment (PS)
Module Name	M2.4 Case Studies 1: Building and Refurbishment
Language	English
Unit Workload	100%

Taught Contact Time (weekly hours per semester)	2
Learning Method	(Project) Seminar (PS)
Unit Content	This module deals with researching case studies of current events in the construction and real estate field, where wider understanding of society, economics and cultural events is required. Issues such as urban planning seminars, renovation projects and research on energy savings and building materials are all examples of case studies. New fields of engineering such as crisis management, temporary structures and the importance of infrastructure. Students choose report topic from lecture topics. During seminars students work in groups on related topics. Written and oral presentation required.
Literature	Additional literature recommendations will be given during the lecturing period.
Further Information	Unit in charge: School of Real Estate and Construction, Metropolia UAS Unit location: Myllypurontie 1, Helsinki

M2.5 Master's Thesis (1)

Module Name	**M2.5 Master's Thesis (1)**
Module Coordinator	**Hannu Hakkarainen, Mika Lindholm and Nicole Riediger**
Semester	2. Semester 3. Semester 4. Semester
Duration	3 semester
Status	Compulsory Module
Module Frequency	In the 2. semester
ECTS Credits	28
Taught Contact Time **(weekly hours per semester)**	0
Learning Outcomes and Competences	The student • is able to write a master level academic thesis, • understands the principles academic writing, • is able to organize research work, uses sources and makes conclusions.
Level	2a
Obligatory Prerequisite Modules	
Recommended Prerequisite Modules	
Examination Type	Written Thesis: 100%
Examination Grading	Depending on grades
Associated Units	
Module Applicability	
Recognised Modules	
Module content	▪ Writing period: 2. till the 4. semester ▪ Registration: **End of January (2. Semester)** The registration occurs automatically by receiving the Provisional permission from the HTW Faculty Administration (Mr. Frank Stoll) ▪ Start date: **1st of February (2. Semester)** ▪ Official permission: 30th of June (2. Semester) – recommended deadline To gain the Official permission, students are obliged to prepare an appropriate research proposal and accordingly find two

	supervisors. Without the Official permission, the submission of the Master`s Thesis is not possible. ▪ **Fixed deadline:** **1st or 2nd week of July (4. Semester)** This deadline is fixed and strict. The exact submission day in July is indicated in the Provisional permission/Official permission.
Further Information	For the official Master`s Thesis Guideline, Timeline overview, Recommended work phases and other Master`s Thesis templates and forms, please visit the relevant section of the official ConREM Website: **https://conrem.htw-berlin.de/studying-conrem/thesis-and-final-oral-examination/**

M3.1 European Life Cycle Management

Module Name	**M3.1 European Life Cycle Management**
Module Coordinator	**Nicole Riediger and Roode Liias**
Semester	3. Semester
Duration	1 semester
Status	Compulsory Module
Module Frequency	Every winter term
ECTS Credits	5
Taught Contact Time (weekly hours per semester)	4
Learning Outcomes and Competences	Real Estate and Facility Management are significant in the global structural change from an industrial society towards a service-orientated society. In this module, students learn relevant working methods and their theoretical basis (e.g. life cycle concepts, three column models) together with an understanding of services and customer needs. Advanced management concepts and their implementation are key focus of the module.
Level	2a
Obligatory Prerequisite Modules	none
Recommended Prerequisite Modules	none
Examination Type	The module coordinator(s) at the beginning of the semester shall present in written form the explicit examination requirements of the module to the students. If this does not occur, the hereby presented examination requirements will be the operative one(s): • Individual written assignment: 10% • Individual oral presentation (15min): 30% • Final Written Examination (60 min): 60%
Examination Grading	Depending on grades
Associated Units	European Life Cycle Management (SL)
Module Applicability	
Recognised Modules	
Further Information	**On-site Evaluation scale: 1-5** (German system), that is equivalent to the Evaluation scale: 5-0 (Finnish system)

Involved Unit description:

Unit Name	European Life Cycle Management (SL)
Module Name	M3.1 European Life Cycle Management
Language	English

