Curriculum for the Joint European Master in Cities & Sustainability (JEMES CiSu)

The Technical Faculty of IT and Design
Aalborg University

The School of Civil Engineering
Technical University of Hamburg

The Faculty of Sciences
Autonomous University of Barcelona

The Department of Environment & Planning
University of Aveiro

September 2017

Preface

The Joint European Master in Cities & Sustainability (CiSu) is organised in accordance with the Ministry of Higher Education and Science's Order no. 1061 of June 30, 2016 on Bachelor's and Master's Programmes at Universities (the Ministerial Order of the Study Programmes) and Ministerial Order no. 1062 of June 30, 2016 on University Examinations (the Examination Order). Further reference is made to Ministerial Order no. 258 of March 18, 2015 (the Admission Order) and Ministerial Order no. 114 of February 3, 2015 (the Grading Scale Order) with subsequent changes.

The Master's Programme is a specialisation within Urban, Energy and Environmental Planning, is of 2 years (1st -4th semester), and builds on relevant bachelor programmes at the participating universities.

The education takes place with a special view of theoretical and methodical handling of complex and new engineering problems in the urban context. In the last semester of the programme, a Master's Thesis is prepared.

This curriculum takes effect as from 1 September 2017 – from 1st semester (only).

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Chapter 1: Legal Basis of the Curriculum, etc.

1.1 Basis in Ministerial Orders

1.1.1 Denmark
The Master's programme is organised in accordance with the Ministry of Higher Education and Science's Order no. 1061 of June 30, 2016 on Bachelor's and Master's Programmes at Universities (the Ministerial Order of the Study Programmes) and Ministerial Order no. 1062 of June 30, 2016 on University Examinations (the Examination Order). Further reference is made to Ministerial Order no. 258 of March 18, 2015 (the Admission Order) and Ministerial Order no. 114 of February 3, 2015 (the Grading Scale Order) with subsequent changes.

1.1.2 Germany
The Master's programme is organised in accordance with the Hamburger Hochschulgesetz from 18 July 2001 (last change on 16 November 2010) and the examination regulations from 29 April 2009 of Technische Universität Hamburg-Harburg.

1.1.3 Portugal
The Master's programme is organised in accordance with the Portuguese Decree-Law 74/2006, 24 March. It is registered in the General Direction for the Higher Education in Portugal with the number R/B-CR-67/2007) and published in the Decree-Law 220 (2)/2007, 15 November.

1.1.4 Spain
The Master's programme is organised in accordance with the Spanish Royal Decree 861/2010, 2 July that regulates tertiary education under the framework of the European Higher Education Area and modifies the Royal Decree 1393/2007, 29 October.

1.2 Faculty Affiliation
The Master's programme falls under The Technical Faculty of IT and Design, Aalborg University.

The Master's programme falls under The Faculty of Sciences, Universitat Autònoma de Barcelona

The Master's programme falls under the Department of Environment and Planning, Universidade de Aveiro.

The Master's programme falls under the School of Civil Engineering of the Technische Universität Hamburg-Harburg.

1.3 Board of Studies Affiliation
The master's programme falls under the Study Board of Planning, Geography and Surveying, that falls under the School of Architecture, Design and Planning, Aalborg University

The Master's programme falls under the Board of Studies of ICTA (Institut de Ciència i Tecnologia Ambientals), Universitat Autònoma de Barcelona.

The Master's programme falls under the Board of Studies of the Department of Environment and Planning, Universidade de Aveiro.

The Master's programme falls under the Board of Studies of the School of Civil Engineering (B), Hamburg University of Technology (TUHH).

Chapter 2: Admission, Degree Designation, Programme Duration and Competence Profile

2.1 Admission

Admission to the Master's Programme in Environmental Studies requires:

- A Bachelor's degree or equivalent, at second-class (upper) level or higher, in an engineering, science, technology, or management subject
- An appropriate level of competence in the English language, through attaining a minimum of B2 (Independent User, Vantage) in the Common European Framework of Reference for Languages.

2.2 Degree Designation

The Master's program entitles the graduate to the designation Master of Science (MSc) in Engineering (Urban, Energy and Environmental Planning) with specialisation in Cities and Sustainability.

2.3 The Programme's Specification in ECTS Credits

The Master programme is a 2-year, research-based, full-time study programme. The programme is set to 120 ECTS credits.

2.4 Competence Profile of the Programme

A Candidatus graduate has the following competency profile:

A Candidatus graduate has competencies that have been acquired via a course of study that has taken place in a research environment.

A Candidatus graduate is qualified for employment on the labour market on the basis of his or her academic discipline as well as for further research (PhD programmes). A Candidatus graduate has, compared to a Bachelor, developed his or her academic knowledge and independence so as to be able to apply scientific theory and method on an independent basis within both an academic and a professional context.

For the specialisation in Cities and Sustainability, the candidate acquires, in addition to the competence profile of the diploma, the following:

<u>Knowledge</u>

- Has profound knowledge within one or more of the following subject areas that, in selected topics, are based on the highest international research
  - Sustainable Development
  - Urban Planning
  - Air Pollution
  - Climate Change
  - Ecological Economics
  - Environmental Protection and Management
  - Industrial Ecology
  - Material and energy flow analysis
  - Sustainability Assessment
  - Waste & Resource Management
  - Water, Energy and Food Nexus
- Has basic knowledge of the implications of research ethics
- Has profound knowledge of relevant national and international research work
- Has profound knowledge of theories and methods in planning, administration and/or management within the public and private sector
- Possesses specialist understanding in continuation of the previous degree/or new professional competence in addition to the previous degree
- Has thorough understanding of the technical, structural and social conditions connected with the development and infrastructures of cities

- Possesses insights into and understanding of the socio-technical and socio-economic conditions under which urban environmental and sustainability policies, strategies, plans, technologies and projects are implemented

Skills

- Can handle the methods and tools of contemporary urban development as well as general skills connected with occupation within the field
- Can assess and choose among the theories, methods, tools and general skills of urban development, and on a scientific basis draw up new models of analysis and solution
- Can analyse the technical, economic and social context of which strategies and plans within sustainable urban development are a part
- Can analyse and prepare strategies, plans and projects at different levels
- Can assess if strategies, plans, projects or infrastructure systems are expedient and feasible in technical, economic, environmental, and social respects
- Can involve the public and relevant actors at all levels
- Can reflect on ethical matters in connection with professional practice
- Can independently make and motivate professionally related decisions and when necessary carry out investigations procuring a sufficient basis of decision
- Can impart research-based knowledge within the field of sustainable urban development and discuss professional and scientific problems with both colleagues and non-specialists.

