

## RESOURCE EFFICIENCY IN ARCHITECTURE AND PLANNING

### Our Current World

- » Over half of the world's population lives in cities, with the share growing steadily.
- » The built environment is responsible for the use of considerable energy and material resources.
- » Urban buildings and infrastructure present tremendous opportunities for conservation and efficiency improvements.

### REAP

implements innovative frameworks and technologies for sustainable urban environments.

### We Take Action

The Master of Science degree programme "Resource Efficiency in Architecture and Planning" aims to enable participants to promote sustainable urban development in different geographical and cultural settings.



### Our Starting Points for Change

- » complex relationships between building and urban services technology
- » user demand and behaviour and how they affect the technology-environment interaction
- » resource efficient technologies
- » experiences with and ideas for different forms of legal and economic organisation
- » research methods and techniques for planning and decision support.

### About the HCU

The HCU is a university of the built environment and metropolitan development founded by the Free and Hanseatic City of Hamburg in January 2006.

We are specialised to address the current and future issues facing our towns and cities. Our disciplinary and professional excellence is based on the four disciplines at the HCU which cover the spectrum from 'house to city': **Architecture, Civil Engineering, Geomatics, Urban Planning.**

### The International Master of Science Degree Programme

## Why?

The Master's degree programme at HafenCity University in Hamburg since October 2009

This is an exciting opportunity for those who aspire to extend their knowledge and understanding of innovative technologies which can contribute to a more sustainable urban built environment.

### The Challenge: Using Resources More Efficiently

Urban regions are experiencing a substantial restructuring – fast growth in some parts of the world, centrifugal movements away from old centres in others. This provides a wide window of opportunity for promoting urban sustainability.

Construction, renovation, operation and demolition of buildings accounts for the largest share of European energy and material consumption. Globally, this relation is similar or even more pronounced.

The challenge is implementing what is already out there, utilising the local and global learning curves and overcoming habit, risk aversion, and complex coordination requirements.

## How?

### Aims and Objectives of the M.Sc. REAP Degree Programme

Its main emphasis lies on technology for the provision of urban and building services, yet it also investigates the socio-economic context in which these services are provided and managed.

#### The programme

- » provides an overview of the complex relationships between building and urban services technology (i.e., building construction and renovation, energy and water supply, waste and wastewater management) and the environment (i.e., resources and space consumption, impacts on environmental media and ecosystems)
- » gives insight into patterns of user demand and behaviour and how they affect the technology-environment interaction
- » imparts knowledge of resource efficient technologies, e.g. energy generation from

## Where?

### Come to Hamburg and enter a highly inspiring atmosphere

renewable sources, as well as underlying principles, such as source separation and the closing of material cycles, demand side management, decentralised, modularised service provision, etc.

- » reviews experience with and conveys ideas for different forms of legal and economic organisation of planning, construction and urban services provision
- » teaches study and research methods and techniques for planning and decision support

With this programme, the HCU targets persons from all over the world, with a wide range of academic backgrounds and work experience, sharing an interest in technology and society and a concern for urban life. As such, the programme does not require an expertise in architecture or engineering; nor does it award a professional degree in architecture, urban planning or civil engineering.

The HCU works in a trans- and interdisciplinary way which evolves from urban living and its built and spatial dimensions. It confronts traditional disciplines with radically different approaches and ways of thinking.

The HCU currently offers undergraduate and postgraduate degree programmes from Bachelor to PhD level in architecture, civil engineering, geomatics, metropolitan culture, urban design and urban planning. Through its new interdisciplinary organisational structure, the HCU brings together different approaches to research, teaching and practice as they concern the urban environment.

It is therefore the ideal location for this new Master's programme in Resource Efficiency in Architecture and Planning (REAP).

# The HCU Master Programme Resource Efficiency in Architecture and Planning (REAP)

All you must know to start

## 01 | Graduate Destinations

**Possible fields of work for alumni of the M.Sc. REAP programme include:**

- » national, regional and local governments;
- » national and international non-governmental organisations (NGOs);
- » consulting and finance;
- » utilities and technology producers;
- » real estate development and in the housing industry;
- » education and research institutions.

**Suitable jobs might be as:**

- » specialist consultants in architectural or urban design practices and engineering firms, in local, national and international organisations and the planning departments of city and regional councils;
- » resource managers for larger commercial firms and international aid organisations;
- » specialists for regeneration and conversion projects in urban industrial quarters;
- » managers of energy and environment related infrastructure systems and networks;
- » policy advisers and analysts in the development of sustainable regulations and bylaws for infrastructure, building and urban planning projects;
- » economic advisers for the determination of the financial viability of sustainable design projects; or
- » legal advisers for corporations pursuing sustainable growth and development strategies.

