Winter School: Biomass to Sustainable Bio-products

Organized by the ERA-Chair in VALORTECH,

Estonian University of Life Sciences, Tartu, Estonia

Theme*:* Biomass to Sustainable Bio-products

Duration: 03 days

Date: March 29-31, 2023

Field of study: Valorization technologies

Module: Online/Hybrid mode Open for Masters, Doctoral students, and other professionals

Course schedule: The course includes lecture sessions provided by subject experts, laboratory-based course/hands-on training, individual/group assignments and visits.

About the course:

The course "Biomass to Sustainable Bio-products'' offered in the winter school covers comprehensively various aspects related to the conversion of agri-food industrial waste and by-products into valuable products through sustainable means. This course will give an outline about biomass valorization to obtain sustainable bio-products. In specific, the possibility to convert biomass into valuable and desired products brings in the double benefit of stabilising and treating wastes (biomass), thus minimising their effect on the environment, while instantaneously valorising them into value added products. The course covers topics such as sourcing biomass, valorization technologies, various conversion methods, green deal and sustainable food production. As a case study, valorization of dairy industry waste and by-products, and biogas production are covered. Through informative lectures, creative discussions, group activities and hands-on lab work, students will gain a deep understanding of the science and technology behind converting biomass into sustainable bio-products. Upon completion of the course, students will have a strong foundation in the field and be well-prepared for a career in the bio-product industry.

Program:

	DAY 1: 29.03.2023	
Onsite/ Contact Mode	8.30-9.00	**Registration of participants**
	9.00-9.10	**Welcome and introduction:** Oliivika Zeiger (Project Manager, ERA-Chair in VALORTECH)
	9.10-9.45	**Lecture 1: Biomass valorisation - the way ahead!** Speaker: Rajeev Bhat (Professor, ERA-Chair in VALORTECH**)**
	9.45-10.45	**Lecture 2: Green deal and sustainable food production** Speaker: TBC
	10.45-11.00	*Tea & Coffee break*
	11.00-11.45	Participant interactions (each 2-3 minutes)
	11.45-12:45	*Lunch break & free interactions*
	12.45-13.45	**Lecture 3:** Biogas production from food and agricultural waste. Speaker: Prof. Taavo Tenno, University of Tartu, Tartu
Onsite/ Contact Mode	13.45-14.00	*Tea/coffee break*
	14:00-16.30	**Workshop 1: Group work on conceptualization of sustainable food product development (in 3 groups)** A group should make their own concept of what is sustainable food production in their opinion, create an example of such a product, how it should be produced, packaged, labelled, etc in order to meet the sustainable food product concept. 1 h for concept and product example + 1,5 h of presenting the ideas to each other (2-3 slides per group), open discussions (Kristi, Viive, Surya, Reelika)
	19:00-21:00	*Dinner*
	Day 2: 30.03.2023	
Onsite/ Contact Mode	9.30-10.30	**Lecture 4: Valorization of dairy industrial waste and by-products** Speaker: Ivi Jõudu (Assoc. Prof., PhD) Estonian University of Life Sciences, Chair of Food Science and Technology, ERA Chair Valortech
	10.30-10.45	*Tea & Coffee break*

	10.45-11.45	**Lecture 5: Value added products and sensory quality evaluation** Speaker: **Evita Straumīte** (Assoc. Prof., Dr.sc.ing.), Latvia University of Life Sciences and Technologies, Faculty of Food Technology
Onsite/ Contact Mode	11.45 – 12.30	*Lunch break & free interactions*
	12.30-15.15	**Workshop 2: Dairy by-products valorisation** (Ivi, Siiri, Andres)
	15.15-15.30	*Tea & Coffee break*
	16.00-17.00	*Visit to ALeCoq Brewery biogas production unit*
	19.00	*Dinner*
	Day 3: 31.03.2023	
Onsite/ Contact Mode	9.00-10.15	**Lecture 6: LCA: Conventional and alternative approaches** Speaker: **Sirli Pehme** - Sustainability Team Lead at Civitta Estonia
	10.15-11.30	**Workshop 3:** Plant, dairy and meat by-product valorization (in 3 groups) Based on recent literature reviews - pros and cons of plant, dairy and meat by-products valorization, short presentations by participants (bullet points on the whiteboard by groups) (Reelika, Viive, Sana, Monica, Dunja)
	11.30-11.35	Thanks giving to participants (Rajeev Bhat)
	11.35-12:00	*Lunch break*
	12.00-17.00	Field visit Estover OÜ (dairy dealing with bio-gas production)

Learning outcome:

At the end of the winter school, participants will:

- have a good understanding on the importance of managing food wastes within circular economy concepts.
- propose new sustainable themes for the valorization of wastes and by-products**;**

- increased understanding of the potentiality of biomass as a sustainable source of bio-products.
- acquire knowledge on various technologies and processes used in the conversion of biomass to bio-products
- improve their ability to evaluate the economic and environmental impacts of different biomass conversion strategies.
- gain insight to current research and development in the field of biomass conversion to bio-products.
- understand the importance of sustainability in the bio-product industry and the role of biomass in achieving this goal.
- understand the importance of LCA.

WORKLOAD AND GRADING:

The total course workload is divided as follows:

- Self-centred learning - 7,5 h
- Lectures - 5 h
- Laboratory work/hands-on training + group work - 7,5 h
- Excursion/visits- 6 h

Grading:

The course is graded either as pass/fail. The minimal criteria for passing the course requires all participants to be active individually and in teamwork. A final presentation needs to be done by participants. A certificate will be awarded to each of the participants who complete all of the sessions.

Application to the course:

We accept applications from local and exchange students, professionals and other learning community members. The minimum requirement to be a participant is to hold a Bachelor's degree. The total number accommodated is a maximum of 20 participants.

Please attach the following while submitting your application:

- Please provide one of the following: Short CV/ Research gate id / ORCID/Google Scholar link
- Motivation letter (up to 300 words).

Course/Tuition fees: This course is arranged free of cost. However, external participants need to apply for their own funding (for travel costs, visa processing, accommodation, etc). Food and refreshments are served free of cost.

Registration:
The application period is open until 20.03.2023 23:59 (UTC+3). Once registration is completed, an email confirmation and information to join the event will be sent to the participants.

Registration link: https://forms.gle/1fJx2xLyLopBFg6t5

Cancellation terms: *In the case of cancellation, the participants are requested to inform the organisers at least **one week** before the course begins. This will give the opportunity for other interested participants to attend.*

Personnel involved: All staff of ERA-Chair in VALORTECH.

Contact persons:

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