Competencies

- Can act as part of public, private, non-governmental and knowledge organisations
- Can understand and on a scientific basis reflect on the knowledge and problems of the field of sustainability and urban development, and in this relation identify important socio-technical and socio-economic problems
- Can formulate and analyse essential problems independently, systematically and critically by using relevant scientific methods
- Can assess the expediency of different theories and methods for independent analysis and professional problem solution
- Can act as part of interdisciplinary teams within the field of urban development, working with the preparation and implementation of policies, plans and strategies in national and/or international contexts
- Can participate in research within the field of sustainable urban development and in this way contribute to the enhancement of the profession
- Can independently take responsibility for and develop own competencies and specialisation

Chapter 3: Content and Organisation of the Programme

The Master of Science in Cities and Sustainability is a unique 2-year programme offered jointly by the Department of Development & Planning (Aalborg University, AAU); the Institute of Environmental Technology and Energy Economics and Institute of Wastewater Management and Water Protection (Technische Universität Hamburg, TUHH); the Institut de Ciència i Tecnologia Ambiental (Universitat Autònoma de Barcelona, UAB); and the Department of Environment and Planning (Universidade de Aveiro, UA), enabling excellent graduates with first degrees in engineering, science, management and technology to successfully deal with complex urban processes and problems across international, cultural and disciplinary boundaries.

The programme is modular and organized as a problem-based study. A module is a discipline or a group of disciplines the objective of which is to give the student an entirety of professional qualifications within a specified time frame indicated in ECTS credits and which is finished with one or more examinations within certain examination periods. The examination is indicated and limited in the curriculum.

Students study with two European Universities and the option of one further third country university with the programme's delivery over two years providing a greater depth of learning, more organisational engagement and a rich cultural experience.

The programme builds on a combination of professional, problem-based and interdisciplinary approaches and is organized on the basis of the following work and evaluation forms combining skills and professional reflection:

- lectures
- class teaching
- project work
- workshops
- assignments (individually and in groups)
- teacher feedback
- reflection
- portfolio work
- Etc.

The programme is full time over 24 months, fully delivered in English, and divided into 4 semesters of study.

Students will start and spend the first year of their studies at Aalborg University. The second year, students choose to study at one of the three other participating universities: Universitat Autònoma de Barcelona, Technische Universität Hamburg or Universidade de Aveiro. Furthermore, they will have the option to study up to three months with associated partners (an updated list – ;March 2017 – is included in Annex 3 and available at all times from http://www.jemes-cisu.eu). A mobility overview is provided at the end of this document (Annex 1).

3.1 Overview of the Programme

The table below presents an overview of project and course modules at the four semesters of the master's programme. For the second year, the three mobility options are indicated separately.

All modules are assessed through individual grading according to the local grading scale (7-point in Aalborg, 10-point in Barcelona, 5-point in Hamburg and 20-point in Aveiro) or pass/fail (P/F). All modules are assessed by external examination (external grading) (E) or internal examination (internal grading) (I) or by assessment by the supervisor only.

The full programme is presented in the table below and in the following sections 3.2 to 3.5.

Table 1 Overview of the Master's Programme in Cities & Sustainability

1st year, AAU	Semester	Module	ECTS	Assessment	Exam Internal/ external
Project	1: AAU	Urban Transformations and Sustainable Engineering	15	7-point	I
Course	1: AAU	Theories of Science and Research Designs	5	P/F	I
Course	1: AAU	Sustainable Urban Planning	5	P/F	I
Course	1: AAU	Climate and Hydrology of the Dense City	5	7-point	I
Project	2: AAU	Designing Smarter Cities	15	7-point	E
Course	2: AAU	The Socio-Technical Context of Planning	5	7-point	I
Course	2: AAU	Sustainability Assessment and Societal Decision Processes	5	7-point	I
Course	2: AAU	Theories of the Network City and its Technologies	5	7-point	I
2nd year, UA	**Semester**	**Module**	**ECTS**	**Assessment**	**Exam Internal/ external**
Project	3: UA	Project Work	6	20-point	I/E
Course	3: UA	Environmental systems modelling	6	20-point	I
Course	3: UA	Environmental impact assessment	6	20-point	I
Course	3: UA	Free Option	12	20-point	I
Project	4: UA	Master's Thesis	30	20-point	E
2nd year, UAB	**Semester**	**Module**	**ECTS**	**Assessment**	**Exam Internal/ external**
Project	3: UAB	Research Project/Practicum Exchange	9	10-point	I/E
Course	3: UAB	Waste Management	6	10-point	I
Course	3: UAB	Global Change	9	10-point	I
Course	3: UAB	GIS	6	10-point	I
Project	4: UAB	Master's Thesis	30	10-point	E
2nd year, TUHH	**Semester**	**Module**	**ECTS**	**Assessment**	**Exam Internal/ external**
	3: TUHH	*Option A: Energy - Project work and choice of three (3) courses*			
Project	3: TUHH	Project Work	12	5-point	I/E
Course	3: TUHH	Waste Treatment Technologies	6	5-point	I
Course	3: TUHH	Bioresources and Biorefineries	6	5-point	I
Course	3: TUHH	Special Aspects of Waste Resource Management	6	5-point	I
Course	3: TUHH	Environmental Biotechnology	6	5-point	I
Course	3: TUHH	Environmental Protection and Management	6	5-point	I
Course	3: TUHH	Wastewater Systems and Reuse	6	5-point	E
	3: TUHH	*Option B: Water - Project work and choice of three (3) courses*			
Project	3: TUHH	Project Work - Water	12	5-point	I/E
Course	3: TUHH	Analytical Methods and Treatment Technologies for Wastewater	6	5-point	I
Course	3: TUHH	Wastewater Treatment and Air Pollution Abatement	6	5-point	I
Course	3: TUHH	Water Protection	6	5-point	I
Course	3: TUHH	Membrane Technology	6	5-point	I
Course	3: TUHH	Process Modelling in Water Technology	6	5-point	I
Course	3: TUHH	Seminar Cities	6	5-point	I
Course	3: TUHH	Resources Oriented Sanitation Systems	6	5-point	I
Course	3: TUHH	Environmental Protection and Management	6	5-point	I
Course	3: TUHH	Wastewater Systems and Reuse	6	5-point	I
Project	4: TUHH	Master's Thesis	30	5-point	E
Total			**120**		

As per the mobility plan, first and second semester takes place at AAU, third semester at UA, UAB, or TUHH. The master's thesis is written at the same European university where the student spent his or her third semester. Credits for the respective semester(s) are automatically transferred to AAU.

3.2 Cities & Sustainability, 1st semester

The theme of the semester is Urban Transformations and Sustainable Engineering. The semester comprises workload of 30 ECTS.

Project Module: Urban Transformations and Sustainable Engineering

Objectives: Students completing the module acquire the following

Knowledge:

- Understanding of the dynamics of the urban climate and its effects on
- the built environment
- Knowledge of environmentally and socially sustainable techniques for densifying the urban environment
- Knowledge of potential resources in the contemporary built environment as a catalyst to finding sustainable engineering and design solutions
- Knowledge of synergies and conflicts in climate change planning
- Knowledge of the fundamental principles of Problem Based Learning (PBL) as implemented in the Aalborg PBL model at The Technical Faculty of IT and Design

Skills:

- Can analyse and conceptualise complex urban projects and environments from a number of perspectives related to the 'compact city', e.g. climate adaptation and mitigation, densification, re-use, inclusivity
- Can analyse the interaction between environmental factors such as wind, water and the built environment
- Can utilise theories and methods in order to analyse and evaluate contemporary built environments and notions of 'compact cities'
- Can develop a proposal that integrates engineering techniques with conceptual and spatial design
- Can structure project management activities based on a well-formulated problem formulation

Competencies:

- Can work with techniques for adapting to climate change in densified built environments that compile technical, spatial, social and aesthetic qualities into an integrated design solution
- Can evaluate existing situations and utilise innovative and contemporary sustainable engineering techniques in the transformation of the built environment
- Can evaluate and communicate the effects of urban transformation as environmentally and socially sustainable
- Can reflect on, plan and manage a study project in a PBL learning environment

Teaching: Problem-based project work in groups.

