

Become an Expert in Green 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** 
- > **Architecture meets Engineering** [ARCH*ENG]

Majors

Solar Architecture
Climate Engineering

Danube University Krems
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

The new International Master's Program Future Building Solutions offers comprehensive training in **Green Building Design for professionals**. It imparts, in detail, all the knowledge and skills necessary to become an expert in the consulting, planning and execution of sustainable and energy efficient architecture and engineering.

With a **comprehensive overview** in Green 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 ensuring that you are ready to take advantage of new income opportunities.

The Key to Success

The key to success in Green Building Design is Integrated Design: the collaboration of all the important players in the planning process. With its **Architecture meets Engineering®** initiative the Master's Program provides a unique environment of cooperation and learning between engineers and architects. This synergy will be the springboard to propel you to the next level of sustainable design solutions.

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.

Your Choice

We offer you a choice of **two majors** (areas of specialization) within the Master's Program: Climate Engineering and Solar Architecture. Within your specialization you can broaden and enrich your expertise and formulate your Master's Thesis. Choose from one of two majors:

Consulting for Buildings with Superior Performance – Climate Engineering

- > Gain an in-depth understanding of indoor comfort and thermal performance of buildings
- > Guide decisions on facade concepts, building construction and HVAC concepts from the early design phase
- > Learn to use high-end thermal building simulation tools such as TAS® and TRNSYSlite®

Designing a Superior Built Environment - Solar Architecture

- > Extend your portfolio of architectural skills to specialize in passive solar design, context sensitivity, natural cooling and climate responsive architecture
- > Become an expert in Green Building Rating, using LEED®, DGNB®, TQB®, and learn more about the Passive House Concept
- > Learn how to use specialized software tools for predicting heating and cooling demands, for thermal bridge calculation and for optimization of both thermal and visual comfort



A Master's Program for a wide range of building professionals:

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

- > Professionals from 14 different nations have participated in the inaugural classes.





Scientific Board

- > Univ.Lect. DI Dr. **Manfred Bruck**
- > Univ.-Prof. Arch. SIA **Robert Hastings**
AEU Architektur, Energie & Umwelt GmbH,
Wallisellen, Switzerland
- > DI **Patrick Jung**
Ingenieurbüro Jung, Cologne, Germany
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- > DI **Michael de Saldanha**
Technical University Munich,
Chair in building climate control and
building services, Munich, Germany
- > Arch. BDA **Dieter Schempp**
Tübingen, Germany
- > DI Dr. **Karl Torghele**
FH Lichtenstein, Spektrum – Zentrum für
Umwelttechnik & -management GmbH,
Dornbirn, Austria

>> Contents

Module 1

Sustainability Challenges

October 10-15, 2011

- > An introduction to sustainability: its historical background, the circumstances of and reasons behind its development, with a special focus on the challenge of climate change
- > The application of sustainability in architecture, ethical demands and the key strategy of context sensitivity
- > Future outlook and plan of action for the contribution of architecture to a sustainable world
- > The basics of energy and an introduction into energy efficient design as the key starting point for sustainable design, with a special focus on the thermal balance of buildings: the central relationship in energy efficient design

Module 6

Ecological Performance - Life Cycle Analysis

May 14-19, 2012

- > The fundamentals and application of Life Cycle Analysis as the prime ecological measure of sustainable design with two primary foci: building materials and energy systems using GEMIS® and Ecosoft®
- > The fundamentals of site development including construction waste management, water use & wastewater reduction
- > The fundamentals of microclimate: building aerodynamics, air flow in buildings and around buildings
- > Sustainable urbanism and town planning incorporating traffic solutions

Module 2

Climate and Comfort

November 21-26, 2011

- > The first of four module weeks focusing on energy efficient design located in the Klimahaus in Bremerhaven, Germany
- > The connection between outdoor climate and thermal comfort: implement the context sensitive approach to sustainable design in Climate Sensitive Architecture
- > The theory, measurement and prediction of thermal comfort including adaptive comfort and outdoor comfort
- > The parameters, data set generation & analysis of outdoor climate including the use of METEONORM® and psychometric charts
- > Integrated design studio for Climate Sensitive Architecture

Module 7

Light Engineering

September 24-29, 2012

- > 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
- > Indoor environmental quality and Acoustic comfort

Module 3

Building for the Cold

January 30 - February 4, 2012

- > Continuation of the focus on energy efficient design now specializing in Climate Sensitive Architecture for cold and moderate climates including the Passive House Design Concept and Passive House Projecting Tool PHPP®
- > Heat retention: The design of highly insulated constructions, air tight envelopes, thermal-bridge-free design using THERM®, triple-glazed windows and ventilation, verified using the n50 test and infrared thermography
- > Heat gain: Employ solar architecture design to access solar gain through windows, trombe walls and sun-spaces
- > Integrated design studio for building in the cold and the Passive House

Module 8

Economic Performance - Life Cycle Costs

November 5-10, 2012

- > 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

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

March 12-17, 2012

- > Continuation of the focus on energy efficient design now specializing in Climate Sensitive Architecture for hot climates
- > Heat avoidance: Control overheating using glazing, shading and façade systems, perform summer comfort calculations using the high end, single-zonal simulation tool TRNSYSlite®
- > Passive cooling: 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 in the heat

Module 9

Applied Design Studio

January 14-19, 2013

- > 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

April 16-21, 2012

- > The final part of the focus on energy efficient design - mechanical and electrical equipment and renewable energy sources implementing tier 3 of the THREE TIER APPROACH® of sustainable design
- > 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, July 2013

- > 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 10th October, 2011
- > 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

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.
- > Tuition for a single module week is 2,100 Euros (no VAT is payable). Tuition for the energy efficiency package (module weeks 2-5) is 8,200 Euros. Credit for exams (and tuition) can be applied to the entire program.

