CARINTHIA UNIVERSITY OF APPLIED SCIENCES
FACHHOCHSCHULE KÄRNTEN

ADMISSION REQUIREMENTS

Requirements for admission are alternatively:

- **a completed relevant bachelor's degree (environmental engineering, electrical engineering, construction) from a university or college**
- **a completed technical diploma or master's degree from a university or technical college**
- **a completed magister, diploma or master's degree in natural sciences or economics from a university or college plus a minimum of three years hydropower-related experience**
- **a minimum of five years of relevant skilled work involving hydropower**

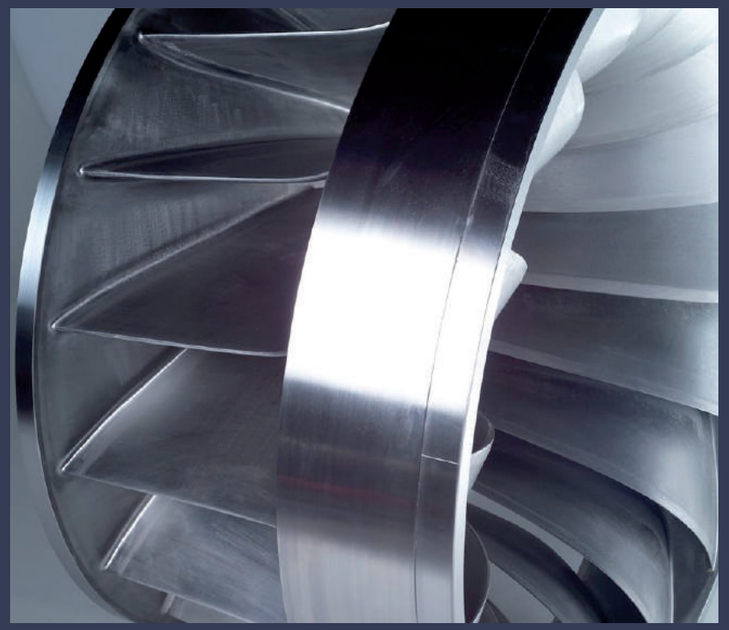
In addition:

- **English language ability: minimum - matura level or CEFR Level B2**
- **students must be equipped with a powerful internet connection during their studies. In addition, a laptop with integrated camera or equivalent equipment is required.**

APPLICATION

Interviews are organized by telephone via Skype. The application documents must be scanned and sent to Univ.-Prof. Dipl.-Ing. Dr. Bernhard Pelikan, pelikan@boku.ac.at. To apply, officially certified copies of all certificates/documents in the original language and, if necessary, appropriate and duly certified translations into German or English language are to be submitted with the application for admission.

>> Information: **shsd@cuas.at**



"The master´s degree program is a unique opportunity to become an expert in small hydropower engineering. All lecturers are highly experienced in their respective field and work scientifically as well as practically. The course addresses any needs a hydropower engineer might be faced with.

PROF. BERNHARD PELIKAN
BOKU VIENNA AND CUAS (FH KÄRNTEN)

INFORMATION:
SHSD@CUAS.AT

MASTER´S DEGREE PROGRAM

SMALL HYDROPOWER FOR SUSTAINABLE DEVELOPMENT

Distance learning program

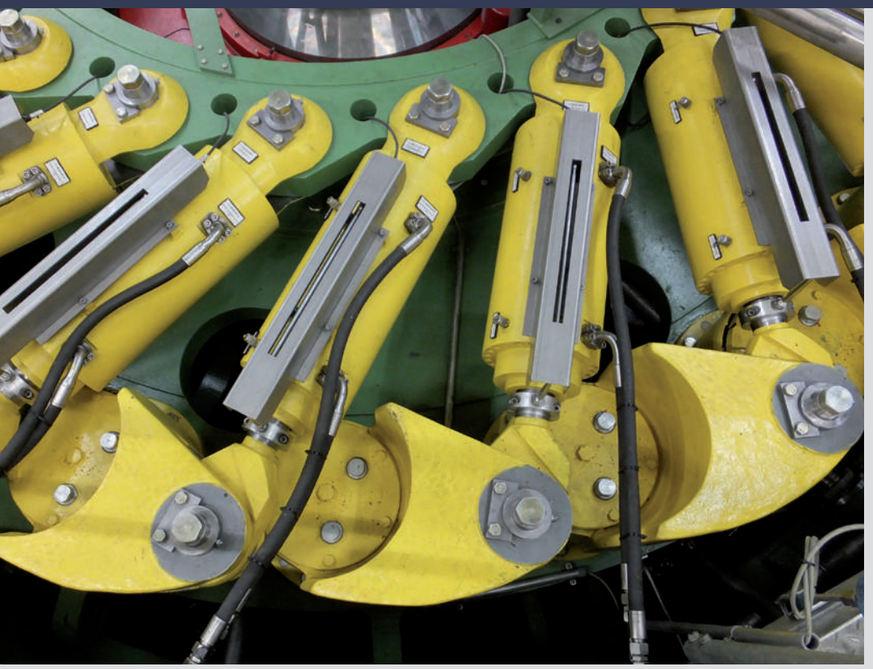
CARINTHIA UNIVERSITY OF APPLIED SCIENCES
CENTER FOR FURTHER EDUCATION

Standort Feldkirchen
Hauptplatz 12
A-9560 Feldkirchen i. K.
furthereducation@cuas.at

