	Implementation schedule	Title	Participation	Partner University	Lecturer	Learning outcomes
DAY 1	**02/03/2026** **10.00-11.30 CET**	Introduction to sustainable Aquaculture practices and Aquafeed production	Online	AUA	Arkadios Dimitroglou	✓ Acquire knowledge on sustainable Aquaculture. ✓ Acquire knowledge on basic techniques used in fish feed production.
Description of the course	*This lecture provides an in-depth introduction to sustainable aquaculture, focusing on the practices, technologies, and scientific principles that support environmentally responsible fish and seafood production. This lecture will also explore aquafeed production, focusing on the technology available, the essential processing parameters, and the nutritional demands of different species that must be considered.*					
	02/03/2026 **12.00-13.30 CET**	Fish and seafood analyses	Online	AUA	Evanthia Chatzoglou	✓Identify key proximate composition parameters (protein, lipids, ash, and moisture) used to evaluate fish and aquafeed nutrient content. ✓Describe physical and chemical methods of analysis for determining the nutritional quality and energy value of fish and fish feed. ✓ Assess the importance of proximate composition data in supporting product development, sensory quality evaluation, and food safety in aquaculture.
	Monitoring the nutrient content of fish and fish feed aquafeed is essential to ensure optimal growth and health. Parameters include protein, lipids, ash, moisture, analyzed by physical and chemical methods These parameters are expressed as a percentage in the sample, and studying them provides valuable insights into evaluating the sensory quality and energy value of the fish. In summary, fish proximate composition analyses are essential for assessing the quality, nutritional value, energy content, product development, and food safety aspects of fish.					

DAY 2	**03/03/2026** **10.00-13.00 CET**	Microalgae production in bioreactors	Online	UNIZD	Tomislav Šarić	✓ Explain key requirements for microalgae cultivation including nutrient preparation (vitamins, macronutrients, micronutrients), appropriate CO_2 concentrations, pH balance, and optimal light–dark cycles. ✓ Evaluate photobioreactor design and operation for industrial microalgae production. ✓ Assess strategies for sustainable aquaculture feed development by identifying the role of microalgae as alternative nutrient sources.
Description of the course	*Aquaculture feeds are one of fish culture's main inputs and cost factors. Concerns regarding the economic and environmental sustainability of feeds are mainly based on ingredients of marine feed-grade fisheries origin and have steered significant EU support towards exploring and utilizing alternative nutrient sources. In aquaculture, microalgae are primarily associated with nutrition for fish larval rearing or as food additives to essential nutrients as a provider of DHA and EPA. Microalgae cultivation in photobioreactors has emerged as a promising and sustainable approach to address various environmental and energy challenges, offering many benefits across diverse applications. In this lecture, critical factors in microalgae cultivation, such as preparation of nutrients for algae cultivation (vitamins, macronutrients and micronutrients), photobioreactor design, light-dark (L-D) cycles, CO2 concentrations, mass transfer, hydrodynamics behaviour, and pH, will be reviewed. Also, the production of algae in large-scale industrial photobioreactors will be demonstrated as well as the control of the population of cultivated algae.*					
DAY 3	**04/03/2026** **10.00-13.00 CET**	Research and Development of sustainable aquaculture practices	Online	UROS	Harry Palm	✓Learn how aquaponics functions as a closed-loop system. ✓Understanding the underlying chemical and biological. processes required to maintain a balance between fish health, water quality, and plant growth. ✓Identify the specific research methodologies to optimize aquaponic systems.

Description of the course	*Monitoring the nutrient content of fish and aquafeed is essential to ensure optimal growth and health. Key parameters include protein, lipids, ash, and moisture, which are analysed using physical and chemical methods. These parameters are expressed as percentages of the sample, and their assessment provides valuable insights into the sensory quality and energy value of fish. In summary, proximate composition analyses are essential for assessing fish quality, nutritional value, energy content, product development, and food safety.* *Sustainable aquaculture practices require more efficient use of natural resources, as well as minimal production of effluent water and waste. One possible approach is the integration of fish and plant production, known as aquaponics, in which plants utilise water and nutrients derived from aquaculture, while the clarified water is returned to the fish. However, this system is complex and requires extensive research and a deeper understanding of the underlying processes. This lecture presents the research strategy applied in the FishGlassHouse at Rostock University for the further development of aquaponics and its integration into the circular economy.*					
DAY 4	**05/03/2026** **10.00-13.00 CET**	Aquaculture emissions footprint	Online	FREDU	Charalambos Chasos	✓ List the EU initiatives and strategies for carbon emissions reduction and describe the contribution of each sector in carbon dioxide emissions. ✓ Comprehend the energy needs for aquaculture systems and quantify requirements for production, transport and processing during aquaculture activities. ✓ Analyze the energy requirements for aquaculture systems, and evaluate the related carbon emissions. ✓ List carbon emissions' mitigation measures for the activities involved in aquaculture systems.
Description of the course	*A low-carbon footprint in farmed seafood production is necessary, in order to achieve a sustainable food system. Aquaculture in the European Union (EU) is strictly regulated in terms of requirements for quality, health and the environment. To this end, it is required to provide methodologies and tools in order to assess the energy input into the aquaculture systems, and their contribution in the carbon dioxide emissions during the various stages of the systems' operation. The main objectives of the present course are firstly to present the current environmental*					

	legislation with emphasis in aquaculture, secondly to assess the impact of aquaculture on the environment in terms of carbon dioxide emissions and finally to provide guidelines on the mitigation of carbon dioxide emissions produced in aquaculture.					
DAY 5	**06/03/2026** **10.00-13.00 CET**	Production and incorporation of insect meals as protein sources in fish feed	Online	SETU	Shikha Ojha	✓ Explain the role of edible insects in aquaculture as sustainable, protein-rich feed ingredients approved under EU legislation. ✓ Evaluate the effects of insect meal inclusion on fish growth, health, and haematological parameters, considering species and inclusion levels. ✓ Discuss future trends and industry implications of scaling insect farming for more profitable and sustainable aquafeed production.
Description of the course	*Edible insects can represent a sustainable and protein-rich feeds ingredient for aquaculture. In recent decades, eight species of insects including silkworms (Bombyx mori), black soldier fly (Hermetia illucens), housefly (Musca domestica), yellow mealworm (Tenebrio molitor), lesser mealworm (Alphitobius diaperinus), house cricket (Acheta domesticus), banded cricket (Gryllodes sigillatus) and Jamaican field cricket (Gryllus assimilis) have been tested and used for industrial aquafeed production. These insects are approved for the production of feed in aquaculture under EU legislation. When insect meal is used as fishmeal replacement, growth performances, as well as haematological parameters and healthy status of fish could be affected. These results are strictly dependent on insect species, aquatic species and percentage of inclusion. The scale of insect farming and the volume of insect meals production are on rise, and it is expected that insects as a fish feed ingredient will substantially impact aquaculture, making it more profitable and sustainable.*					