FACHHOCHSCHULE KÄRNTEN

BIONIK/BIOMIMETICS IN ENERGY SYSTEMS

At the beginning of the 21st century our industrial society is confronted with major challenges in regard to energy and environment. Using new insights from the developing cross-sectional discipline Biomimetics, we can utilize strategies and procedures which have been successfully developed by nature over four billion years of evolution. The international Master program "Bionik/Biomimetics in Energy Systems" focuses for the first time in Europe on the area of Biomimetics and Energy. As a branch of Biomimetics, it researches energy transformations in living organisms in order to develop similar technical systems and devices for energy production. The following questions are therefore of current relevance:

How do natural power systems work? What energy strategies does nature follow and how does it regulate its energy resources? What future technologies and systems can be derived for the benefit of humanity? Which new technical energy systems can you as a future energy expert develop from these findings? How could a solar – industrialised world look like? Based on nature's model what kind of energy future is possible and can a solar bionics strategy for the "energy fate" of future generations be defined?

If you are interested in these topics and questions, then "Bionik/Biomimetics in Energy Systems" at the Carinthia University of Applied Sciences is the right Master program for you!

CAREER

Since Biomimetics is a cross-sectional discipline in which engineering and biological competences are systematically merged, this is directly reflected in the course of studies. In this way, as a prospective graduate you will receive a knowledge package which will allow you to creatively find solutions to subject-specific as well as inter-disciplinary questions in order to develop innovative systems, technical products and applications.

In this implementation process, you will be active in inter-disciplinary research teams in both a coordinating as well as a leading capacity. Graduation from this Master program entitles you to undertake a doctorate.

The wide-ranging fields of activity include:

- Solar and Photovoltaics industry
- Micro-/Nano- Solar technology, Photonics and Instrumentation
- Bio-materials industry
- Research into renewable energy sources
- Solar/wind technology research and development
- Architecture/construction

FACT BOX – OVERVIEW

SCHEDULE: Full time (120 ECTS), Monday-Friday
DURATION: 4 semesters
STUDY-PLACES (PER YEAR): 25
MODE OF STUDY: Full time
PROGRAM START: Beginning of October 2009
DEGREE: Master of Science in Biomimetics (MSc)

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- Heating and air conditioning
- Energy technology
- Engineering offices
- Logistics companies
- Research institutions
- Aerospace industry
- Service providers and experts specialising in biomimetics, energy management, project/innovation management

COURSE CONTENT

The wide range of subjects offered provides you as a student a learning environment which is academic and scientific but also closely related to practice. In this respect considerable value is placed on a continual interaction between theoretical basis mediation and active research and development. The integrative approach to teaching ensures that you gain a broad general competence as a future expert in biomimetics. You will also acquire open-mindedness, social competence, planning flexibility and action flexibility, as well as the necessary economic competence which will qualify you in the best way possible for the solution of future challenges and issues in interdisciplinary active teams.

"The rapidly growing need for energy throughout our industrial society forces us to search for alternative methods of generating energy. In this situation, the new cross-sectional discipline Biomimetics is making an invaluable contribution because it is enabling a new and unrestricted view of systems, procedures and technologies in nature and their technical implementation. With the international Master degree program "Bionik/Biomimetics in Energy Systems", offered now for the first time in Europe at the Carinthia University of Applied Sciences, a novel interdisciplinary course of studies has been initiated. It enables the transdisciplinary trained graduates in the area of energy bionics, biomimetics in Energy Systems, to decisively and creatively plan future energy systems according to nature's blueprint. The Carinthia University of Applied Sciences as an Austrian pioneer in the area of bionics gives a trend-setting, ecologically responsible and future-oriented answer to the current climate and energy debates."

D.ID. Mag. Peter Piccottini,
Program Director Biomimetics, FH Kärnten

MASTER MODULES ECTS: European Credit Transfer System	ECTS
1. SEMESTER	**30**
Orientation Module	7
Physics	7
Mathematics and Statistics	7
Biochemistry and -structures	7
Foreign Languages 1	2
2. SEMESTER	**30**
Business & Management	7
Energy Systems	7
System Theory	7
Biomimetics 1	7
Foreign Languages 2	2
3. SEMESTER	**30**
Biomechanics	7
Biomimetics 2	7
Creativ Design	7
Biosimulation	7
Foreign Languages 3	2
4. SEMESTER	**30**
Master Thesis	30

NEW! OCT. 2009*

PROGRAM DIRECTOR
D.ID.Mag. Peter Piccottini

Fachhochschule Kärnten
Carinthia University of Applied Sciences

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