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# MASTER'S DEGREE PROGRAMME IN ENVIRONMENTAL TECHNOLOGY 60 ECT credits



STUDY GUIDE 2014-15

	Academic year		
	1	2	
<b>MASTER'S DEGREE PROGRAMME IN ENVIRONMENTAL ENGINEERING</b> <b>60 ECTS CR</b>			
<b>PROFESSIONAL STUDIES 30 ECTS CR</b>			
<b>Managing environmental changes 20 ECTS</b>			<b>20</b>
07MET205E Urban and communicative planning 5 ects	5		
07MET305E Climate change and its environmental impacts 5 ects	5		
07MET405E Environmental management 5 ects	5		
07MET505E GIS in environmental planning and research 5 ects	5		
<b>Elective studies 10 ECTS CR</b>			<b>10</b>
07MET605E Environmental technology and research 5 ects	5		
07MET805E Societal change and future foresight 5 ects	5		
<b>THESIS 30 ECTS CR</b>			<b>30</b>

<b>Masters thesis and research project seminars 30 ECTS</b>			
07MET730E Master's Thesis 30 ects	30	(30)	<b>30</b>

## **Managing environmental changes 20 ects**

### **Objectives**

Student

- understands different viewpoints of environment and its transitions in urban areas
- understands global and local scale transitions and their interaction in environment
- is able to collect current environmental information and apply it into practise
- develops understanding of complex environmental challenges and their possible future solutions or scenarios

## **CLIMATE CHANGE AND ITS ENVIRONMENTAL IMPACTS 5 ECTS**

### **07MET305E CLIMATE CHANGE AND ITS ENVIRONMENTAL IMPACTS 5 ECTS**

#### **Objectives**

Student

- understands carbon cycle and climate change issues
- understands the EU impacts on reduction of carbon emissions in the future and their consequences
- understands current possibilities for climate change mitigation in urban settings
- is able to search for information and scientific research results concerning the climate change topics
- develops applications of mitigation in urban settings

#### **Contents**

Current research results and understanding of the climate change as a phenomenon including carbon cycle. Urbanization as a global challenge in planning of built environment. Possibilities and challenges in mitigation of climate change in urban areas. Urban floods and stormwater management. Possibilities to manage carbon emissions in different levels; national, regional and local.

#### **Assessment**

Lectures, assignments, working in the web.

#### **Materials**

Archer, D. 2006. Global Warming. Blackwell Publishing.

Chiras, D. 2005. Environmental Science. Jones and Bartlett

## **ENVIRONMENTAL MANAGEMENT 5 ECTS**

### **07MET405E ENVIRONMENTAL MANAGEMENT 5 ECTS**

**Student**

- understands the impacts of environmental legislation in organisations' policy and actions

- understands the environmental management system in different organisations
- understands the requirements of environmental impact assessment connected to major building projects
- is able to present case studies applications of environmental management

### **Contents**

Overall view and main topics concerning environmental legislation. Organisation's environmental policy and organisations' operative acts. Organisational structure and responsibility: training, communication, documentation requirements and document control, operational control and emergency preparedness and response actions. Use of the environment, environmental problems and pollution caused by effective usages. Remediation of contaminated sites. Examples of developing brown fields as urban regeneration projects in European countries. Environmental monitoring and impact assessment in major projects.

### **Assessment**

Lectures, assignments, working in the web.

### **Materials**

To be defined later.

ISO 14001 standard.

## **ENVIRONMENTAL TECHNOLOGY AND RESEARCH 5 ECTS**

### **07MET605 ENVIRONMENTAL TECHNOLOGY AND RESEARCH 5 ECTS**

#### **Objectives**

Student

- understands possibilities of using environmental friendly technical solutions in urban settings
- understands current research in the field and needs for future research
- is able to collect information of different technologies and evaluate their impacts
- develops applications of the field to existing situations

#### **Contents**

Possibilities of renewable energy sources and use in the future including solar, thermal and wind energy. Evaluation methods of energy efficiency in buildings and urban areas and current development in the field. Cleantech technology – contemporary research and practical applications (green ICT etc.) in business sector. Responsible business, Waste treatment and possibilities to recycle different types of waste. Developed systems of waste collection and transportation in urban settings. Site visits in different organisations and enterprises in Lahti.

#### **Assessment**

Lectures, assignments, working in the web.

#### **Materials**

To be defined later.

## **GIS IN ENVIRONMENTAL PLANNING AND RESEARCH 5 ECTS**

### **07MET505E GIS IN ENVIRONMENTAL PLANNING AND RESEARCH 5 ECTS**

## **Objectives**

Student

- understands the possibilities of using GIS in environmental research and planning
- understands the rapid change and current possibilities to use and combine GIS based information for different needs and situations
- understands the use of GPS and principles of production of own GIS information
- is able to work with a program connected to GIS use and production
- develops one's knowledge base and abilities to use GIS in RDI projects

## **Contents**

How GIS is used today in urban and environmental research and planning. Spatial analyses based on GIS. Introduction to ArcGIS program and its use in planning. Examples of data bases available in Finland and in international level including open access data bases. Open access GIS programmes. Legislation concerning GIS information and its availability.