Unit Workload	100%
Taught Contact Time (weekly hours per semester)	4
Learning Method	Seminar-based teaching/ lectures (SL)
Unit Content	This module deals with international life cycle management and focusses particularly on how the building strategy on operational and strategical level influences the life time, span and cycle of a building. • Building Life Cycle • Property Management/ Facility Management • Asset Management (investment/portfolio) • Stakeholders • Development Strategies • Maintenance Strategies • Service Level Agreements • Yield-optimized management • Land law: ownership/freehold/leasehold
Literature	・ Facilities Management: An Explanation (Building and Surveying Series), 2nd edition, A.Park; ・ Property Asset Management (Englisch), D. Scarrett, J. Wilcox, 2018 ・ Total Facility Management (English Edition) 4. Auflage, B. Atkin, A. Brooks Additional literature recommendations will be given during the lecturing period.
Further Information	Unit in charge: Faculty II – HTW Berlin Unit location: Wilhelminenhof Strasse 75/A, Berlin

M3.2 Project Management and German Culture

Module Name	**M3.2 Project Management and German Culture**
Module Coordinator	**Nicole Riediger and Felicitas Proksch**
Semester	3. Semester
Duration	1 semester
Status	Compulsory Module
Module Frequency	Every winter term
ECTS Credits	5
Taught Contact Time (weekly hours per semester)	4
Learning Outcomes and Competences	This module is intended to provide real estate students with the understanding and practical skills required to utilise internationally recognised methodology and tools for the management development and implementation of construction projects and projects for the cultivation of real estate. Especially the influence of management on all stages of the life cycle is discussed. Students should learn to understand the differences of management aspects and to adapt them to different requirements indifferent countries. The module focuses on the adaptation of existing building stock as well as new buildings related to a changing market situation and the associated construction measures affected by aspects of German culture.
Level	2a
Obligatory Prerequisite Modules	none
Recommended Prerequisite Modules	none
Examination Type	The module coordinator(s) at the beginning of the semester shall present in written form the explicit examination requirements of the module to the students. If this does not occur, the hereby presented examination requirements will be the operative one(s): • Intermediate group work presentation: pass or fail • Final Written Examination (90 min): 100%
Examination Grading	Depending on grades
Associated Units	• Project Management and German Culture (SL) • Project Management and German Culture (PA)
Module Applicability	
Recognised Modules	
Further Information	**On-site Evaluation scale: 1-5** (German system), that is equivalent to the Evaluation scale: 5-0 (Finnish system)

Involved Unit description:

Unit Name	Project Management and German Culture (SL)

Module Name	M3.2 Project Management and German Culture
Language	English
Unit Workload	70%
Taught Contact Time (weekly hours per semester)	3
Learning Method	Seminar-based teaching/ lectures (SL)
Unit Content	This module focusses on clarifying how Project Management serves as an interface among the different stakeholders of a building project. Herby, it is important to understand that it is the PM`s main task to coordinate and optimize the three parameters time, cost and quality in a most appropriate way according to stakeholders' requirements. Hereby, reasonable methods of risk management have to be applied and the student will apply them on a chosen case study which has to be presented during the lecture period. Evaluation will be undertaken by written exam.
Literature	• A Guide to the Project Management Body of Knowledge (Pmbok Guide), Project Management Institute Additional literature recommendations will be given during the lecturing period.
Further Information	Unit in charge: Faculty II – HTW Berlin Unit location: Wilhelminenhof Strasse 75/A, Berlin

Involved Unit description:

Unit Name	Project Management and German Culture (PA)
Module Name	M3.2 Project Management and German Culture
Language	English
Unit Workload	30%
Taught Contact Time (weekly hours per semester)	1
Learning Method	Practical Activities (PA)
Unit Content	By profound discussions and site tours through Berlin students will be shown how the market of construction is influenced by aspects of German culture.
Literature	Additional literature recommendations will be given during the lecturing period.
Further Information	Unit in charge: Faculty II – HTW Berlin Unit location: Wilhelminenhof Strasse 75/A, Berlin

