



### **“AquaLoop cross-border student exchange program”**

Within AquaLoop project we offer a week long exchange program based on the AquaLoop project pilots, hands on experience, laboratory work, study trip, cross-border cooperation and networking. The program is addressed to aquaculture (and related majors: biology, marine biology etc.) undergraduate and graduate students from the AquaLoop project partner universities: University of Rostock, University of Gdańsk, and Klaipeda University. The idea of the program is to get familiar with AquaLoop pilots, circular economy practices in aquaculture, partner institutions, and students from Germany, Poland and Lithuania. The program is scheduled for January – March 2025, at the University of Rostock (DE), University of Gdańsk (PL), and Klaipeda University (LT).

#### **Participants & eligibility criteria**

AquaLoop would like to welcome all applicants, but space is limited (18 students for the whole program). To apply for the AquaLoop cross-border student exchange:

- You must be 18 years and older
- You must be an undergraduate or graduate student from the University of Rostock, University of Gdańsk or Klaipeda University studying/working on the topics related to the AquaLoop pilots
- You must submit a completed application form before the deadline
- You must attach a motivational statement in a written form (English, max 500 words).

#### **Application & recruitment procedure**

Recruitment for the program is based on the application process, including a motivational statement. Application will be announced separately for students from each university.

In case of questions, please contact program coordinators at your university:

University of Rostock: [adrian.bischoff-lang@uni.rostock.de](mailto:adrian.bischoff-lang@uni.rostock.de), [laura.redondo@uni.rostock.de](mailto:laura.redondo@uni.rostock.de)

University of Gdańsk: [joanna.hegele-drywa@ug.edu.pl](mailto:joanna.hegele-drywa@ug.edu.pl), [filip.pniewski@ug.edu.pl](mailto:filip.pniewski@ug.edu.pl)

Klaipeda University: [nerijus.nika@ku.lt](mailto:nerijus.nika@ku.lt)

#### **Time and scope**

One working week of practical work based on the AquaLoop pilots' activities.

Program dates for students from the University of Rostock:

6-12 January 2025 for the visit in the University of Gdańsk (PL)

5-11 January 2025 for the visit in the Klaipeda University (LT)

Program dates for students from the University of Gdańsk:

23 February – 1 March 2025 for the visit in the University of Rostock (DE)

23 February – 1 March 2025 for the visit in the Klaipeda University (LT)

Program dates for students from the University of Klaipeda:

23 February – 1 March 2025 for the visit in the University of Rostock (DE)

26 January – 1 February 2025 for the visit in the University of Gdańsk (PL)

### Other practical information:

Registering for the “AquaLoop cross-border student exchange program” is free of charge.

Participation in the “AquaLoop cross-border student exchange program”, travel and accommodation arranged by your university in cooperation with the hosting university is covered by the AquaLoop project funds.

Please note, that you must be present at the program for the entire program duration.

### Program curriculum

Program at each partner university will take 5 working days/app. 8h/day. English is the language of instruction. Additional days are scheduled for arrival/departure, more information on the daily agenda will be provided to the selected students.

Program curriculum at each hosting university will be based on the pilots carried out within AquaLoop project. Daily activities will be mostly experimental/laboratory work and students will be engaged in daily routine activities in partner institutions depending on the experiments carried out and work being performed based on the AquaLoop pilots. Program will include a study trip to an aquaculture facilities/institutions in the area.

### Host university specific activities

University specific activities	
<b>University of Gdańsk (PL)</b> <b>Pilot 1 - TARAS</b> Testing Algae Applications in Recirculating aquaculture systems (RAS) to improve aquaculture circularity potential in the SB region	<ul style="list-style-type: none"><li>• Daily routine activities in Pilot 1: analyses of water chemistry and animals, analyses of physiological parameters in shrimps (rates of food consumption, faeces and ammonia excretion, respiration, osmoregulation), growth of specific strains of microalgae using RAS waste water</li><li>• 1-day study trip to rainbow trout hatchery &amp; aquaculture farm</li></ul> More: <a href="#">Pilot 1 information</a>
<b>University of Rostock (DE)</b> <b>Pilot 2 - NEMATIC</b> Increasing the nutrient efficiency of commercial aquaculture through increased application of circular economy concepts	<ul style="list-style-type: none"><li>• Daily routine activities in Pilot 2: fish sampling and aquaponics</li><li>• 1-day introducing parasitological working methods</li><li>• 1-day study trip to an aquaculture facility in the area</li></ul> More: <a href="#">Pilot 2 information</a>
<b>Klaipeda University (LT)</b> <b>Pilot 3 - FISHVISA</b> Development of the Fish-Shrimp-Vegetables integrated system of aquaponics to showcase the potential of circular economy principles in RAS	<ul style="list-style-type: none"><li>• Daily routine activities in Pilot 3: maintenance of aquaponics system with rainbow trout, crayfish and salads, water chemistry analysis, animals and plants growth and health evaluation</li><li>• Getting familiar with other Fisheries and Aquaculture Lab RAS facilities and additional activities in RAS technology and experimental aquatic biology</li><li>• 1-day study trip to Arctic char cultivation, processing and education farm</li></ul> More: <a href="#">Pilot 3 information</a>

## AquaLoop pilots' descriptions

AquaLoop Pilot 1 – TARAS

University of Gdańsk (PL)

Testing Algae Applications in Recirculating aquaculture systems (RAS) to improve aquaculture circularity potential in the SB region



[Pilot 1 information](#)

[AquaLoop pilot 1: TARAS presentation](#)

[Coordinating partner: University of Gdańsk \(PL\)](#)

[Video material: Experimental RAS shrimps cultivation \(\*Litopenaeus vannamei\*\)](#)

[Feasibility of co-culture of shrimp and algae in RAS system](#)

Contact:

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[filip.pniewski@ug.edu.pl](mailto:filip.pniewski@ug.edu.pl)

The aim of the pilot is to further develop technology on cultivation of shrimps and specific strains of microalgae, for RAS facilities, effluent purification, while producing high-value algal biomass, and to demonstrate applications of the biomass produced.

