

BioEnergyTrain



developed two NEW master programmes:

Bioresource Value Chain Management at the University of Twente in the Netherlands

Biorefinery Engineering at the Graz University of Technology in Austria

www.bioenergytrain.eu

The two new master programmes **Biorefinery Engineering** and **Bioresource Value Chain Management** have been created through the BioEnergyTrain project, a cooperation of fifteen partners from six EU countries coordinated by eseia.

As national and European policies are shifting away from fossil resources towards more sustainable alternatives offered by bioresources, **Europe needs more professionals who are able to understand and innovate bio-based economies.** The BioEnergyTrain project, which has received funding from the European Union's Horizon 2020 research and innovation programme, stepped in and created two-year master's degree programmes in key bio-economy disciplines. **Both curricula are multidisciplinary based**, combining knowledge and skills of biology, chemical, electrical, process and mechanical engineering, business development, economics, supply chain management and innovation.



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement N°656760

Biorefinery Engineering

Graz University of Technology

This master programme is focused on engineering aspects in the bio-based industry covering renewable energy as well as bio-based materials as objectives of study.

The master programme enables graduates to act as connector between different disciplines. Based on a mix from lectures, exercises and practice, graduates are able to carry out high-quality, structured research to develop cutting edge technology and high-quality products along the whole bioresource value chain with a great ecological responsibility as part of a modern bio-economy.

Career prospects

The biorefinery sector is rapidly growing and in strong need of qualified personnel. Graduates will be able to develop biorefinery systems while taking into account the agricultural, logistical, economic, and social aspects in their system designs. Graduates will also be knowledgeable about the integration of biorefineries into evolving electricity, gas, and heat grids.

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Module	ECTS
A: Engineering Basics	13
B: Mass and Heat Transfer	12,5
C: Chemical and Analytical Aspects of Biorefineries	7
D: Biorefinery Economic, Ecological and Social Aspects	9
E: Bioresources	9
F: Biorefinery Technologies	6,5
G: Biorefinery and Energy Systems	6
H: Biorefinery Project	7
Elective: Energy Utilisation / Material Utilisation and Recovery"	14
Free-choice subject	6
Master's thesis	30
Total	120

Credits: 120 ECTS

Duration: 4 semesters, full-time

Language: English

Admission criteria: An undergraduate degree in a subject relevant to biorefinery engineering (e.g. chemistry, environmental sciences) or equivalent at a recognized Higher Education Institution. Find the application deadline and more details at www.tugraz.at.



Studying at the Graz University of Technology in Graz

Graz is the second largest city in Austria next to Vienna and hosts six Higher Education Institutions. The 50.000 students are the city's heart and soul, contributing to the vibrant city life. Graz has a beautiful historic centre combined with modern architecture, and the river Mur forms a green corridor with its multicultural and artistic districts.

Bioresource Value Chain Management

University of Twente

Specialisation Track Bioresource Value Chain Management (BVM) makes you a High Tech Human Touch (HTHT) expert in connecting bioresources, technologies, and companies in the new biobased value chains for sustainable products, materials, and renewable energy.

The programme will be offered as a specialisation in the master Sustainable Energy Technology. This two year programme offers in the first year courses in sustainable energy technologies, while in the second year you will specialize in bioresource value chain management.

Career Prospects

Graduates will be professional engineers with a preference in the implementation of technology and with a radar for economic, societal and political contingencies of technology implementation. They are trained for and are expected to manage and lead the transition to a bioeconomy in Europe and the world. They will take this challenge by initiating and developing new value chains out of local bioresources and turn these into sustainable economic value for regions.

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Modules	ECTS
BIORESOURCE ECONOMICS AND MANAGEMENT	15
1. (Regional) Economics of Bioresource	5
2. Bioresource Business Development and Management	5
3. Bioresource Value Chain Optimization	5
BIORESOURCE VALUE CHAIN OPTIMIZATION	15
1. Sustainable Bioresource Supply Chain Management	5
2. Bioresources or Conversion Technologies	5
3. Integrative Business Project	5
MASTER THESIS ASSIGNMENT in collaboration with the Industry	30
Total	60

Credits: 60 ECTS

Duration: 2 semesters, full-timeW

Language: English

Admission criteria: SET-BVM is open for science/engineering bachelor graduates from all qualified and recognized science/engineering bachelor programs and B.Sc. graduates from polytechnic colleges, successfully finalising the SET-BVM premaster of the University of Twente. Find the application deadline and more details on www.utwente.nl.

Studying at the University of Twente in Enschede

The University of Twente is the most entrepreneurial university in the Netherlands. Its education is known for being highly interactive, with a strong focus on teamwork, independence and proactive thinking. University of Twente has a real university campus: a breath-taking green parkland with state-of-art facilities with a dynamic community to live and work in.



Linking education with industry

www.etp.eseia.eu

The BioEnergyTrain master programmes have an **extensive exposure to industry** through several cooperative learning formats, such as **interdisciplinary student camps, technical site visits, summer schools, joint master theses and student projects**. Because of these interactions between industry and students, graduates will have an easy transition from university to a stable professional career in the European bio-based industry, that will ensure their competitiveness on the labour market.



International Summer School on “Balancing Bio-Resources and Energy Production” at the University of Zagreb, Croatia, 26 June - 1 July 2017. Lectures, interactive workshops, lab experiments and site visits tackled the topic of bio-energy in depth.



Student Camp in Günskirchen, Austria, March 2016. The students had access to the industrial infrastructures and got acquainted with the day-to-day working of the manufacturing company BRP-Rotax.

15 partners from 6 EU countries

What makes the BioEnergyTrain master programmes unique is the **involvement of fifteen partners in developing both curricula**. The modules and the courses of Bioresource Value Chain Management and Biorefinery Engineering were built by a network of tertiary education institutions, research centres, professional associations, and industry stakeholders from six EU countries. Coordinated by eseia, the consortium addressed the current needs and knowledge gaps encompassing the whole value chain of bioenergy and biobased products in the two master programmes.



UNIVERSITY OF TWENTE.



University of Ljubljana



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