M3.3 Financial Mathematics and Management Information Systems

Module Name	**M3.3 Financial Mathematics and Management Information Systems**
Module Coordinator	**Dieter Bunte and Markus Krämer**
Semester	3. Semester
Duration	1 semester
Status	Compulsory Module
Module Frequency	Every winter term
ECTS Credits	5
Taught Contact Time (weekly hours per semester)	6
Learning Outcomes and Competences	An obligatory component of every economically oriented study programme is an advanced knowledge to financial mathematics and the presentation of calculations of profitability. The techniques of the financial mathematics (engineering economics) are processed in a way, so that a solid basis is given for investment decisions and calculations of life cycle costs. The main emphasis is put on the comprehensibility of calculation processes of dynamic methods of the calculation of profitability under certainty and uncertainty. All mathematical models to be used are derived and explained in detail by extensive examples. Financial mathematical standard software shall not be used, but instead spreadsheet calculation software. The acquired knowledge shall be converted in creation of own calculation sheets (according to a responsible and scientific working with computers). Students shall strive for purchase the competence to recognise the efficiency, significance and limits of "classic" methods of investment appraisal. They independently test and review the learned information by individual homework. In the Management Information System part the students learn how to make use of results and findings of financial mathematical methods and mathematical models within decision supporting information systems (Business Intelligence). Therefor they get to know which operational IT systems in AEC/RE sector may deliver the basic data for analytic purposes like Enterprise Resource Planning Systems (ERP), Computer Aided Facility Management Systems (CAFM), Customer Relationship Management Systems (CRM) and Supplier Relationship Management Systems (SRM). During the module the students learn to master the challenge of consolidating and transforming data coming from different information sources (Data Warehousing). Furthermore, the students learn to define Key Performance Indicators and organize them in dashboards and cockpits to monitor and visualize business performance. Finally, the students shall be able to manage implementation projects of Business Intelligence Solutions/Management Information Systems from a buyer's perspective.
Level	2a
Obligatory Prerequisite Modules	none

Recommended Prerequisite Modules	none
Examination Type	The module coordinator(s) at the beginning of the semester shall present in written form the explicit examination requirements of the module to the students. If this does not occur, the hereby presented examination requirements will be the operative one(s): • Oral group work presentation (20 min): 33% • Final Written Examination (total 120 min): 67%
Examination Grading	Depending on grades
Associated Units	• Financial and Investment Planning (SL) • Financial and Investment Planning (PA) • Management Information Systems (SL) • Management Information Systems (PA)
Module Applicability	
Recognised Modules	
Further Information	**On-site Evaluation scale: 1-5** (German system), that is equivalent to the Evaluation scale: 5-0 (Finnish system)

Involved Unit description:

Unit Name	Financial and Investment Planning (SL)
Module Name	M3.3 Financial Mathematics and Management Information Systems
Language	English
Unit Workload	25%
Taught Contact Time (weekly hours per semester)	2
Learning Method	Seminar-based teaching/ lectures (SL)
Unit Content	This unit content can be described by the following keywords: • Interest and compound interest calculation, • Calculation of present and final value (addition and deduction of accrued interest), • Calculation of annuities, • Calculation of the net present value and future value, • Calculation of the dynamic payback period, • Calculation of the internal rate of return, • Calculation of equivalent annuities, • Real Estate Financing, Time Value of Money, Mortgages, Loans, • Sensitivity analysis, • Real Estate Valuation
Literature	• Brueggeman, W., Fisher, J.: Real Estate Finance & Investments, 16th Edition, Mc Graw Hill, 2019 • Diederichs, C. J.: Wirtschaftlichkeitsberechnungen und Nutzen/Kosten Untersuchungen, Sindelfingen 1985 • Tung Au, Thomas P. Au: Engineering Economics for Capital Investment Analysis

	• Yates, J.K.: Engineering economics, Möller, D. A.: Planungs- und Bauökonomie, München 1988 • Panneerselvam, R.: Engineering Economics, 2nd edition. • Oakshott, l.: Essential Quantitative Methods for Business Management and Finance, Houndmills 2001 • Pike, R. / Neale, B.: Corporate Finance and investment, Harlow 2003 • Chan S. Park: Fundamentals of Engineering Economics, 3. Edition Auflage, Braunschweig 2002 Additional literature recommendations will be given in lecture.
Further Information	Unit in charge: Faculty II – HTW Berlin Unit location: Wilhelminenhof Strasse 75/A, Berlin