Examination: Individual oral examination based on the project report, internal grading, 7- point scale.

Assessment criteria as stated in the Joint Programme Regulations.

Course Module 1: Theories of Science and Research Designs

Objectives: Students completing the module, acquire the following:

Knowledge:
- Understanding of the history and theoretical framework of theories of science at a graduate level
- Understanding of the relation between theories of science, research design and research methods at a graduate level
- Understanding of the contents and interrelation of the positions of theories of science and capability of relating critically to them
- Thorough knowledge of the relation to theories of science and research designs of own professional fields

Skills:
- Can use the basic complex of problems of theories of science in relation to assessment of courses and references in projects at a graduate level
- Can independently assess the value and reliability of own science production in relation to scientific basic complexes of problems
- Can independently assess the value and reliability of others' research design and methodologies
- Can use theories of science, research design and research methods within own fields at a graduate level
- Can impart knowledge of theories of science and research designs to specialists as well as non-specialists

Competencies:
- Can reflect critically on project-related choices of value bases, theories of science and methods
- Can reflect critically on choices of qualitative and quantitative research methods
- Can take responsibility for continuous professional development through acquisition of new knowledge of the development and renewal of theories of science and research designs.

Teaching: Lectures, workshops, seminars, assignments, etc.

Examination: Individual oral or written examination, internal grading, pass/fail.

Assessment criteria as stated in the Joint Programme Regulations.

Course Module 2: Sustainable Urban Planning

Objectives: Students completing the module acquire the following:

Knowledge:
- Understanding of the complexities of contemporary urban planning in relation to challenges and possibilities such as sustainability, resilience and liveability
- Understanding of radical changes that can constitute future directions for international urban development
- Knowledge and understanding of different concepts, analytical methods and tools for assessing the qualities of planning documents

Skills:

- Can critically use relevant theories, concepts, analytical methods and tools for assessing the qualities of planning documents and visions
- Can analyse urban problems taking into consideration economic, environmental and social conditions
- Can prepare concepts, proposals and solutions to guide future urban planning objectives
- Can communicate research-based knowledge and scientific problems and facilitate possible future planning solutions with both professionals (from a variety of fields) and non-specialists

Competencies:
- Can independently use relevant theories, concepts and methods to identify challenges and possibilities in relation to sustainable urban planning
- Can engage in interdisciplinary cooperation with other experts and the public in planning urban solutions and proposals and take a professional responsibility in relation to guiding future action
- Can carry out focused, critical and well-informed research to support the planning for sustainable and liveable cities

Teaching: Lectures, workshops, seminars, assignments, etc.

Examination: Individual oral or written examination, internal grading, pass/fail.

Assessment criteria as stated in the Joint Programme Regulations.

Course Module 3: Climate and Hydrology of the Dense City

Objectives: Students completing the module acquire the following:

Knowledge:
- Must have knowledge of causes, development, and effects of climate change from global to local scale
- Must have knowledge on aquatic and terrestrial ecology and ecosystems
- Must have knowledge on techniques for addressing climate adaptation
- Must have knowledge on urban water management practices

Skills:
- Must be able to utilise analytical tools and methods concerning sustainable and infrastructural design
- Must be able to identify and address problems in relation to climate adaption and hydrological issues relevant to the design of the built environment
- Must be able to assess similarities and differences between rural and urban ecosystems
- Must be able to assess the impact of the built environment on urban climatology
- Must be able to measure quantify, and model urban transformation processes in relation to the built environment

Competencies:
- Must have the competence to analyse, plan, and guide the sustainable transformation of a city
- Must be able to evaluate the quality of urban ‘blue’ and ‘green’ ecosystem structures
- Must have the competence to develop strategies for urban climate adaption

Teaching: Lectures, workshops, seminars, assignments, etc.

Examination: Individual oral or written examination, internal grading, 7-point scale

Assessment criteria as stated in the Joint Programme Regulations.

3.3 Cities & Sustainability, 2nd semester

The theme of the semester is Designing Smarter Cities. The semester comprises a workload of 30 ECTS.

Project Module: Designing Smarter Cities

Objectives: Students completing the module acquire the following:

Knowledge:

- Knowledge of the importance of contemporary infrastructures to the functionality of cities
- Understand of the technical factors shaping and forming the contemporary urban systems in their social context
- Knowledge of the adequate functional and technical solutions to sustainability challenges within the contemporary city

Skills:

- Can apply the theories and methods relevant to the design and development of (selected) smarter urban systems and infrastructures
- Can evaluate the solutions presented in the field and assess their values seen in the light of urban design theories, methods and reference projects
- Can establish skills in analysing the infrastructural challenges of the contemporary city applying relevant technologies and methods
- Can independently collect data in relation to relevant problems and assess the quality and reliability of the used data
- Can explain the general structure and methods of the project
- Can reflect critically on sources and use accurate source referencing

Competencies:

- Can combine relevant theories, concepts, methods and analyses to form a synthesis towards the preparation of specific strategies and plans directed towards institutional and social framework conditions
- Can create design proposals and concepts for smarter urban living and assess their implementation effects

Teaching: Problem-based project work in groups

Examination: Individual oral examination based on the project report, external grading, 7- point scale.

Assessment criteria: Stated in the Joint Programme Regulations.

Course Module 1: The Socio-Technical Context of Planning

Objectives: Students completing the module acquire the following:

Knowledge:

- Knowledge of the context dependency of urban, energy and environmental problems
- Knowledge of links between technological development and theories for analysis

of planning and decision-making processes
- Knowledge of how to apply insights from socio-technical theory in agency, better policy designs, and sustainability transition

Skills:
- Can use the presented concepts and methods in a socio-technical approach in relation to analysis of real life cases of environment, energy and urban planning and policy creation/development
- Can use and develop socio-technical theoretical approaches, concepts and methods for the analysis of specific problems at an advanced level
- Can propose interventions based on socio-technical knowledge, and communicate knowledge derived from socio-technical theoretical approaches to both specialists and non-specialists

Competencies:
- Can critically and independently use and develop socio-technical approaches, concepts and methods of analysis in problem-based project work
- Can understand and act upon complex problems in planning and technology, based upon socio-technical analysis and informed delimitation
- Can reflect upon own practise with a starting point in socio-technical knowledge, and thereby continuously develop capacity for being a professional change agent

Teaching: Lectures, workshops, seminars, assignments, etc.

Examination: Individual oral or written examination, internal grading, 7-point scale.

Assessment criteria as stated in the Joint Programme Regulations.