## 02 | Faculty

The HCU faculty members teaching this course come from very different disciplinary backgrounds, e.g. architecture, urban planning, landscape planning, civil engineering, physics, law and economics. The 'Resource Efficiency in Architecture and Planning' (REAP) group aims to advance research and education in resource efficient technology as well as its application and management in the building and urban services sector.

**Current faculty members contributing to the Master of Science REAP are:**

- » Prof. Peter Braun, Building Engineering and Solar Building Design
- » Prof. Wolfgang Dickhaut, Environmental Planning, Water Management, River Basin Development and Technology Evaluation
- » Prof. Udo Dietrich, Building Physics, Energy-Optimised Building, Passive Air Conditioning
- » Prof. Irene Peters, Technical Urban Infrastructure Systems, Economics of Urban Services, Policy Evaluation
- » Prof. Uwe Stephenson, Architectural Acoustics, Noise Immission Prognosis, Computer-Simulation
- » Prof. Martin Wickel, Planning and Environmental Law
- » Prof. Wolfgang Willkomm, Building Construction and Material Technology, Planning and Construction in International Development Cooperation, Climate Responsive Architecture
- » Pia Salkowski, Recycling Adaptive Choice of Building Materials
- » Cathrin Zengerling, International, European and National Environmental Law, Land Use Planning, Public Participation
- » Temporary teaching staff: Prof. Kerstin Kuchta, Hans Schäfers, Anke Jurleit, Sonja Schelbach, Anna Strastil

## 03 | Content and Duration

**REAP covers the following areas:**

- » Sustainability
- » Water, Material and Energy Cycles in the city
- » Urban Noise and Traffic
- » Resource efficient urban technologies and infrastructure
- » Economics and administration of buildings and urban services
- » Legal and policy instruments
- » Urban Planning on different scales: building (1:10 - 1:100), neighbourhood (1:500 - 1: 5000) and city (1:10000 - 1:100000) scale and regarding the specific geographical and cultural context
- » Skills development: dimensioning, perception, assessment and decision making in the field of sustainable resource technologies
- » Research methods and decision support techniques

**REAP is not:**

- » an architectural design course
- » focused on a single discipline - it is interdisciplinary and follows an integrative and multidimensional planning approach

The Master's programme consists of 17 study modules taught over 2 academic years.

### M.Sc. (REAP) Year 1

Semester 1	Semester 2
Project I (5 CP)	Project II (10 CP)
Facets of Sustainability (5 CP)	
Methods of Integrative and Urban Planning (5 CP)	Urban Material Cycles (5 CP)
Legal and Economic Instruments (5 CP)	Urban Energy Flows (5 CP)
Research Methods and Statistics (5 CP)	Urban Water Cycles (5 CP)
Studium Fundamentale (5 CP)	Studium Fundamentale (5 CP)

### M.Sc. (REAP) Year 2

Semester 3	Semester 4
Project III (10 CP)	Thesis Project (30 CP)
Plus 2 Modules from each block	
Block 1: Resources, Technologies and Environment	Block 2: Resources, Institutions and Instruments
Climate Responsive Architecture and Planning (5 CP)	Economics and Planning of Technical Urban Infrastructure Systems (5 CP)
Technologies for Sustainable Water Resource Management (5 CP)	Decision Support and Project Evaluation (5 CP)
Urban Traffic and Noise (5 CP)	Material Flow Analysis and Life Cycle Assessment (5 CP)
Technologies for Sustainable Material Cycles (5 CP)	International Development: Institutions and Policies (5 CP)
or instead of one Module	
General Elective (5 CP)	

Structure of the Degree Programme. In each Semester, students enrol for 30 credit points (CP). In Semester 3, students select two of the 5 CP modules from each of the Blocks 1 and 2 (or one General Elective instead of one of the Block modules) for a total of 20 CP in addition to the 10 CP from Project III. General Electives are chosen from any other offering of the HCU or other Universities.

## 04 | Study Methods

Lectures and seminars are grouped around the central project work, i.e. real-time, real-world case studies, in which students, with help and guidance from faculty, develop recommendations and solutions for applied tasks. These could be: Designing a building-based, integrated supply-treatment system for water and wastewater; working out a plan for the environmentally sound retrofit of a housing block; devising an incentive-based scheme for refuse management or recycling of building materials. Project work is inspired by the research activities taking place at the university and can in turn contribute to this research. Project-based work also allows student interests and experiences with practical applications and the completion of a specific concept for design, planning or use in the context of real or potentially real problems. For this reason, it is clearly an advantage when students have relevant work experience from which they can draw for their project work. Experience with scientific concepts and an interest in the physical world is also useful.