Involved Unit description:

Unit Name	Financial and Investment Planning (PA)
Module Name	M3.3 Financial Mathematics and Management Information Systems
Language	English
Unit Workload	25%
Taught Contact Time (weekly hours per semester)	1
Learning Method	Practical Activities (PA)
Unit Content	• Life-cycle cost analyses with certain and uncertain conditions (Monte-Carlo simulation) • Valuation methods and inferential statistics
Literature	• Diederichs, C. J.: Wirtschaftlichkeitsberechnungen und Nutzen/Kosten Untersuchungen, Sindelfingen 1985 • Tung Au, Thomas P. Au: Engineering Economics for Capital Investment Analysis • Yates, J.K.: Engineering economics, Möller, D. A.: Planungs- und Bauökonomie, München 1988 • Panneerselvam, R.: Engineering Economics, 2nd edition. • Oakshott, l.: Essential Quantitative Methods for Business Management and Finance, Houndmills 2001 • Pike, R. / Neale, B.: Corporate Finance and investment, Harlow 2003 • Chan S. Park: Fundamentals of Engineering Economics, 3. editionAuflage, Braunschweig 2002 Additional literature recommendations will be given in lecture.
Further Information	Unit in charge: Faculty II – HTW Berlin Unit location: Wilhelminenhof Strasse 75/A, Berlin

Involved Unit description:

Unit Name	Management Information Systems (SL)
Module Name	M3.3 Financial Mathematics and Management Information Systems
Language	English

Unit Workload	25%
Taught Contact Time (weekly hours per semester)	2
Learning Method	Seminar-based teaching/ lectures (SL)
Unit Content	• Information Sources in AEC/RE: OLTP-Systems in AEC/ RE (e.g. ERP, CRM, SRM, CAFM, Collaborative EngineeringPlatforms) • Structuring of Key Performance Indicators (Target Systems), Dash-boards (e.g. Balance Scorecard) • Managing analytic Data (Data Warehouse concepts, Extraction / Transformation / Loading – ETL, Service OrientedArchitectures - SOA) • Analytic Information Systems / Decision Support Systems (reporting Platforms, OLAP, concept orientedManagement Information Sys-tems) • Information Distribution (e.g. Portal Solutions, Standard Software) • Implementation of Business Intelligence solutions
Literature	• Anandarajan, M.; Anandarajan, A; Srinivasan, C: Business Intelligence Techniques. A Perspective fromAccounting and Finance, Spring Ver-lag, Berlin Heidelberg, New York, 2004. • Management Information Systems: Managing the Digital Firm, 7th Ed.. Kenneth C. Laudon; Prentice Hall,Publisher. ISBN: 0-13-033066-3. • Turban, Efraim: Decision Support and Expert Systems. Management Support System. 4th Edition. Prentice Hall,1995. • Turban, Efraim; et.al: Business Intelligence. Prentice Hall, 1th, 2007 • P. Chamonie; P. Gluchowski (Hrsg): Analytische Informationssys-teme. Business Intelligence-Technologien und –Anwendungen. 3. Aufl. Berlin Heidelberg: Springer Verlag, 2006. • Kemper, Hans-Georg; Mehanna, Walid; Unger, Carsten: Business In-telligence. Grundlagen und praktischeAnwendung. Eine Einführung in die IT-basierte Managementunterstützung. 2. Aufl. Vieweg Verlag, 2006. Additional literature recommendations will be given in lecture.
Further Information	Unit in charge: Faculty II – HTW Berlin Unit location: Wilhelminenhof Strasse 75/A, Berlin

Involved Unit description:

Unit Name	Management Information Systems (PA)
Module Name	M3.3 Financial Mathematics and Management Information Systems
Language	English
Unit Workload	25%
Taught Contact Time (weekly hours per semester)	1
Learning Method	Practical Activities (PA)
Unit Content	

Literature	Additional literature recommendations will be given during the lecturing period.
Further Information	Unit in charge: Faculty II – HTW Berlin Unit location: Wilhelminenhof Strasse 75/A, Berlin