Course Module 2: Sustainability Assessment and Societal Decision Processes

Objectives: Students completing the module, acquire the following:

Knowledge:
- Knowledge of different technical impact tools and methodologies applied for ex-ante sustainability assessment
- Knowledge and understanding about the socio-technical context in which ex-ante impact assessment is developed and used
- Knowledge and understanding of how impact assessment connects to societal decision-making on e.g. large infrastructures, technologies or spatial developments
- Can understand and reflect on decision-making theories

Skills:
- Can choose impact assessment methods and tools for ex-ante sustainability assessment
- Can integrate technical analyses of bio-physical and social variables in the assessments and decision-making processes
- Can analyse and assess theoretical and practical problems, and develop and assess solutions that favour sustainable development
- Can communicate results of assessments to both other peers and non-specialists

Competencies:
- Can handle complex assessment situations
- Can participate critically and reflexively in impact assessment to secure more

sustainable planning and decision-making at societal level

Teaching: Lectures, workshops, seminars, assignments, etc.

Examination: Individual oral or written examination, internal grading, 7-point scale

Assessment criteria as stated in the Joint Programme Regulations.

Course Module 3: Theories of the Network City and its Technologies

Objectives: Students completing the module acquire the following:

Knowledge:
- Must have knowledge about the technical forces shaping the network city and their societal consequences
- Must be able to understand the basic factors behind the creation of the network city and its technologies
- Must be able to develop knowledge about the network city and its technologies as a 'large technical system'

Skills:
- Must be able to apply the relevant scientific theories and methods related to an analysis of the technological infrastructure systems of the network city
- Must be able to evaluate proposals for intervention and design of the network city in light of state-of-the-art theories

Competencies:
- Must acquire competencies in analysing the network city on a theoretical and methodologically reflective level
- Must acquire competencies in assessing technical solutions to traffic and mobility challenges of the network city

Teaching: Lectures, workshops, seminars, assignments, etc.

Examination: Individual oral or written examination, internal grading, 7-point scale.

Assessment criteria as stated in the Joint Programme Regulations.

3.4 Cities & Sustainability, 3rd semester

The theme of the semester is Professional Development. The semester comprises workload of 30 ECTS. On the 3rd semester, students can choose to study at either UA, UAB or TUHH. During the course of the semester, students have the option to integrate research based project work at one of the programme's associated partners, see annex 3 for further details.

3.4.1 Universidade de Aveiro (UA):

Admission: Passed 1st semester of the MSc in Environmental Studies or the like, and must have participated in 2nd semester's courses, project work and exams.

Project Module: Project Work (12 ECTS)

Aim: Students passing the project will acquire:
Knowledge
- for understanding and applying various tools in solving design and planning within technological and policy-related questions
- practical integrated knowledge in environmental aspects

Skills

- for critically reflect on a given problem, argue for and apply appropriate tools, theories and practices in order to develop proposals for solutions
- to discuss technological perspectives on the given option
- to identify, analyse and evaluate project-relevant sustainability related problems and consequences in an overall societal perspective

Competences

- to organise and manage the practical challenges related to the design, and planning of technological and policy-related strategies on a sustainable basis
- to combine and compose the application of relevant theories, understandings, methods and assessments, so these form a synthesis toward developing specific strategies and plans that allow work with environmental solutions
- to motivate, argue, and communicate the project's general structure, methodology and solution for both professionals and non-professionals

Teaching: Project work alone or in group, supervisor feedback, presentations.

Examination: based on a written report of the developed project and its presentation and discussion. Graded in accordance with the Portuguese 20-point scale. Internal examiner.

Course Module 1: Environmental Systems Modelling (6 ECTS)

Aim: Students that complete the module acquire the following:

Course Module 2: Environmental Impact Assessment (6 ECTS)

Aim: Students that complete the module acquire the following:

Course Module 3: Free Option II (6 ECTS)

Aim: Students that complete the module acquire the following:

3.4.2 Universitat Autònoma de Barcelona (UAB):

Admission: Passed 1st semester of the MSc in Environmental Studies or the like, and must have participated in 2nd semester's courses, project work and exams.

Project Module: Research Project/Practicum Exchange (9 ECTS)

Aim: Students that complete the module acquire the following:

Knowledge:

- The overall objective is for the student to work in a public or private research institution or of a public or private company to gain knowledge of their habits
- To learn about how work is organized and how to manage him or herself at work
- To learn about teamwork with other professionals
- To gain an overall view of environmental topics that affect the research or professional work
- To learn the specific tasks and capabilities of the job developed in the hosting institution

Skills:

- The student should be able to communicate clearly, perform well in a team environment and organize his/her time and work.

Teaching: Students will be enrolled in the hosting institution system in terms of working hours and working needs. Prior to the start, a registration file will be fulfilled where the tasks to be performed by the student will be detailed. During the last week of the Practicum period, the student will present a short report describing its activity along the Practicum period

Evaluation: Evaluation will be performed according to the following marks: 50% by the student responsible at the hosting institution; 50% by the university tutor according to the report presented and his considered opinion. Graded in accordance with the Spanish 10-point scale. Internal examiner.

Course Module 1: Global Change (9 ECTS)

Aim: Students that complete the module acquire the following:

Knowledge

- Understanding and explaining many of the types of impacts related to global change, covering a variety of spatial and temporal timescales
- Discern changes and impacts caused by climate vs. those with other forcing mechanisms. They will focus their studies and efforts on both terrestrial and marine impacts, biodiversity, the global carbon cycle, ocean acidification, and ecosystem impacts and repercussions. Impacts to each of the major environmental spheres will be emphasized, at past, present, and future timescales.

Skills

- Have a clear distinction between climate vs. other driving forces of impact and change

Teaching: Teaching and discussions will occur during class times, guided by particular readings and hand-outs assigned by individual instructors. There will also be a field trip to the mountainous regions of Catalonia led by 1 of the instructors.

Evaluation: There will be evaluations based on a short answer / essay exam (50%) at the end of the module. A research paper will also be required (50%). Graded in accordance with the Spanish 10-point scale. Internal examiner.

Course Module 2: Waste Management (6 ECTS)

Aim: Students that complete the module acquire the following:

Knowledge

- This module consists of an introduction to the general context, including legislation, hazardous properties, management models, and case studies, followed by more in depth study of waste production, composition, properties, collecting systems and related sustainability indexes, available technologies, recyclable materials, and landfills.

Skills

- classify and coding wastes
- choose and propose the most suitable management system for an industrial waste according the actual legislation.
- Propose a logic sequence for automatic classification of the fractions of the municipal solid waste.
- Evaluate the possibility to apply a biological treatment for a waste according to its characteristics.

- Analyze the performance of a biologic wastewater treatment plant (WWTP) and proposing improvement and correction actions.
- Evaluate the main impact of a landfill
- Analyze the main characteristics of the composting process design and performance.

Teaching: The main teaching methodology will be through lectures (approximately 65 hours) but discussions will occur during class times, guided by particular readings and exercises. Some classes will be given in computer labs, and will have follow-up exercises. Several visits to industrial installations will be proposed.