### Studium Fundamentale

The Studium Fundamentale consists of courses of more general interest which are not directly part of the disciplinary field for which the student is enrolled. These may include offerings in philosophy, ethics, languages, culture, etc. and are aimed at suggesting a different approach to thought processes and learning methods than normally found in the student's discipline.

The programme allows a certain amount of freedom to choose between courses, in the neighbourhood of 2/3 of each topic offered being compulsory, 1/3 elective. However, the programme is not intended to provide a specialisation solely in energy, water or material flows, respectively, as its main intent is to provide an integrative perspective of all resource flows.

## 05 | Entry Requirements

### University entrance qualification

The Master of Science in Resource Efficiency in Architecture and Planning is normally open to university graduates with relevant work experience in cognate or related fields and a demonstrated strong interest in interdisciplinary approaches to environmental design and technology.

**The minimum admission requirements are**

- » a Bachelor's degree or recognised equivalent from an accredited institution in Architecture, Urban Planning, Geography, Landscape Architecture, Civil Engineering, Law, Political Science, Business and Administration, Economics, Humanities or others with focus on REAP related fields;
- » sufficient undergraduate training to do postgraduate work in REAP;
- » relevant work experience of at least 6 months (this may have been gained prior to or while being enrolled at university);
- » evidence of English language proficiency;
- » demonstrated strong interest as well as personal aims and objectives for the study in the Master of Science REAP programme.

Satisfying these standards, however, does not necessarily guarantee your admission, since the number of qualified applicants may exceed the number of places available.

### Language requirements

The courses in the Master of Science in Resource Efficiency in Architecture and Planning are taught in English. To study in this programme, you should be able to:

- » write grammatically correct English and develop ideas clearly and accurately. Essays or reports are the main type of written work for in-term assessment.
- » read with understanding, so you can find relevant information and analyse an argument without special guidance.
- » listen carefully in lectures and seminars to pick up key points, speak clearly so you can contribute to a discussion or present ideas in class.

Applicants from countries in which the official language is not English are required to submit official evidence of English language proficiency. This may be:

- » TOEFL (Test of English as a Foreign Language)
- » IELTS (International English Language Testing System)
- » CAE (Cambridge Certificate of Advanced English)
- » CPE (Certificate of Proficiency in English)
- » TELC (European Language Certificate)

Accepted are TOEFL-tests with a minimum score of 570 points (paperbased), 230 points (computer-based) or 88 points (internet-based); \* Cambridge Certificate in Advanced English: min. grade B; Cambridge Certificate of Proficiency in English min. grade C; IELTS: min. 7; or TELC: min. C1.

Previous Studies in English of at least 4 Semesters are considered equivalent to the required English test results.

\* These are the TOEFL scores which will probably be valid for the next application process in winter semester 2012/13. The final confirmation is expected in July 2012. If you have achieved these scores, please do not hesitate to apply.

## 06 | Application Process

### Applicants with a non-German university degree

Applicants with a non-German university degree have to apply at Uni-Assist ([www.uni-assist.de](http://www.uni-assist.de)). Uni-Assist is a certification office founded to make the application procedure for international student applicants easier and to support German universities in the selection of their foreign students.

If you want to apply for the REAP programme, please complete the Uni-Assist application form for REAP (see: <http://www.hcu-hamburg.de/en/application/application-procedure/downloads/>) and submit the documents listed in this form to Uni-Assist.

Additionally you have to fill in your personal dates in the HCU online application system "ahoi", which is available between June 1st and July 15th each year under <http://www.hcu-hamburg.de>

### Deadline for application

As the REAP programme at HafenCity University starts only in winter semester, the application period is up to July 15 for the following winter semester.

Please note: You can apply at Uni-Assist throughout the whole year. Due to the processing time, we recommend you, not to apply later than May 15 each year. In this case, Uni-Assist has sufficient time to check your application documents regarding missing parts or mistakes and will inform you about that. In the peak months of June and July, Uni-Assist cannot guarantee that information on missing documents will reach you in time.

### Applicants with a German university degree

Applicants with a German university degree can directly apply at HafenCity University via our online application system.

### Deadline for application

The online application system for the winter semester is available between June 1 and July 15 each year. You can access to the online system under <http://www.hcu-hamburg.de>.

## 07 | Further Information

More information about the Master of Science degree programme "Resource Efficiency in Architecture and Planning" can be obtained under <http://www.hcu-hamburg.de/en/master/reap/>

Director of the REAP Master of Science degree programme:  
Prof. Wolfgang Dickhaut

In case of any question, please feel free to contact the coordinator of the REAP Master of Science degree programme:  
e-mail: [reap-master@hcu-hamburg.de](mailto:reap-master@hcu-hamburg.de)