

> **Become an Expert in Sustainable Building Design**



International Master's Program for Professionals in  
Sustainable and Energy Efficient Design  
**Future Building Solutions MSc**



Master of Science – MSc  
Nine one-week modules, part-time program

including

> **Certified Passive House Designer** 

Danube University Krems  
[www.donau-uni.ac.at/dbu/fbs](http://www.donau-uni.ac.at/dbu/fbs)

Partner



# Future Building Solutions, MSc

## The Challenge

"Sustainable solutions are increasingly in demand on the market. If you want to be successful as a building professional, architect or engineer, you have to act now. I have heard a lot about green ideas and sustainable concepts, but I need to know how to implement them practically."

Arch. **Matthias Nave**

## Become an Expert in Sustainable Building Design

The International Master's Program Future Building Solutions offers comprehensive training in **Sustainable Architecture for professionals**. It imparts the knowledge and skills necessary enable you to become an expert in the consulting, planning and execution of sustainable and energy efficient building projects.

With a **comprehensive overview** in Sustainable Building Design complete with the very latest knowledge you will gain new decision-making competence and credibility. Alongside this, we will also invest you with **specific skills** for immediate practical implementation enhancing your career development within the sustainable building sector. It is envisaged that successful graduates of the Master's Program will go on to become the experts and leaders of tomorrow.

## Acquire State-of-the-Art Knowledge

**Austria** is a worldwide pioneer in the design and construction of sustainable and highly energy-efficient buildings - such as the Passive House. Known as the "**Silicon Valley**" of sustainable design in Europe today, the unique mix of sustainable technology companies, world-renowned architects and engineers, and experienced building industry experts provide you with the environment to best support your development in this new and exciting field.

**Danube University Krems** has become a leader in the research and implementation of sustainable design in the last 15 years. The International Master's Program Future Building Solutions enables you to benefit from this cutting-edge experience and state-of-the-art knowledge in an expertly delivered format.

## Specialize Yourself in this Career Field of the Future

Future Building Solutions MSc. has a modular structure, which allows a flexible approach to learning, each with a dedicated theme, which underpins the teaching and learning. Over the two years of the Master's Program, you attend nine intensive one-week teaching sessions. These include lectures, seminars, practice-based workshops and one-to-one tutorials.

Within the Master's Program we offer you a choice of two areas of specialization: Climate Engineering and Solar Architecture. With your specialization you specify your focus of interest - either engineering or architecture - for your participation in the Master's Program and the development of your Master's Thesis on a topic of your choice.



## A MSc. aimed at a wide range of building professionals:

- > Architects
- > Engineers
- > Building Physicists
- > Building Service Engineers
- > Real Estate Developers
- > Building Promoters
- > Master Builders
- > Construction Staff

- > Professionals from 20 different nations have participated in the inaugural classes.





## Expert Lecturers

The Master's Program brings together more than 30 experts from throughout the world in the area of sustainable building design. Here a selection:

- > Univ.-Prof. Arch. SIA **Robert Hastings**  
AEU Architektur, Energie & Umwelt GmbH,  
Wallisellen, Switzerland
- > DI **Patrick Jung**  
Ingenieurbüro Jung, Cologne, Germany
- > Dr. **Wolfgang Kessling**  
TRANSOLAR Energietechnik GmbH,  
Munich, Germany
- > Arch. **Kay Künzel**  
Raum für Architektur, Wachtberg, Germany
- > DI **Helmut Krapmeier**  
Energieinstitut Vorarlberg, Dornbirn, Austria
- > Prof. **Helga Kromp-Kolb**  
Head of Institute of Meteorology, University  
of Natural Resources and Life Sciences,  
Vienna, Austria
- > Arch. **Fritz Oetl**  
Pos architects, Vienna, Austria
- > Arch. **Bill Odell**, FAIA  
Design Principal, HOK Architects,  
St. Louis, USA
- > Dipl. Ing. **Gregers Reimann**  
Technical Director IEN Consultants,  
Kuala Lumpur, Malaysia
- > Arch. **Olaf Reiter**  
Reiter Architects, Dresden, Germany
- > Arch. **Ursula Schneider**  
Pos architects, Vienna, Austria