Evaluation: Evaluation will be done separately by each professor, but in general, evaluation will be based on: assistance to class, class projects, class exercises and short exams. Graded in accordance with the Spanish 10-point scale. Internal examiner.

Course Module 3: GIS (6 ECTS)

Aim: Students that complete the module acquire the following:

Knowledge

- This module introduces the students to GIS data bases, models, and tendencies, platforms, sensors, and processing of images. The more important techniques of classification (automatic and vector) will be described, as well as advanced cartographic searches via internet. Special attention will be paid to territorial planning via the integration of GIS tools and Teledetection, and the role these tools can play in environmental planning. The students at the end will compose cartographies and analyse results.

Skills

- be able to use GIS programs to analyze different systems; be able to obtain, analyze and manipulate geographical data

Teaching: The classes will always take place in computer lab, with time for students to work on their own while having supervision.

Evaluation: Readings and discussions represent 30% of the final grade, exercises and a final exam 70%. Graded in accordance with the Spanish 10-point scale. Internal examiner.

3.4.3 Technische Universität Hamburg (TUHH):

Admission: Passed 1st semester of the MSc in Environmental Studies or the like, and must have participated in 2nd semester's courses, project work and exams.

TUHH offers the option of two focus areas on the third semester: A) Energy and B) Water. Both combine project with course work.

Project Module: Project Work (12 ECTS)

Aim: The students are able to work in a scientific fashion. They have the ability to complete and document research on a subject matter assignment with scientific methods independently and within a given timeframe. The students are able to develop solutions for technical problems on the basis of pure science with regards to safety, environmental, ethical and economic aspects.

Teaching Project work with or without studies abroad

Examination: Oral individual exam with point of departure in the project report. Internal examiner. Graded in accordance with the German 5-point scale.

Option A: Energy

Course Module 1A: Waste Treatment Technologies (6 ECTS)

Aim: After taking part successfully, students have reached the following learning results:

Professional Competence:
Theoretical Knowledge: Students are able to...

- possess knowledge concerning the planning of biological waste treatment plants.
- explain the design and layout of anaerobic and aerobic waste treatment plants in detail
- describe different techniques for waste gas treatment plants for biological waste treatment plants
- explain different methods for waste analytics.

Capabilities: Students are able to...

- discuss the compilation of design and layout of plants.
- critically evaluate techniques and quality control measurements.
- research and evaluate literature and data connected to the tasks given in der module and plan additional tests.
- reflect and evaluate findings in the group.

Personal Competence:
Social Competence: Students are able to...

- participate in subject-specific and interdisciplinary discussions, develop cooperated solutions and defend their own work results in front of others and promote the scientific development in front of colleagues.
- give and accept professional constructive criticism.

Autonomy:

- Students can independently tap knowledge from literature, business or test reports and transform it to the course projects. They are capable, in consultation with supervisors as well as in the interim presentation, to assess their learning level and define further steps on this basis. Furthermore, they can define targets for new application-or research-oriented duties in accordance with the potential social, economic and cultural impact.

Teaching Labwork and assignments

Examination: Written Exam. Internal examiner.Graded in accordance with the German 5-point scale.

Course Module 2A: Bioresources and Biorefineries (6 ECTS)

Aim: After taking part successfully, students have reached the following learning results:

Professional Competence:
Theoretical Knowledge: Students are able to...

- give on overview on principles and theories in the field’s bioresource management and biorefinery technology and can explain specialized terms and technologies.

Capabilities: Students are able to...

- apply knowledge and know-how in the field’s bioresource management and biorefinery technology in order to perform technical and regional-planning tasks.
- discuss the links to waste management, energy management and biotechnology.

Personal Competence:
Social Competence: Students are able to...

- work goal-oriented with others and communicate and document their interests and knowledge in acceptable way.

Autonomy

- Students are able to solve independently, with the aid of pointers, practice-related tasks bearing in mind possible societal consequences.

Teaching Lectures, group work

Examination: Written Exam. Internal examiner.Graded in accordance with the German 5-point scale.

Course Module 3A: Special Aspects of Waste Resource Management (6 ECTS)

Aim: After taking part successfully, students have reached the following learning results:

Professional Competence:
Theoretical Knowledge: Students are able to...

- describe waste as a resource as well as advanced technologies for recycling and recovery of resources from waste in detail. This covers collection, transport, treatment and disposal in national and international contexts.

Capabilities: Students are able to...

- select suitable processes for the treatment with respect to the national or cultural and developmental context.
- evaluate the ecological impact and the technical effort of different technologies and management systems.

Personal Competence:
Social Competence: Students are able to...

- work together as a team of 2-5 persons,
- participate in subject-specific and interdisciplinary discussions,
- develop cooperated solutions and defend their own work results in front of others and promote the scientific development of colleagues,
- give and accept professional constructive criticisms.

Autonomy

- Students can independently gain additional knowledge of the subject area and apply it in solving the given course tasks and projects

Teaching Assignments

Examination: Written Exam. Internal examiner.Graded in accordance with the German 5-point scale.

Course Module 4A: Environmental Biotechnology (6 ECTS)

Aim: After taking part successfully, students have reached the following learning results:

Professional Competence:
Theoretical Knowledge: Students are able to...

- explain methods for the detection of microorganisms in the environment
- explain the mechanisms that exist for the biological degradation of pollutants

Capabilities: Students are able to...

- judge, in which technical processes microbially mediated problems may occur
- propose methods for the elimination of microorganisms from the environment
- evaluate environmental problems derived from pollutants and their consequences,
- isolate bacteria from water and soil samples,
- perform and document experiments concerning biological degradation of pollutants,
- use modern molecular biology methods for the characterization of mixed bacterial communities,
- transfer the mechanisms for the degradation of environmental pollutants to new chemicals whose degradation is not known yet.

Personal Competence:
Social Competence: Students are able to...

- perform experiments in teams of 4 students

Autonomy

- Students are able to extract new knowledge from scientific articles, summarize them and compare it to the contents of the lecture

Teaching Lectures and labwork

Examination: Written Exam. Internal examiner.Graded in accordance with the German 5-point scale.

Course Module 5A: Environmental Protection and Management (6 ECTS)

Aim: After taking part successfully, students have reached the following learning results:

Professional Competence:
Theoretical Knowledge: Students are able to...

- describe the basics of regulations, economic instruments, voluntary initiatives, fundamentals of HSE legislation ISO 14001, EMAS and Responsible Care ISO 14001 requirements.
- analyse and discuss industrial processes, substance cycles and approaches from end-of-pipe technology to eco-efficiency and eco-effectiveness, showing their sound knowledge of complex industry related problems.
- judge environmental issues and to widely consider, apply or carry out innovative technical solutions, remediation measures and further interventions as well as conceptual problem solving approaches in the full range of problems in different industrial sectors.

Capabilities: Students are able to...

- assess current problems and situations in the field of environmental protection, consider the best available techniques and plan and suggest concrete actions in a company- or branch-specific context.
- solve problems on a technical, administrative and legislative level.

Personal Competence:
Social Competence: Students are able to...

- work together in international groups.