Our Services Include

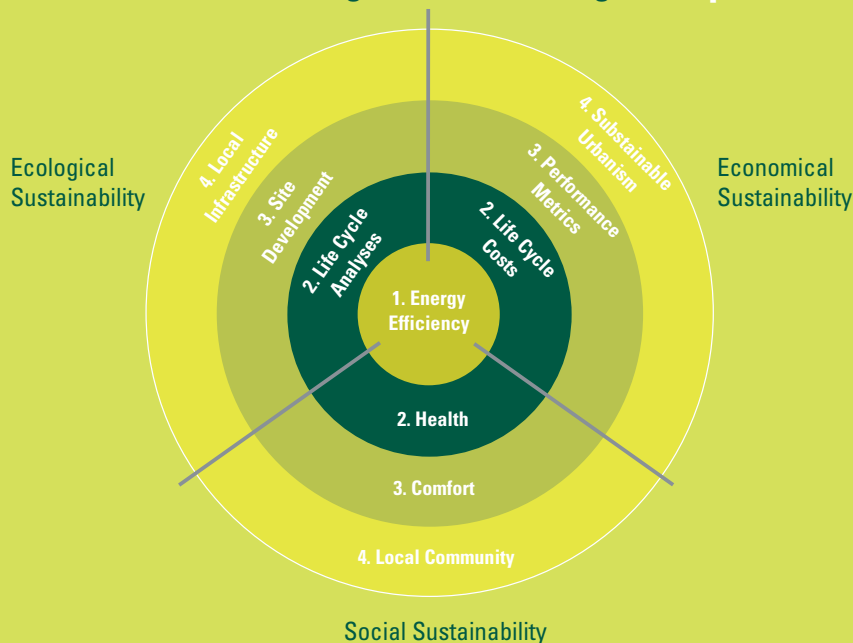
- > High-quality tuition from leading professionals in small classes.
- > Close supervision during the module weeks coupled with remote supervision between modules.
- > Individual supervision of the Master's Thesis.
- > Support with day-to-day organization throughout the course of study.

Further Options

- > Gain knowledge of a specific area of sustainable and energy efficient design with a select single module week
- > Become a specialist in the implementation of sustainable and energy efficient buildings and a Certified Passive House Designer with the energy efficiency package (module weeks 2-5)



1. Future Building Solutions Design Compass



>> The Future Building Solutions Design Strategy

The FBS Design Strategy® follows three important steps to ensure that you gain from a broad overview of the field enhanced with state-of-the-art knowledge and in-depth expertise in the area of sustainable design:

1. The FBS Design Compass singles out the key issues of sustainable design - tiers them into three levels of action while placing a special focus on the central issue: Energy Efficiency.

2. The FBS Design Principles of Context Sensitivity and Integrated Design provides the fundamental approaches and skills necessary for the successful application of sustainable design in all situations.

3. Finally, the FBS Design Implementation uses nine module weeks to impart up to date and detailed architectural and engineering skills for the successful execution of sustainable design solutions, for both domestic and office buildings, in every climate of 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



> Architecture meets Engineering

The complexity of sustainable design dictates a collaborative design strategy between all disciplines and all players. Future Building Solutions sets the framework for integrated design solutions by offering a new program where the two key players of sustainable design, engineers and architects, teach, learn and work together.



> Context Sensitive Design

The Three Tier Approach ensures a context sensitive design by placing design solutions and passive energy solutions at the fore of active solutions. Context Sensitivity reacts to the specific conditions of a particular site to ensure that damage to the world is minimized while comfort and health are maximized.

3. Future Building Solutions Design Implementation



Contact

Danube University Krems
Department for Building and Environment
Dr.-Karl-Dorrek-Strasse 30
3500 Krems, Austria

Phone +43 (0)2732 893-2660
Fax +43 (0)2732 893-4650
fbs@donau-uni.ac.at
www.donau-uni.ac.at/dbu/fbs



The **Danube University Krems** has specialized in postgraduate academic studies and offers exclusive courses in the fields of • Economics and Management, • Communication, IT and Media, • Medicine and Health • Law, Administration and International Relations • Cultural and Educational Sciences as well as of • Building and Environment. More than 5,500 students from 60 countries are living the philosophy of Lifetime Learning, and are currently enrolled at the University for Continuing Education. Eighty kilometers outside of Vienna, Krems is located in the unique natural and cultural land-scape of the Wachau Region, which has been declared a World Cultural Heritage Site by UNESCO.

Lifetime Learning.