EUCONEXUS

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OPEN LAB HOURS COURSE INFORMATION

Title: "Quality analyses in aquaculture"

Academic Year 2024/2025

Automn semester

Deadline for applications: 05/12/2024

Course information: Quality analyses in aquaculture

Lecturer name & email	Evanthia Chatzoglou	echatzoglou@aua.gr
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First day of the course	09 December 2024	
Last day of the course	13 December 2024	
Deadline for applications	**05 December 2024**	
Timetable of the synchronous classes	*Every day from 10:00 to 13:00 (CET)*	
Total hours (including autonomous work)	*40h*	
Assessment system	*On line tests and exercises*	
Mobility	*For mobility opportunities contact your University representative at: https://www.eu-conexus.eu/en/open-lab-hours/* ***by 30/11/2024***	
Certification (ECTS where applicable)	*Certificate of completion*	

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Dates	Title of the course	Partner University		Lecturer
DAY 1 **Monday,** **09/12/24** **10:00 to 13:00 (CET)**	**Water Quality Analysis**	**On site** **KU**	**On-line** **AUA** **FredU** **LRUniv** **UCV** **SETU** **UNIZD** **UROS** **UTCB**	**Jolita Petkuvienė** *Coastal Research and Planning Institute* *Klaipeda University*

Fish health in open or RAS aquaculture is very sensitive to the changes of water quality (pH, oxygen, nitrogen form). pH increase may affect ammonium transformation to toxic ammonia and cause illness or even death of fish. During the EU-CONEXUS Open lab lecture "Water quality analysis" we will measure ammonium in water samples from different RAS aquaculture steps for contact activity and the analysis of importance of nitrogen forms and risk pathways will be done with remote students.

Learning outcomes of the course

- ✓ Understanding of the importance of water quality in aquaculture;
- ✓ Skilled in the spectrophotometric ammonium analysis (ISO 7150-1:1998);
- ✓ Assessment of risk ammonium value to fish.

DAY 2 **Tuesday,** **10/12/24** **10:00 to 13:00 (CET)**	Fish and seafood analyses part 1 (moisture, fat content)	**On site** **AUA**	**On-line** **FredU** **KU** **LRUniv** **UCV** **SETU** **UNIZD** **UROS** **UTCB**	**Evanthia Chatzoglou** *Laboratory of Applied Hydrobiology* *Department of Animal Science Agricultural University of Athens*
DAY 3 **Wednesday,** **11/12/24** **10:00 to 13:00 (CET)**	Fish and seafood analyses part 2 (ash, protein content)	**AUA**	**FredU** **KU** **LRUniv** **UCV** **SETU** **UNIZD** **UROS** **UTCB**	**Evanthia Chatzoglou** *Laboratory of Applied Hydrobiology* *Department of Animal Science Agricultural University of Athens*

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. During these two courses, experiments of moisture, ash, fat and

protein will be performed on-site, while the data from the experiment will be evaluated on-line.

Learning outcomes of the course:

- ✓ Recognizing the Significance of Proximate Composition in Assessing the Quality of Fish and fishfeed
- ✓ Familiarize with Analytical Techniques used to determine the proximate composition of fish feed and fish samples
- ✓ Interpretation of proximate composition results.
- ✓ Estimating the Significance of Diverse Values

DAY 4 **Thursday,** **12/12/24** **10:00 to 11:30 (CET)**	Assessing environmental impact of Aquaculture by macrofauna communities	**On site** **UNIZD**	**On-line** **AUA** **FredU** **KU** **LRUniv** **UCV** **SETU** **UROS** **UTCB**	**Ivana Zubak Čižmek** *Department of Ecology, Agronomy and Aquaculture* *University of Zadar*

To ensure responsible and environmentally sustainable aquaculture practices, the monitoring of macrofauna communities should be conducted in sites where aquaculture is present. One way of doing it is the analysis of video and photo material. By recording the present species on (or near) the seabed, we can detect the reductions in number of species and/or diversity and increased dominance of opportunistic species. In this Open Lab, students will analyze photo material from two sites, one close to the aquaculture facilities and one reference site with pristine conditions and try to observe differences in present species and their relative abundances.

Learning outcomes of the course:

- ✓Understanding the importance of monitoring macrofauna in aquaculture for environmental sustainability.
- ✓Identifying key species and their ecological roles.
- ✓Distinguishing between opportunistic and healthy ecosystem indicators.
- ✓Evaluating ecological consequences of reduced diversity and increased dominance of opportunistic species.
- ✓Integrating principles from biology, ecology, environmental science, and technology.

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DAY 5 **Friday,** **13/12/24** **11:30 to 13:00 (CET)**	Aquaculture emissions footprint	**On site** **FredU**	**On-line** **AUA** **LRUniv** **KU** **UCV** **SETU** **UNIZD** **UROS** **UTCB**	**Charalambos Chasos** *Department of Mechanical Engineering* *Frederick University*

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.

Learning outcomes of the course:

- ✓ 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

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