Autonomy

- Students are able to organize their work flow to prepare themselves for presentations and contributions to the discussions. They can acquire appropriate knowledge by making enquiries independently.

Teaching Lectures and exercises

Examination: Written Exam. Internal examiner.Graded in accordance with the German 5-point scale.

Course Module 6A: Wastewater Systems and Reuse (6 ECTS)

Aim: After taking part successfully, students have reached the following learning results:

Professional Competence:
Theoretical Knowledge: Students are able to...
- outline key areas of the full range of treatment systems in water and waste water management, as well as their mutual dependence for sustainable water protection.
- describe relevant economic, environmental and social factors.

Capabilities: Students are able to...
- pre-design and explain the available water and wastewater treatment processes and the scope of their application in municipal and for some industrial treatment plants.

Personal Competence:
Social Competence
- Through partial PBL students have learned to research and to interact with other students on the subjects covered.

Autonomy
- Students are in a position to work on a subject and to organize their work flow independently. They can also present on this subject.

Teaching Lectures, assignments, exercises

Examination: Written Exam. Internal examiner.Graded in accordance with the German 5-point scale.

Option B: Water

Course Module 1B: Analytical Methods and Treatment Technologies for Wastewater (6 ECTS)

Aim: After taking part successfully, students have reached the following learning results:

Professional Competence:
Theoretical Knowledge:
- The students know some non-biological processes for the treatment of water and wastewater as well as the fundamentals of mass transfer, which is essential for many treatment processes. They have knowledge about analytical procedures which can be applied even without the availability of a laboratory and which are useful for evaluating the performance of (waste)water treatment processes and the assessment of surface water quality in an economically feasible way.

Capabilities: Students are able to...
- select suitable processes for the treatment of wastewaters with respect to their characteristics.

- evaluate the efforts and costs for analytical procedures for the characterization of waters/wastewaters and select economically feasible analytical procedures.

Personal Competence:
Social Competence: Students are able to...
- plan and perform wastewater analyses together with colleagues in small groups and to efficiently distribute the respective tasks within the group.

Autonomy
- The students are capable to make their own decisions with respect to the selection of suitable water/wastewater treatment processes as well as economically feasible analytical procedures for water/wastewater characterization.

Teaching Lectures

Examination: Oral Exam. Internal examiner.Graded in accordance with the German 5-point scale.

Course Module 2B: Wastewater Treatment and Air Pollution Abatement (6 ECTS)

Aim: After taking part successfully, students have reached the following learning results:

Professional Competence:
Theoretical Knowledge: Students are able to...
- name and explain biological processes for wastewater treatment, characterize waste water and sewage sludge
- discuss legal regulations in the area of emissions and air quality
- classify off gas treatment processes and to define their area of application

Capabilities: Students are able to...
- choose and design process steps for the biological waste water treatment
- combine processes for cleaning of off-gases depending on the pollutants contained in the gases

Teaching Lectures

Examination: Written Exam. Internal examiner.Graded in accordance with the German 5-point scale.

Course Module 3B: Water Protection (6 ECTS)

Aim: After taking part successfully, students have reached the following learning results:

Professional Competence:
Theoretical Knowledge: Students are able to...
- describe the basic principles of the regulatory framework related to the international and European water sector.
- explain limnological processes, substance cycles and water morphology in detail and assess complex water related problems.
- demonstrate to achieve significant improvements in the full range of existing water quality problems.
- judge environmental and wastewater related issues and to widely consider innovative solutions, remediation measures and further interventions as well as conceptual problem solving approaches.

Capabilities: Students are able to...

- accurately assess current problems and situations in a country-specific or local context.
- suggest concrete actions to contribute to the planning of tomorrow's urban water cycle.
- suggest appropriate technical, administrative and legislative solutions to solve these problems.

Personal Competence:
Social Competence: The students can work together in international groups.

Autonomy
- Students are able to organize their work flow to prepare themselves before presentations and discussion. They can acquire appropriate knowledge by making enquiries independently.

Teaching Lectures, assignments, exercises

Examination: Written Exam. Internal examiner.Graded in accordance with the German 5-point scale.

Course Module 4B: Membrane Technology (6 ECTS)

Aim: After taking part successfully, students have reached the following learning results:

Professional Competence:
Theoretical Knowledge: Students are able to...
- rank the technical applications of industrially important membrane processes.
- explain the different driving forces behind existing membrane separation processes.
- name materials used in membrane filtration and their advantages and disadvantages.
- explain the key differences in the use of membranes in water, other liquid media, gases and in liquid/gas mixtures.

Capabilities: Students are able to...
- prepare mathematical equations for material transport in porous and solution-diffusion membranes and calculate key parameters in the membrane separation process.
- handle technical membrane processes using available boundary data and provide recommendations for the sequence of different treatment processes.
- to classify the separation efficiency, filtration characteristics and application of different membrane materials through their own experiments.
- characterise the formation of the fouling layer in different waters and apply technical measures to control this.

Personal Competence:
Social Competence: Students are able to...
- work in diverse teams on tasks in the field of membrane technology.
- make decisions within their group on laboratory experiments to be undertaken jointly and present these to others.

Autonomy
- Students will be in a position to solve homework on the topic of membrane technology independently. They will be capable of finding creative solutions to technical questions.

Teaching Lectures, exercises, labwork

Examination: Written Exam. Internal examiner.Graded in accordance with the German 5-point scale.

Course Module 5B: Process Modelling in Water Technology (6 ECTS)

Aim: After taking part successfully, students have reached the following learning results:

Professional Competence:
Theoretical Knowledge: Students are able to...

- explain selected processes of drinking water and waste water treatment in detail.
- explain basics as well as possibilities and limitations of dynamic modeling.

Capabilities: Students are able to...

- use the most important features Modelica offers.
- transpose selected processes in drinking water and waste water treatment into a mathematical model in Modelica with respect to equilibrium, kinetics and mass balances.
- set up and apply models and assess their possibilities and limitations.

Personal Competence:
Social Competence: Students are able to...

- solve problems and document solutions in a group with members of different technical background.
- give appropriate feedback and can work constructively with feedback concerning their work.

Autonomy

- Students are able to define a problem, gain the required knowledge and set up a model.

Teaching Lectures and assignments

Examination: Written Exam. Internal examiner.Graded in accordance with the German 5-point scale.

Course Module 6B: Project Work/Seminar Cities (6 ECTS)

Aim: After taking part successfully, students have reached the following learning results:

Professional Competence:
Theoretical Knowledge: Students are able to...

- demonstrate their detailed knowledge in the field of Water and Environmental Engineering.
- exemplify the state of technology and application and discuss critically in the context of actual problems and general conditions of science and society.
- develop solving strategies and approaches for fundamental and practical problems in the field of Water and Environmental Engineering.
- apply theory based procedures and integrate safety-related, ecological, ethical, and economic view points of science and society.
- describer and critically review scientific work techniques used.

Capabilities: Students are able to...

- independently select methods or planning approaches for the project work and to justify their choice.

- explain how these methods or approaches relate to solutions in the field of work and how the context of application has to be adjusted.
- Outline general findings and further developments.