## >> Contents

### Module 1 Sustainability Challenges

March 11-16, 2013

- > Understand the major challenges of sustainability which confront the world today
- > Comprehend the answer which sustainability offers together with its underlying ideas and solutions
- > Describe the Sustainable Design Approach and develop a first sustainable design
- > Understand the basics of energy and carry out a energy analysis of participants nations
- > Understand the thermal balance model of a building, formulate energy performance goals and carry out an energy demand calculation of a building using the software CASANOVA.

### Module 6 Ecological Performance - Life Cycle Analysis

January 13-18, 2014

- > Understand the fundamentals and application of Life Cycle Analysis as the prime ecological measure of sustainable design
- > Learn to assess the LCA of building materials using Ecosoft®
- > Learn to calculate the LCA of building energy systems using GEMIS® and LCA-Tool
- > Understand the concept of a Net-Zero-Carbon-Emission-Building
- > Understand indoor environmental quality, recognize the different dimensions of the indoor environment and how to handle air humidity, contaminants & odors such as Radon or mould or electro-smog for a healthy building

### Module 2 Climate and Comfort

April 15-20, 2013

Klimahaus Bremerhaven, Germany

- > Experience, measure and experiment in ten different climate zones of the world in the Klimahaus Bremerhaven in Germany
- > Learn to process, interpret and present climate data using climate data sets from METEONORM, the leading climate data base
- > Learn to calculate the path and radiation of the sun on facades for shading and use the SUN EYE to make a sunpath diagram analysis and shading analysis
- > Learn how to "design" thermal comfort
- > Learn how to combine climate and comfort data with context sensitive design strategies, and develop a climate sensitive building in the integrated design studio

### Module 7 Social Performance - Light Engineering

March 17-22, 2014

- > Light is a source of comfort and health that demands a special focus. Learn to employ a maximum of daylight, daylighting and a minimum of electrical light in your sustainable design
- > Daylight engineering, artificial light engineering, interior lighting design and calculation using RELUX®, ELI® and the Artificial Light Dome, an outstanding tool for visualizing daylight design on a scientific level
- > Integrated design studio for light engineering with a focus on combined thermal and daylight optimization

### Module 3 Building for the Cold

May 13-18, 2013

- > Understand the connection between heat retention and heat gain for building energy efficient buildings in a cold climate
- > Master the Passive House Design Concept and Passive House Projecting Tool PHPP®
- > Learn to design highly insulated constructions and air tight envelopes with triple-glazed windows and mechanical ventilation, verified using the n50 test and infrared thermography
- > Learn to implement thermal-bridge-free design with thermal bridge calculation using THERM®
- > Employ solar architecture design to access solar gain through windows, trombe walls and sunspaces
- > Become a certified Passive House designer CEPH

### Module 8 Economic Performance - Life Cycle Costs

April 28 - May 3, 2014

- > Understand and compare major international sustainable building rating systems like LEED®, BREEAM®, DGNB and TQB®, know the strengths and weaknesses of each system
- > Learn to design and estimate a building with Life cycle cost assessment to assess the lowest overall cost of ownership for your client
- > Implement economic efficiency with concepts for effective maintenance & cleaning: area efficiency and adaptive reuse
- > Understand the interaction between facility management and project development for long lasting economic performance

## Heads of the Department

- > Arch. DI Dr. **Renate Hammer**, MAS  
Dean of the faculty for Arts, Building and Culture
- > DI Dr. **Peter Holzer**  
Head of Department for Building and Environment

## Knowledge Community

The small size of the class, an international network of leading lecturers and participants from twenty different nations, both linked through the Program's online portal and the special atmosphere of Krems during the module weeks makes for a high quality learning experience.