M3.4 Case Studies 2: International Management

Module Name	**M3.4 Case Studies 2: International Management**
Module Coordinator	**Arnd Wittchen and Ammar Al-Saleh**
Semester	3. Semester
Duration	1 semester
Status	Elective Module
Module Frequency	Every winter term
ECTS Credits	5
Taught Contact Time **(weekly hours per semester)**	3
Learning Outcomes and Competences	Engineers tend to focus on projects, facts and results. Yet the success of a project depends no less on the people and institutions involved. This demands that students are able to manage themselves well and to act with competence. In this module, students gain a comprehensive understanding of the interdependencies between project goals, management and the individual's personal approach, and develop this understanding through project work in preparation for their later professional occupations. In this module, students also gain the mechanism of profitable and non-profitable project development work. What are the rules, methods and key factors of a real estate development on base of a real project surrounding.
Level	2a
Obligatory Prerequisite Modules	none
Recommended Prerequisite Modules	none
Examination Type	The module coordinator(s) at the beginning of the semester shall present in written form the explicit examination requirements of the module to the students. If this does not occur, the hereby presented examination requirements will be the operative one(s): • 3 group work assignments: 65% • Final Group Work presentation (30 min): 35%
Examination Grading	Depending on grades
Associated Units	Case Studies 2: International Management (PS)
Module Applicability	
Recognised Modules	
Further Information	Attendance at lectures is compulsory. **On-site Evaluation scale: 1-5** (German system), that is equivalent to the Evaluation scale: 5-0 (Finnish system)

Involved Unit description:

Unit Name	Case Studies 2: International Management (PS)
Module Name	M3.4 Case Studies 2: International Management
Language	English
Unit Workload	100%
Taught Contact Time (weekly hours per semester)	3
Learning Method	(Project -)Seminar (PS)
Unit Content	Project control • Propagation and initial phase • Design and planning phase • Construction and hand over • Project accompanying activities • Project and project analysis • Design, construction, material ,quality • Milestones and time scheduling • Procurement and procurement control • Main contract and contract administration • Main partners involved and their interests • Financial results and cost control Project management and organisation • Site office and management staff • Technical office and personal • Navigator and time scheduling • Contract administration and subletting • Commercial administration Site installations and infrastructure • Elements and practices of project management • Job descriptions, responsibilities, procedures, approvals • Flow of information, documents and documentation • Production, progress and quality control and risks management. Work and change orders, change, claim management Invoicing, costs and payment control
Literature	• A Guide to the Project Management Body of Knowledge (Pmbok Guide), Project Management Institute Additional literature recommendations will be given during the lecturing period.
Further Information	Unit in charge: Faculty II – HTW Berlin Unit location: Wilhelminenhof Strasse 75/A, Berlin

M4.1 Project Development

Module Name	**M4.1 Project Development**
Module Coordinator	**Nicole Riediger**
Semester	4. Semester
Duration	1 semester
Status	Compulsory Module
Module Frequency	Every summer term
ECTS Credits	5
Taught Contact Time (weekly hours per semester)	4
Learning Outcomes and Competences	This module is intended to provide real estate students with the understanding and practical skills required to utilise internationally-recognised methodology and tools for the development and implementation of construction projects and projects for the cultivation of real estate. Students should be able to understand the basics of real estate development. Though all stages of the life cycle are discussed, the module focuses on the adaptation of existing building stock as well as new buildings to a changing market situation and the associated construction measures.
Level	2a
Obligatory Prerequisite Modules	none
Recommended Prerequisite Modules	none
Examination Type	The module coordinator(s) at the beginning of the semester shall present in written form the explicit examination requirements of the module to the students. If this does not occur, the hereby presented examination requirements will be the operative one(s): • Final Written Examination (90 min): 100%
Examination Grading	Depending on grades
Associated Units	• Project Development (SL) • Project Development (PA)
Module Applicability	
Recognised Modules	
Further Information	**On-site Evaluation scale: 1-5** (German system), that is equivalent to the Evaluation scale: 5-0 (Finnish system)

Involved Unit description:

Unit Name	Project Development (SL)
Module Name	M4.1 Project Development
Language	English

Unit Workload	70%
Taught Contact Time (weekly hours per semester)	3
Learning Method	Seminar-based teaching/ lectures (SL)
Unit Content	The module focuses on the basic content of Real Estate Development for different types of real estates and different markets. Students learn about the interdisciplinary scope of Real Estate Development projects as well as details of development finance and investment calculation as basic requirements for success. The module mainly focusses on the following aspects: • Real Estate Markets • Feasibility study in general • Market and Site Analysis • Stakeholder Analysis, Types of Developers • Technical, economical and legal aspects Financing Real Estate Development, Financial Leverage • Risk Management • Real Estate Valuation • Real Estate Portfolios, • Real Estate Assets Management
Literature	• Real Estate Development - 5th Edition; Principles and Process; By Mike E. Miles, By Laurence M. Netherton, By Adrienne Schmitz; Urban Land Institute • Real Estate Finance & Investments; William Brueggeman and Jeffrey Fisher; McGraw Hill • Finance for Real Estate Development; Charles Long; Urban Land Institute • Professional Real Estate Development; The ULI Guide to the Business; By Richard Peiser, By David Hamilton; Urban Land Institute • Real Estate Market Analysis; Trends, Methods, and Information Sources, Third Edition; By Deborah L. Brett; Urban Land Institute Additional literature recommendations will be given in lecture.
Further Information	Unit in charge: Faculty II – HTW Berlin Unit location: Wilhelminenhof Strasse 75/A, Berlin

Involved Unit description:

Unit Name	Project Development (PA)
Module Name	M4.1 Project Development
Language	English
Unit Workload	30%
Taught Contact Time (weekly hours per semester)	1
Learning Method	Practical Activities (PA)

Unit Content	The students will be introduced to different aspects to be considered profoundly when analysing current market situations within context of the development stage of building projects and having effect on all stages of its life cycle. Case Studies and Best Practices are presented, supported by exercises.
Literature	• Real Estate Development - 5th Edition; Principles and Process; By Mike E. Miles, By Laurence M. Netherton, By Adrienne Schmitz; Urban Land Institute • Real Estate Finance & Investments; William Brueggeman and Jeffrey Fisher; McGraw Hill • Finance for Real Estate Development; Charles Long; Urban Land Institute • Professional Real Estate Development; The ULI Guide to the Business; By Richard Peiser, By David Hamilton; Urban Land Institute • Real Estate Market Analysis; Trends, Methods, and Information Sources, Third Edition; By Deborah L. Brett; Urban Land Institute Additional literature recommendations will be given in lecture.
Further Information	Unit in charge: Faculty II – HTW Berlin Unit location: Wilhelminenhof Strasse 75/A, Berlin

M4.2 International Tendering, Construction and Real Estate Contract Administration

Module Name	**M4.2 International Tendering, Construction and Real Estate Contract Administration**
Module Coordinator	**Jan Bünnemeyer**
Semester	4. Semester
Duration	1 semester
Status	Compulsory Module
Module Frequency	Every summer term
ECTS Credits	5
Taught Contact Time **(weekly hours per semester)**	4
Learning Outcomes and Competences	There are a number of players to be considered when carrying out a construction project: the client, the occupant, the architect, the specialized engineer, and public authorities and construction firms, to name a few. The number of stakeholders involved makes project development and implementation time and cost intensive. To ensure the orderly running of the project, relations between the different parties must be governed by clear contracts and thorough regulation. This is especially important when dealing with partners from different countries with differing conceptions and systems of contractual law. It is therefore essential to compare and evaluate the fundamental manifestations which systems of construction legislation take, and to demonstrate them with selected examples. This facilitates students' ability to manage the legal aspects of international projects and to orientate themselves in the various legal systems of different countries. FIDIC documents and sample contracts form an important focus of reference for the module. Their content and implementation are also taught with an emphasis on practical application as students' homework tasks are based on concrete examples.
Level	2a
Obligatory Prerequisite Modules	none
Recommended Prerequisite Modules	none
Examination Type	The module coordinator(s) at the beginning of the semester shall present in written form the explicit examination requirements of the module to the students. If this does not occur, the hereby presented examination requirements will be the operative one(s): • Final Written Examination (90 min): 100%
Examination Grading	Depending on grades
Associated Units	International Tendering, Construction and Real Estate Contract Administration (SL)