## **Assessment**

Lectures, assignments, practical training.

## **Materials**

To be defined later.

# **SOCIETAL CHANGE AND FUTURE FORESIGHT 5 ECTS**

## **07MET805E SOCIETAL CHANGE AND FUTURE FORESIGHT 5 ECTS**

## **Objectives**

Student

- understands the theoretical base of future research and its history
- understands the perspectives used in future research and consideration of different transition processes
- is able to use some main working methods of future research and produce a case studies base on them
- develops own thinking and working methods by future research
- develops one's thesis work with the use of future research

## **Contents**

Theoretical principles of future research and possibilities to adapt working methods in current environmental challenges. Urbanization now and in the future. Human behaviour, social relations and communication in history and in future. Innovative means of using future research in environmental planning. The role of built environment and green environment in the future.

## **Assessment**

Lectures, assignments, working in the web.

## **Materials**

To be defined later.

# **Masters thesis and research project seminars 30 ECT CR**

## **Masters thesis and research project seminars 30 ECT CR**

### **Objectives**

Student

- understands the goals of the thesis work and its process and the importance of tutor guidance in the process
- is able to design the work process and suitable working methods
- is able to work independently and collectively in the process
- develops thesis representing a professionally competent and logical approach to the field

## **MASTER´S THESIS 30 ECTS**

### **07MET730E MASTER´S THESIS 30 ECTS**

#### **Objectives**

Student

- understands the character and scientific demands of the RDI work as a Master´s thesis in the programme
- is able to define the target of the work and choose the suitable methods for it
- is able to use critical evaluation concerning the work process, the results and the conclusions
- develops new planning solutions or environmental / technological applications in urban settings or evaluates current situation in different environmental sectors / urban planning

#### **Contents**

Choosing the relevant research methods for the task, background or framework of the study, research design, using analytical tools, report writing and oral defense of different presentations in seminars.

#### **Assessment**

Research seminars:

Topic analysis seminar

Field research results seminar

Publication seminar

#### **Materials**

To be defined later

## **Elective studies 10 ECT CR**

### **Elective studies**

## Objectives

The student

- is able to choose elective courses in this Master Degree Programme OR from other Master Degree Programmes either in Lahti University of Applied Sciences or in other FUAS Master Degree programmes (Laurea UAS and Häme UAS)
- can effect on his/her own degree profile by choosing the elective courses

# RESEARCH PROCESS AND RESEARCH METHODS 5 ECTS

## 07MET105E RESEARCH PROCESS AND RESEARCH METHODS 5 ECTS

### Objectives

The student

- understands main principles of qualitative and quantitative research and their methods.
- is able to use the guidelines for thesis work
- is able to choose and adapt suitable research methods in thesis work and understands empirical and ontological ground of thesis project
- is able to carry out development of research projects as one's thesis work
- develops knowledge search methods including the possibilities of professional groups in social media.
- develops thesis work by connecting its main elements in assignments of this course

### Contents

The guidelines of the thesis work in UAS. Introduction to different environmental research projects and their methods including qualitative and quantitative methods. Search for knowledge by using library services and e-materials as well as using professional networks in social media. Principles of scientific writing. Students own thesis work, research plan, choice of research methods and empirical material, how to process the results of the research and make conclusions.

### Assessment

Lectures, assignments, working in the web.

### Materials

To be defined later.

# URBAN AND COMMUNICATIVE PLANNING 5 ECTS

## 07MET205E URBAN AND COMMUNICATIVE PLANNING 5 ECTS

### Objectives

The student

- understands contemporary phenomenons like urbanization and urban sprawl, transitions in urban areas, energy efficiency in planning, climate change and its effects, collaboration of professionals and stakeholders
- understands current theoretical discussion of planning including the role of the planner and planning profession

- understands the use of EIA and its different aspects in planning process
- is able to evaluate recent planning processes, their management and arrangement of participation in the processes
- develops own understanding and professional attitude in environmental issues
- develops applications from theoretical background into practical situations

## **Contents**

Contemporary phenomenon in urban areas, urbanization, global and local perspective. Sustainable planning, introduction and evaluation of current projects. Theory and practice of collaborative planning. The role of the planner, theoretical perspectives and practices. EIA in planning.

## **Assessment**

Lectures, group discussion, assignments and building of common database on urbanization, project presentations and evaluation.

## **Materials**

To be defined later.

Sustainable Planning, Communicative Planning, Planning theory.