## Academic Staff



- > Mag. arch. **Richard Sickinger**  
Program Director  
richard.sickinger@donau-uni.ac.at



- > Mag. **Nastaran Sazvar**  
Program Assistant  
nastaran.sazvar@donau-uni.ac.at



### Module 4

#### Building for the Hot

September 23-28, 2013

- > Understand the relationship between heat avoidance and passive cooling for building energy efficient buildings in a hot climate
- > Learn to control overheating using glazing, shading and façade systems, perform summer comfort calculations using the high end, single-zonal simulation tool TRNSYSlite®
- > Learn to utilize passive methods of cooling such as comfort ventilation, night flush cooling and evaporative cooling according to the needs of the local climate - either hot & dry or hot & humid
- > Integrated design studio for building for the hot

### Module 9

#### Applied Design Studio

May 26-31, 2014

- > One week integrated design studio
- > Organized in interdisciplinary groups of architects and engineers, intensively guided by supervisors from both architectural and engineering backgrounds
- > You bring your experience as a professional enhanced by the skills acquired in Future Building Solutions to design a sustainable design project. This is the time to embed your acquired knowledge at a practical level

### Module 5

#### Technical Building Services

November 4-9, 2013

- > Systematically work through the range of HVAC components, from power supply technologies via energy distribution systems to energy releasing units for energy-efficient buildings
- > Focus on renewable energy technologies, such as solar heating and cooling, photovoltaic, heat pumps, biomass combustion, wind power generation and cogeneration
- > Acquire knowledge and practical skills to enable preparation of the primary building services concept and preliminary sizing its components.

#### Master's Thesis

Graduation, February 2015

- > Define and develop your personal research topic, your Master's Thesis, in the course of the Master's Program
- > Your topic is examined and approved by the Scientific Board
- > Write your Master's Thesis, guided and supported by your personal supervisor, in the final semester which is otherwise free of lectures
- > Conclude the Master's Program with the presentation and defense of your master thesis

We reserve the right to make changes to the Master's Program due to lecturer availability and participant needs.

## >> Key Points

### Upcoming Program

- > Commences Monday 11th March, 2013
- > Duration: Nine one-week modules (Mon – Sat) distributed over three semesters (part time) or a minimum of two semesters (full time) with the Master's Thesis taking the final semester
- > Objective: Become an international consultant and a specialist in the implementation of sustainable and energy efficient buildings as a Master of Science

### Admission Requirements

- > A university degree in Architecture or building related engineering science or equivalent relevant qualifications supported by significant practical experience.
- > A good working knowledge of English.
- > Successful completion of the application and assessment process. Details under Admission at [www.donau-uni.ac.at/dbu/fbs](http://www.donau-uni.ac.at/dbu/fbs)

### Tuition

- > Tuition for the entire program is 18,000 Euros (no VAT is payable). Please note that travel and accommodation costs are not included in quoted prices. Payment per semester is possible by prior agreement.

### Our Services Include

- > High-quality tuition from leading professionals in small classes.
- > Close supervision during the module weeks coupled with remote supervision between modules.
- > Individual supervision of the Master's Thesis.
- > Support with day-to-day organization throughout the course of study.