Module Applicability	
Recognised Modules	
Further Information	**On-site Evaluation scale: 1-5** (German system), that is equivalent to the Evaluation scale: 5-0 (Finnish system)

Involved Unit description:

Unit Name	International Tendering, Construction and Real Estate Contract Administration (SL)
Module Name	M4.2 International Tendering, Construction and Real Estate Contract Administration
Language	English
Unit Workload	100%
Taught Contact Time (weekly hours per semester)	4
Learning Method	Seminar-based teaching/ lectures (SL)
Unit Content	**Principles of law and contracts** • Different historical developments • The cultural and social context • Constitutions, legislation and law **Different kinds of contracts** • Architects, engineers and surveyors • Special parties involved • Building contracts • Rental Agreements • Service and maintenance contracts **Methods and principles of tendering** • General procedure and phases • Different national procedures • International competitive bidding • The FIDIC tendering procedure **Building contracts and contractual relations** • National types and their elements • Parties involved and their relations • New forms of organisation **The FIDIC conditions of contract** • Red Book: Construction works only • Yellow Book: Design and construction • Silver Book: Turnkey projects • Green Book: Short form of contract Special aspects of the Red, Yellow and Silver Book
Literature	• International Construction Contract Law (Englisch), Lukas Klee Additional literature recommendations will be given during the lecturing period.

Further Information	Unit in charge: Faculty II – HTW Berlin Unit location: Wilhelminenhof Strasse 75/A, Berlin

M4.3 Case Studies 3: International Business

Module Name	**M4.3 Case Studies 3: International Business**
Module Coordinator	**Ira Lemm, Papon Kumar Dev and Martin Meyer**
Semester	4. Semester
Duration	1 semester
Status	Elective module
Module Frequency	Every summer term
ECTS Credits	5
Taught Contact Time (weekly hours per semester)	3
Learning Outcomes and Competences	Social and economic sciences form the basis of the construction and real-estate industry. This module systematically provides students with a comprehensive understanding of social sciences and business. They become acquainted with micro and macroeconomics as a coherent ideological construct: starting from the smallest unit (client or producer), economic principles and coherences are explained on a national and global level. Students shall become familiar with the application of these rules to the construction and real estate sector, and the classification of the construction and real estate sector in this system. The relationship of these themes to management tasks is established. Students should understand the process of international business projects and should be able to plan, operate and control as well as calculate a project. Furthermore, they benefit from presentation techniques, research ability, critical thinking and working in project teams.
Level	2a
Obligatory Prerequisite Modules	none
Recommended Prerequisite Modules	none
Examination Type	The module coordinator(s) at the beginning of the semester shall present in written form the explicit examination requirements of the module to the students. If this does not occur, the hereby presented examination requirements will be the operative one(s): • 2 individual assignment: 15% • 2 group work assignment: 15% • Final written project group work (6000word): 50% • Final Oral Group work presentation (20 min): 20%
Examination Grading	Depending on grades
Associated Units	Case Studies 3: International Business (PS)
Module Applicability	

Recognised Modules	
Further Information	**On-site Evaluation scale: 1-5** (German system), that is equivalent to the Evaluation scale: 5-0 (Finnish system)

Involved Unit description:

Unit Name	Case Studies 3: International Business (PS)
Module Name	M4.3 Case Studies 3: International Business
Language	English
Unit Workload	100%
Taught Contact Time (weekly hours per semester)	3
Learning Method	(Project -)Seminar (PS)
Unit Content	The course provides case studies in the field of international real estate business. A project work has to be done related to business project close to reality. Students have to work out different detailed concepts of business project regarding technical, legal and economical requirements. Different points of views should be taken into account. Tasks required in the case studies are e.g. market analysis, technical concepts, legal concepts, financial concepts, calculation of prices, marketing and distribution.
Literature	• Real Estate Development - 5th Edition; Principles and Process; By Mike E. Miles, By Laurence M. Netherton, By Adrienne Schmitz; Urban Land Institute, 2015 Additional literature recommendations will be given during the lecturing period.
Further Information	Unit in charge: Faculty II – HTW Berlin Unit location: Wilhelminenhof Strasse 75/A, Berlin