Personal Competence:
Social Competence: Students are able to...
- condense the relevance and the structure of the project work, the work steps and the sub-problems for the presentation and discussion in front of a bigger group.
- lead the discussion and give a feedback on the project to their colleagues

Autonomy
- The students are capable of independently planning and documenting the work steps and procedures while considering the given deadlines. This includes the ability to accurately procure the newest scientific information. Furthermore, they can obtain feedback from experts with regard to the progress of the work, and to accomplish results on the state of the art in science and technology.

Teaching Lectures, seminars, project work and supervised dialogue

Examination: Written Exam. Internal examiner.Graded in accordance with the German 5-point scale.

Course Module 7B: Resources Oriented Sanitation Systems (6 ECTS)

Aim: After taking part successfully, students have reached the following learning results:

Professional Competence:
Theoretical Knowledge: Students are able to...
- describe resources oriented wastewater systems mainly based on source control in detail.
- comment on techniques designed for reuse of water, nutrients and soil conditioners.
- discuss a wide range of proven approaches in Rural Development from and for many regions of the world.

Capabilities: Students are able to...
- design low-tech/low-cost sanitation, rural water supply, rainwater harvesting systems, measures for the rehabilitation of top soil quality combined with food and water security.
- consult on the basics of soil building through “Holisitc Planned Grazing” as developed by Allan Savory.

Personal Competence:
Social Competence: Students are able to...

Autonomy
- Students are in a position to work on a subject and to organize their work flow independently. They can also present on this subject.

Teaching Lectures and labwork

Examination: Written Exam. Internal examiner.Graded in accordance with the German 5-point scale.

Course Module 8B: Environmental Protection and Management (6 ECTS)

Aim: After taking part successfully, students have reached the following learning results:

Professional Competence:
Theoretical Knowledge: Students are able to...

- describe the basics of regulations, economic instruments, voluntary initiatives, fundamentals of HSE legislation ISO 14001, EMAS and Responsible Care ISO 14001 requirements.
- analyse and discuss industrial processes, substance cycles and approaches from end-of-pipe technology to eco-efficiency and eco-effectiveness, showing their sound knowledge of complex industry related problems.
- judge environmental issues and to widely consider, apply or carry out innovative technical solutions, remediation measures and further interventions as well as conceptual problem solving approaches in the full range of problems in different industrial sectors.

Capabilities: Students are able to...

- assess current problems and situations in the field of environmental protection, consider the best available techniques and plan and suggest concrete actions in a company- or branch-specific context.
- solve problems on a technical, administrative and legislative level.

Personal Competence:
Social Competence: Students are able to...

- work together in international groups.

Autonomy

- Students are able to organize their work flow to prepare themselves for presentations and contributions to the discussions. They can acquire appropriate knowledge by making enquiries independently.

Teaching Lectures and exercises

Examination: Written Exam. Internal examiner.Graded in accordance with the German 5-point scale.

Course Module 9B: Wastewater Systems and Reuse (6 ECTS)

Aim: After taking part successfully, students have reached the following learning results:

Professional Competence:
Theoretical Knowledge: Students are able to...

- outline key areas of the full range of treatment systems in water and waste water management, as well as their mutual dependence for sustainable water protection.
- describe relevant economic, environmental and social factors.

Capabilities: Students are able to...

- pre-design and explain the available water and wastewater treatment processes and the scope of their application in municipal and for some industrial treatment plants.

Personal Competence:
Social Competence

- Through partial PBL students have learned to research and to interact with other students on the subjects covered.

Autonomy

- Students are in a position to work on a subject and to organize their work flow independently. They can also present on this subject.

Teaching Lectures, assignments, exercises

Examination: Written Exam. Internal examiner.Graded in accordance with the German 5-point scale.

3.5 Cities & Sustainability, 4th semester

Project Module: Master's Thesis (30 ECTS)

Admission: Passed the three first semesters of the Programme in Urban, Energy and Environmental Planning

Objectives: Students completing the module acquire the following:

Knowledge:

- Thorough knowledge of relevant theories and methods in relation to the chosen problem and can reflect on them
- Can describe the used theories so that the special characteristics of the theories are brought to light and in this way document understanding of the possibilities and limitations of the used theories within the concerned field of problems
- Have knowledge of the scientific-theoretical and methodical embeddedness of the used theories and can reflect on them
- Have thorough knowledge of the research embeddedness of the chosen problem, including knowledge of the most important national and international research in the field

Skills:

- Can independently plan and carry through a project at a high professional level
- Can give an account of possible methods for solution of the problem formulation of the project, and describe and assess the suitability of the chosen method, including an account of chosen limitations and their importance to the results
- Can give an account of the relevance to the education of the chosen problem, including a precise account of the core of the problem and the professional context
- Can analyse and describe the chosen problem by using relevant concepts, theories and empirical investigations
- Can analyse and assess the results of empirical investigations, whether it is the student's own investigations or those of others, including an assessment of the importance of the investigation methods to the validity of the results
- Can point out relevant future strategies, possibilities of change and/or solution proposals
- Can impart knowledge of the problem to both professionals and non-professionals

Competencies:

- Can form a synthesis between the professional problem, theoretical and empirical investigations and make a critical assessment of the synthesis formed and the other results of the project work
- Can independently, on the basis of the acquired problem, be part of interdisciplinary discussions and development work
- Can independently acquire the newest knowledge in the field and are on this background capable of continuously developing the professional skills and

competencies

Teaching: Problem-based project work alone or in groups.

Examination: Individual oral examination on the basis of the thesis, external grading, graded in accordance with the scale at the university where the thesis is handed in:
UA: In accordance with the Portuguese 20-point scale
UAB: In accordance with the Spanish 10-point scale
TUHH: In accordance with the German 5-point scale

Assessment criteria: Stated in the Joint Programme Regulations.

Chapter 4: Entry into Force, Interim Provisions and Revision

This curriculum is approved by the Dean of The Technical Faculty of IT and Design and enters into force as of September 1, 2017.

The curriculum is approved by the Scientific Council of the University of Aveiro.

The curriculum is approved by the Academic Board of Graduate Studies of the Universitat Autònoma de Bacelona (Comissió d'Estudis de Postgrau).

The curriculum is approved by the Academic Senate and the Council of the School of Civil Engineering of Hamburg University of Technology (TUHH).

Students who wish to complete their studies under the previous curriculum from 2014 must conclude their education by the summer examination period 2018 at the latest, since examinations under the previous curriculum are not offered after this time.

Chapter 5: Other Provisions

5.1 Rules concerning written work, including the Master's thesis

In the assessment of all written work, regardless of the language it is written in, weight is also given to the student's spelling and formulation ability, in addition to the academic content. Orthographic and grammatical correctness as well as stylistic proficiency are taken as a basis for the evaluation of language performance. Language performance must always be included as an independent dimension of the total evaluation. However, no examination can be assessed as 'Pass' on the basis of good language performance alone; similarly, an examination normally cannot be assessed as 'Fail' on the basis of poor language performance alone.

The Board of Studies can grant exemption from this in special cases (e.g., dyslexia or a native language other than Danish).