### Option Single Module Week

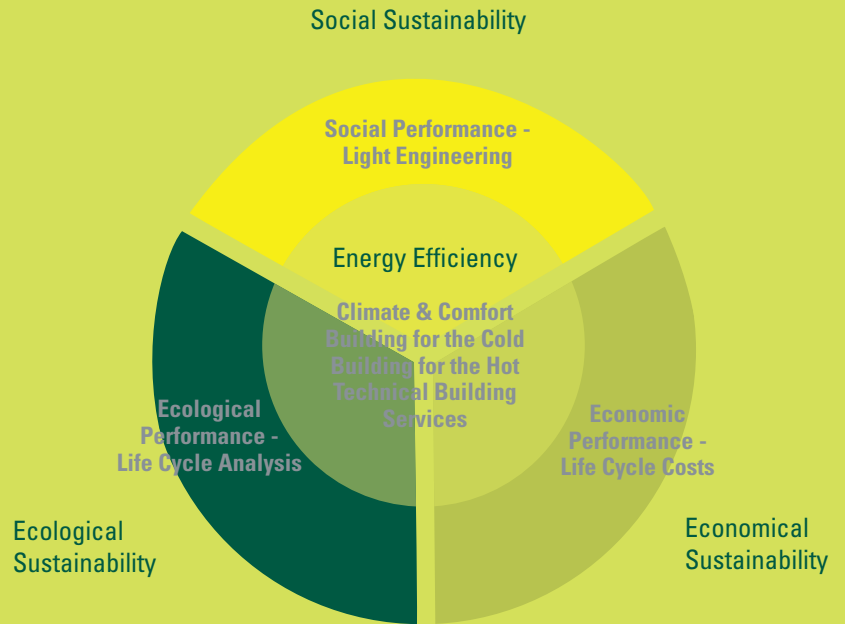
- > Gain knowledge of a specific area of sustainable and energy efficient design with a select single module week. An assessment test is not required. Tuition for a single module week is 2,100 Euros (no VAT is payable).

### Option Energy Efficiency Package

- > Become a specialist in the implementation of sustainable and energy efficient buildings with module weeks 1-5. An assessment test is not required. Tuition for the energy efficiency package is 9.800 Euros. Credit for exams (and tuition) can be applied to the entire program.



## 1. Future Building Solutions Design Compass



## >> The Future Building Solutions Design Strategy

The FBS Design Strategy® implemented in the Master's Program, follows three important steps to ensure that you profit from a broad overview of the field of sustainable design combined with state-of-the-art knowledge and in-depth expertise:

1. The **FBS Design Compass** singles out the key issues of sustainability and tiers them into three levels of action while placing a special focus on the central issue: Energy Efficiency - imparting orientation, decision-making competence and credibility.

2. The **FBS Design Principles** convey a mastery of the two fundamental approaches necessary for the successful application of sustainable architecture - Context Sensitivity and Integrated Design.

3. Finally, the **FBS Design Implementation** imparts a holistic understanding of sustainable building design in four dimensions in nine single module weeks:

- > Command of the Sustainable Design Approach for designing and optimizing energy efficient and sustainable building projects.
- > Expertise in cutting-edge efficient and renewable building systems and their implementation
- > Competence in modern building concepts like the Passive House or Zero Carbon Building.
- > Analysis of select state-of-the-art building projects from throughout the world.

We teach the Passive House Concept and participants are offered the opportunity to become a **Certified Passive House Designer (CEPH)** in cooperation with the Passive House Institute in Darmstadt, Germany.



## 2. Future Building Solutions Design Principles

### > Integrated Design

The complexity of sustainable architecture dictates a collaborative design strategy between all disciplines and all players. Future Building Solutions MSc. imparts integrated design and provides a unique environment of cooperation and learning with its Architect meets Engineer® initiative where the key players of sustainable design teach, learn and work together.

### > Context Sensitive Design

A sustainable building must respond to the specific conditions of a particular site, such as the climate, to ensure that damage to its surroundings is minimized while the comfort and health of its occupants are maximized. The Three Tier Approach, which Future Building Solutions MSc. imparts, ensures a context sensitive design by placing design solutions and passive energy solutions at the fore of active solutions.

## 3. Future Building Solutions Design Implementation



## Contact

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**Danube University Krems** is specialized in academic continuing education and offers exclusive master's programs and courses in the fields of • Medicine, Health and Social Services • Economics and Business Management • Law, Administration and International Affairs • Education, Media and Communication as well as • Arts, Culture and Building. With more than 6,000 students and 13,000 alumni from 80 countries, Danube University Krems is one of the leading providers of structured courses throughout Europe. The university combines more than 15 years of experience in postgraduate education with innovation in research and teaching. Krems is located in the unique natural and cultural landscape of the Wachau Region, eighty kilometers outside of Vienna.

Lifetime Learning.

Imprint

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