M4.4 Case Studies 4: Real Estate Technology

Module Name	**M4.4 Case Studies 4: Real Estate Technology**
Module Coordinator	**Nicole Riediger**
Semester	4. Semester
Duration	1 semester
Status	Elective module
Module Frequency	Every summer term
ECTS Credits	5
Taught Contact Time (weekly hours per semester)	3
Learning Outcomes and Competences	By means of different projects, students learn how to define and achieve goals when dealing with technical issues within the real estate industry, and which methods and strategies form the basis of solutions to technical problems. Furthermore, they benefit from report writing and presentation techniques, research ability, critical thinking and working in project teams.
Level	2a
Obligatory Prerequisite Modules	none
Recommended Prerequisite Modules	none
Examination Type	The module coordinator(s) at the beginning of the semester shall present in written form the explicit examination requirements of the module to the students. If this does not occur, the hereby presented examination requirements will be the operative one(s): • Intermediate Presentation (20min.): pass or fail • Written group work project report: 70%. • Final group work presentation (20 min.): 30%
Examination Grading	Depending on grades
Associated Units	Case Studies 4: Real Estate Technology (PS)
Module Applicability	
Recognised Modules	
Further Information	**On-site Evaluation scale: 1-5** (German system), that is equivalent to the Evaluation scale: 5-0 (Finnish system)

Involved Unit description:

Unit Name	Case Studies 4: Real Estate Technology (PS)
Module Name	**M4.4 Case Studies 4: Real Estate Technology**
Language	English
Unit Workload	100%

Taught Contact Time (weekly hours per semester)	3
Learning Method	(Project -)Seminar (PS)
Unit Content	This course guides students through the different technologies which are available for real estates. The decision for appropriate technologies will be made based on different case studies with projects close reality. Especially current social, legal, technical as well as economic and ecologic requirements will be taken into account. Questions like how to use Subjects like Heating, Ventilation and Air systems in an appropriate way or how technological solutions could be transferred to other countries should be discussed. In addition, aspects of the usage of renewable energies, thermal rehabilitation will be included.
Literature	• ASHRAE – American Society of H/R/A Engineers: Handbook of Fundamentals, Atlanta 2001 • Allen, E.: How Buildings Work, Oxford 1995 • Stein, B. and Reynolds, J.S.: Mechanical and Electrical Equipment for Buildings, 8th edition, New York 1992 • Banal, N.K., Hauser, G.M.: Passive Building Design, Amsterdam, London Additional literature recommendations will be given in lecture and materials will be provided by lecturer
Further Information	Unit in charge: Faculty II – HTW Berlin Unit location: Wilhelminenhof Strasse 75/A, Berlin

M4.5 Final Oral Examination

Module Name	**M4.5 Final Oral Examination**
Module Coordinator	**Nicole Riediger**
Semester	4. Semester
Duration	1 semester
Status	Compulsory Module
Module Frequency	Every semester
ECTS Credits	2
Taught Contact Time **(weekly hours per semester)**	0
Learning Outcomes and Competences	With the presentation of their master's thesis, students display their ability to communicate effectively. They demonstrate that they are able to apply academic methodology when dealing with a defined topic, prove their subject knowledge, presentation and debating skills.
Level	2b
Obligatory Prerequisite Modules	See 12 § ConREM study regulation (all modules)
Recommended Prerequisite Modules	
Examination Type	Final Oral Examination (45-60min): 100%
Examination Grading	Depending on grades
Associated Units	none
Module Applicability	
Recognised Modules	
Module content	Colloquium: in general last week of September (4. Semester) The exact day is indicated in the official invitation for the Final Oral Examination sent by faculty administration.
Further Information	For the official Final Oral Examination Guideline and other templates, please visit the relevant section of the official ConREM Website: **https://conrem.htw-berlin.de/studying-conrem/thesis-and-final-oral-examination/**