

Case Studies in Bioeconomy education, training and skills development

Case study sample: Master's
programme in 'Biology and Eco-
innovation' at University of Tartu

Estonia

CIVITTA





Master's programme in 'Biology and Eco-innovation' at University of Tartu

1 Abstract

The curriculum provides students with the skills to navigate challenges associated with global changes and encourages eco-innovative thinking. It imparts comprehensive knowledge about the diversity of Estonian and European nature, as well as the functioning and protection of ecosystems. Additionally, the program fosters entrepreneurship in addressing ecological issues, instilling the fundamentals of environmentally sustainable economy, entrepreneurship, and innovation.

2 Target Groups

This curriculum targets students with a bachelor's degree in natural sciences, offering an educational framework that integrates socio-economic processes, with a specific focus on entrepreneurship. The program is conducted in Estonian. The primary requirement for admission is a bachelor's degree or an equivalent level of education obtained abroad. Additionally, applicants are required to have successfully completed 36 ECTS from the University of Tartu's bachelor curricula in biology or substantially similar courses, which can also be obtained from several other universities in Estonia.

3 Case Study Category

Bioeconomy education, training and retraining in Entrepreneurial Education.

4 Training Provider

University of Tartu.

5 Region

Estonia.

6 Language

Estonian.

7 Objectives of the education Format

Re-qualification of professionals.

8 Final objective of the education format

The curriculum places emphasis on understanding the dynamics of the natural environment in Estonia and Europe, while also exploring the interplay between innovative enterprise and technology. It integrates knowledge about nature with insights into societal and economic dimensions. The program's overarching goal is to cultivate innovatively minded individuals with a comprehensive understanding of nature and its functions. Students are equipped to comprehend social and economic processes amidst global changes, ultimately preparing them to emerge as leaders in fostering innovation, promoting an ecosystem-friendly economy, and contributing to societal development in Estonia and Europe.

9 Scope and context of the education format

The program is designed to prepare individuals for leadership roles in enterprises or advisory positions within local governments, public-sector organizations, and academic institutions. The entrepreneurship component aims to achieve specific learning outcomes, emphasizing 'responsibility and initiation' as well as fostering skills in 'leadership and teamwork.' Recognizing the increasing demand for graduates with backgrounds in physical natural sciences and biology in the field of environmental management and protection, the curriculum offers a valuable opportunity for students. While employers value combined study paths, the existing structure of master's studies often poses challenges for students seeking to change their major. Consequently, this curriculum serves as a viable alternative for those seeking diverse academic opportunities.

10 Specific Skills and competencies addressed

Technical competencies

Valorisation competencies

Transversal competencies

Main skills or competencies acquired from the programme: Advanced knowledge of biology, research skills, interdisciplinary thinking, sustainability, and communication skills. In addition, entrepreneurship is developed in solving ecological problems, acquiring the basics of an environmentally sustainable economy, entrepreneurship and innovation. Also, transversal skills are included: problem-solving, adaptability, collaboration and communication.

11 European Qualification Framework level/s

Level 7.

12 Main benefit of the participant

Master's degree diploma after the successful thesis defence.

13 Main cost categories considered

The main cost categories considered include personnel costs for administering the curricula and implementing studies, expenditures related to facilities and equipment, as well as the cost of study materials.

14 Importance and impact

The Institute has been offering the study program since 2019, with the third cohort set to graduate in summer 2023. Each year, the program welcomes up to 15 students. Upon graduation, these graduates have successfully secured positions as specialists and experts in various capacities. They have found roles in laboratories and governmental agencies, such as the Environmental Board and the Environmental Agency, along with local authorities. Additionally, graduates have become valuable contributors to environmental assessment companies and NGOs, including the Estonian Nature Foundation. Notably, some alumni have taken the entrepreneurial route, establishing spin-off companies that provide eco-innovative environmental services.

15 Relevance (of the format)

The format holds relevance as it caters to individuals interested in bioeconomy. Notably, there are no limitations for marginalized groups, with the only potential barrier being language proficiency, as the content is primarily in Estonian

16 How can it inspire BioGov.net (Why was it designed in this specific way / what are the success factors?)

Entrepreneurship coupled with bioeconomy is not widely offered in programs in Estonia. While the Estonian University of Life Sciences provides a master's program called 'Economics and Entrepreneurship,' it specifically targets entrepreneurs in rural areas.

In principle, any academic institution has the capacity to emulate the strategic decision to incorporate entrepreneurial education into a bioeconomy or other course program. However, in the short run and within the context of BioGov.net, the potential for replication may be limited.

17 Data sources

- **Online resources:** <https://ut.ee/et/oppekavad/bioloogia-ja-okoinnovatsioon>
<https://ois2.ut.ee/#/curricula/205725/details>
- **Resource persons:** Kersti Riibak, Programme Director
- **Other sources, if any:** -