So far, two pilot modules have been designed: (1) **RAS shrimp aquaculture** including facility improvements, shrimps diet, supplements improving growth performance and resistance to pathogens, breeding cycles parameters, post-larvae delivery, indicators to be studied, including: survival rate (SR), weight gain rate (WGR), feed conversion ratio (FCR), specific growth rate (SGR), feed intake (FI), scope for growth (SFG), net growth efficiency (K2), hemolymph biochemical indexes (TP, TG, T-CHO, MDA), fatty acid composition, intestinal histology (FH, FW, MT) and infections (bacterial, viral, fungal); (2) **microalgae production and application**, including waste water treatment and application for microalgae production, determination of water chemical composition (nutrient content), photobioreactor panels design, two phased approach design, where cells from the culture medium will be transferred to the effluent – cells will be harvested by centrifugation and then resuspended in the RAS water, and subsequently, biomass will be collected and subjected to biochemical analysis.

Student activities of the AquaLoop exchange program will among others, take part in the shrimps and microalgae-related activities of the foreseen experiments.

## AquaLoop Pilot 2 - NEMATIC

University of Rostock (DE)

Increasing the nutrient efficiency of commercial aquaculture through increased application of circular economy concepts



[Pilot 2 information](#)

[AquaLoop pilot 2: NEMATIC presentation](#)

[Coordinating partner: University of Rostock \(DE\)](#)

[Video material from FishGlassHouse \(FGH\) facility in Rostock](#)

Contact:

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[laura.redondo@uni.rostock.de](mailto:laura.redondo@uni.rostock.de)

The idea of the pilot is to research and test the unused residues from fish production. Specifically, the biochemical composition of the gonads, livers and skins of African catfish (*Clarias gariepinus*), rainbow trout (*Oncorhynchus mykiss*) and pikeperch (*Sander lucioperca*) will be investigated, and possible and practical potential paths of utilization will be tested.

The pilot takes place at the: **FishGlassHouse** (FGH) facility in Rostock, registered as a fish production company, where the growth experiment with the African catfish takes place under production conditions. Growth experiment with African catfish will include 3 x 3 approach (3 replicates per age group, three age groups – small, medium, large), complete grow out from stocking up to a harvest weight of 2.5 kg , sampling intervals of 21 days, sampling of 10 or 11 individuals per tank, data collection: total weight and length, weight of the gonads, livers, skin as well as the length and width of the skin (area), data analysis: growth – weight gain, SGR, FCR, HSI – Hepatosomatic Index, fatty acid composition, biochemical composition, GSI – Gonadosomatic Index, fatty acid composition, biochemical composition, and Skin – fatty acid composition, biochemical composition. Further on comparable approach for rainbow trout and pikeperch will be taken, and potential paths of utilization will be presented for nutrient extraction for further use as raw materials, such as liver oil or fatty acids for feeds, pet food (cats and dogs or aquaria), pharmaceuticals (e.g. collagen), and medical purposes (burn bandage).

Students of the AquaLoop exchange program will among others, take part in the fish sampling and aquaponics activities of the foreseen experiments.

## **AquaLoop PILOT 3 – FISHVISA**

Klaipeda University (LT)

Development of the Fish-Shrimp-Vegetables integrated system of aquaponics to showcase the potential of circular economy principles in RAS



[Pilot 3 information](#)

[AquaLoop pilot 3: FISHVISA presentation](#)

[Coordinating partner: Klaipeda University \(LT\)](#)

[Video material from Marine Research Institute Fishery & Aquaculture Laboratory – Klaipeda, Lithuania](#)

Contact: [nerijus.nika@ku.lt](mailto:nerijus.nika@ku.lt)

The main activities will relate to FISHVISA technology testing at the Marine Research Institute Fisheries and Aquaculture Laboratory. The small demo aquaponics system in a glasshouse is composed of a fish tank, shrimp/crayfish tank, sedimentation tank, backwash filter, biological moving-bed filter, sump, 3 units of plant reservoirs, LED lamps, and water quality monitoring system. The FISHVISA pilot is now tested with rainbow trout, crayfish and salads, where crustaceans expect to use solid wastes, and vegetables use nutrients from fish and crustaceans, to develop a zero-waste RAS technology.

Student activities of the AquaLoop exchange program will be related to daily maintenance of the system, husbandry of rainbow trout, crayfish and salads, evaluation of their growth and status, water quality analysis etc. Also, students will be involved in other laboratory's activities including rainbow trout and/or Arctic char cultivation in RAS, whiteleg shrimp cultivation in RAS with geothermal water, breeding efforts of zebrafish and Australian redclaw crayfish, experimental activities with river lamprey.

**Are you enthusiastic about circular economy & aquaculture, and you study at one of the AquaLoop project universities?**

**Then, the program is for you!**

**More on: [www.aqualoop.edu.pl](http://www.aqualoop.edu.pl)**