The Master's thesis must include an English summary[1]. If the project is written in English, the summary must be in the official language of the university the student is enrolled in[2]. The summary must be at least 1 page and not more than 2 pages. The summary is included in the evaluation of the project as a whole.

5.2 Rules concerning credit transfer (*merit*), including the possibility for choice of modules that are part of another programme at a university in Denmark or abroad

In the individual case, the Board of Studies can approve successfully completed (passed) programme elements from other Master's programmes in lieu of programme elements in this programme (credit transfer). The Board of Studies can also approve successfully completed (passed) programme elements from another Danish programme or a programme outside of Denmark at the same level in lieu of programme elements within this curriculum. Decisions on credit transfer are made by the Board of Studies based on an academic assessment. See the Joint Programme Regulations for the rules on credit transfer.

5.3 Rules concerning the completion of the Master's Programme

The Master's Programme must be completed no later than four years after it was begun.

5.4 Rules for examinations

The rules for examinations are stated in the Examination Policies and Procedures and published accordingly, cf. sections below.

5.4.1 Denmark

The rules for examinations are stated in the Examination Policies and Procedures published by The Technical Faculty of IT and Design, The Faculty of Engineering and Science, and the Faculty of Medicine on their website.

5.4.2 Germany

The rules for examinations are stated in the Examination Policies and Procedures published by the Technische Universität Hamburg on its website.

5.4.3 Portugal

The rules for examinations are stated in the Regulation on 1st and 2nd Cycle Studies approved by the Universidade de Aveiro and published on its website.

5.2.4 Spain

The rules for examinations are stated in the Examination Policies and Procedures published by the Universitat Autonoma de Barcelona- Institute de Ciència i Tecnologia Ambientals,

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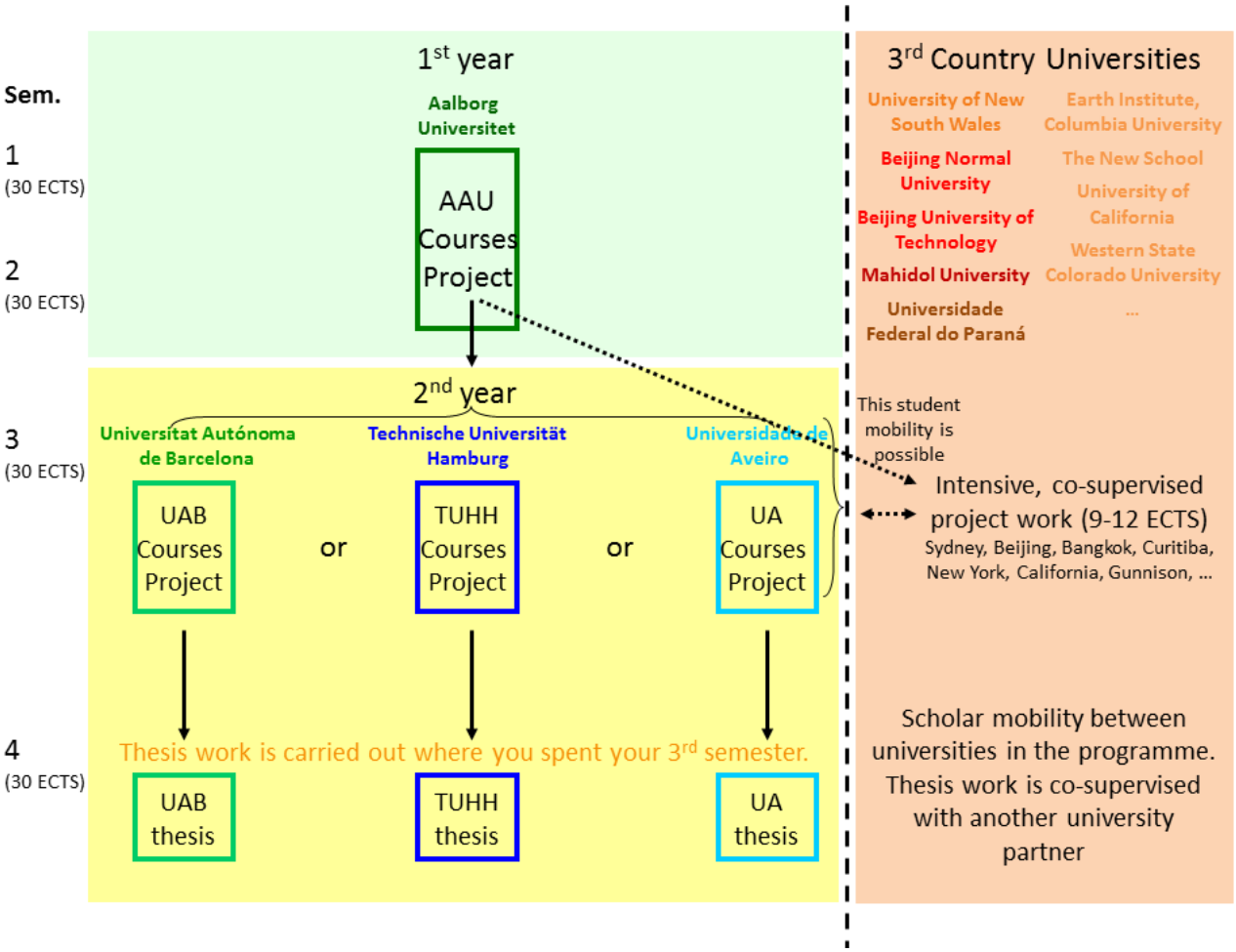
[1] Or another foreign language (upon approval from the Board of Studies.
[2] The Board of Studies can grant exemption from this.

5.5 Exemption
In exceptional circumstances, the Board of Studies study can grant exemption from those parts of the curriculum that are not stipulated by law or ministerial order. Exemption regarding an examination applies to the immediate examination.

5.6 Rules and requirements for the reading of texts
At programmes taught in Danish, it is assumed that the student can read academic texts in modern Danish, Norwegian, Swedish and English and use reference works, etc., in other European languages. At programmes taught in English, it is assumed that the student can read academic text and use reference works, etc., in English.

5.7 Additional information
The current version of the curriculum is published on the Board of Studies' website, including more detailed information about the programme, including exams.

Annex 1: Mobility Overview



Annex 2: Overview of Associated Partners (as of March 2017)

Australia
University of New South Wales (UNSW), http://www.unsw.edu.au/

Brazil
Universidade Federal do Paraná (UFPR), http://www.ufpr.br/portalufpr/ (agreement in process)

China
Bejing Normal University (BNU), http://english.bnu.edu.cn/
Beijing University of Technology (BJUT), http://english.bjut.edu.cn/

Thailand
Mahidol University (MU), http://www.mahidol.ac.th/en/

United States of America
Columbia University (CU), http://www.columbia.edu/
The New School (TNS), http://www.newschool.edu/
University of California (UC) (Davis and Santa Cruz), http://www.universityofcalifornia.edu/
Western State Colorado University, http://www.western.edu/


Cities & Sustainability
cisu
jemes
Aalborg
Aveiro
Hamburg
Barcelona