WWW.FH-KAERNTEN.AT/SHSD
FACEBOOK.COM/FHKAERNTENWEITERBILDUNGSZENTRUM

WWW.CUAS.AT

OVERVIEW OF THE MASTER'S DEGREE PROGRAM



Electricity has undoubtedly become an indispensable part of our modern community. The options on how to provide electricity depend mainly on the national availability of the respective resources and have of course different impacts on the environment. Electricity from hydropower, focusing on small hydropower, is renewable and environmentally sound. Hydropower contributes 75 % of total global renewable electricity production and in several countries world-wide, hydropower is the backbone of the supply system. Two thirds of the global hydropower potential is still untapped and is waiting to be exploited by well-educated engineers.

PROFESSION AND CAREER

Through completing the training, participants have detailed knowledge of the field of small hydropower and in equally important neighboring fields.

The educational objective and skills to be achieved can be concretized as follows:

- **a thorough knowledge of all the fundamentals of hydropower utilization**
- **specific knowledge of hydromechanics**
- **specific knowledge of hydrology and hydrography**
- **a thorough knowledge of all components and their function**
- **a thorough knowledge of environmental impacts and their compensation**
- **ability to assess existing power plants as well as power plant projects in terms of quality and efficiency**
- **ability to plan a power plant until concessioning**

WWW.FH-KAERNTEN.AT

CONTENT AND METHOD

CONTENT AND METHOD

Participants of the master's degree program "Small Hydropower for Sustainable Development" will not only gain deep knowledge of how to create, design, construct, operate and evaluate small hydropower plants of any kind, but also learn a lot about the context of the hydropower engineering process. Topics including the ecological and social environment and economic considerations are also covered. In several subjects the students will get trained by working on practical examples and applying theoretical content. Two design projects will be carried out under supervision including hydrological and hydraulic calculations, drawings and technical reports describing the project.

The master´s degree program "Small Hydropower for Sustainable Development" will be a distance learning program with the lecturers providing the study material via an internet platform. The students will be able to download all the material and have the option to contact the lecturers by email or Skype to ask questions. All the lectures are structured within modules providing the contents in a logical order. In some subjects the latest software will be provided by the lecturers and then directly applied.

BENEFITS AND COSTS

The tuition fee for the master's program is EUR 18,000 (excluding eventual communication costs) and includes/covers:

- sending a student ID
- the correspondence courses totalling 120 ECTS
- the provision of study materials via an internet platform (Moodle) as a PPT or PDF or Word files. These documents are evaluated and approved by an international review committee
- supervision of students by teachers using tele-teaching communication channels (e.g. Moodle, Skype)
- start meeting via video conference to get to know the course management team and lecturers
- distance learning introduction course for targeted use of distance learning software
- acceptance and assessment of examination performances
- supervision of the master's thesis
- final panel examination with defence of the master's thesis
- issue and award of graduate certificate and the master's degree

MASTER´S DEGREE PROGRAM

LANGUAGE:
English

ORGANISATION:
Distance Learning Program

DURATION:
4 Semesters + Master Thesis

ECTS-POINTS:
120

CURRICULUM

Modul	Subject	Semester				ECTS
		1.	2.	3.	4.	
Fluid dynamics	Fluid dynamics 1	2				4
	Fluid dynamics 2		1,5			3
	Hydraulic modelling			2		4
	Hydromechanic modell testing			1		1,5
River science	Potamology	1,5				3
	Applied hydrology	1,5				3
	Basics of Topography and Bathymetry & land survey	1				1,5
	River engineering	1,5				2,25
Construction works	Timber construction	1				1,5
	Geotechnical aspects and foundation engineering		1			1,5
	Dam construction		1,5			2,25
	Tunnel construction			1,5		2,25
	Reinforced concrete constructions			2		4
	Construction operation				1	1,5
Electromechanical equipment	Turbine technology	2				3
	Construction of pipes		1			1,5
	"zero head" techn. and numerical modelling of turbines			1,5		2,25
	Operation and maintenance of SHP			1		1,5
	Gates, valves, trashracks and cranes			1		1,5
	Process measuring and control technology				1,5	2,25
	Construction and operation of power lines				1	1,5
Engineering & Design	Design tools		2			4
	Weirs, intakes and cleaning in low head power plants		1			1,5
	Weirs, intakes and cleaning in high head power plants		1			1,5
	Design 1			4		8
	Design 2				4	8
	SHP development in Africa				1	1,5
	Lessons learned from failures				1	1,5
Ecological considerations	Ecological considerations	2				3
	Soil Bioengineering measures	1				1,5
	Environmental and social assessment		1			1,5
	Monitoring ecological obligations				1	1,5
	Architecture and design in SHP constructions				1	1,5
Economic and social aspects	Energy economics	1				1,5
	Economic analysis and financing		1,5			3
	Project management		1			1,5
	Negotiation, Participation and Mediation		1,5			3
	Due diligence (technical, economical, legal)				1,5	2,25
	Master THESIS					25
Summen		14,5	14	14	13	120

ECTS = European Credit Transfer System