University of Gdańsk

Subject card

Subject name and code	Nutrition and Food Science - lecture, PG_00201308		
Field of study	Aquaculture – Business And Technology		
Date of commencement of studies	October 2026	Academic year of realisation of subject	2027/2028
Education level	Bachelor's studies	Subject group	Obligatory subject group in the field of study Subject group related to practical vocational preparation
Mode of study	full-time studies	Mode of delivery	at the university
Year of study	2	Language of instruction	Polish
Semester of study	4	ECTS credits	1.0
Learning profile	practical	Assessment form	credit
Conducting unit	Laboratory of Aquaculture -> Department of Marine Biology and Biotechnology -> Faculty of Oceanography and Geography -> Rector		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Marcin Kuciński	
	Teachers		

Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	0.0	0.0	0.0	15
	E-learning hours included: 0.0						

Learning activity and number of study hours	Learning activity	Participation in didactic classes included in study plan	Participation in consultation hours	Self-study	SUM
	Number of study hours	15	1.0	9.0	25

Subject objectives
1. Introducing students to inter-species differences in the feeding behavior of various fish species and their nutritional requirements. 2. Familiarizing students with methods of feed production and composition. 3. Explaining the varying nutritional requirements of fish for different stages of development.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[AKWAL3-U04] can select and use available sources of information, and understand the literature on aquaculture in a broad sense	Students are able to select and utilize available sources of information and understand literature on the broad topic of fish nutrition in aquaculture.	[SU1] oral statement/conversation/ discussion [SU4] test/exam - oral or written
[AKWAL3-U06] can apply basic techniques and technological processes related to the use of elements of the environment for practical purposes	Students can apply basic techniques and technological processes related to fish feed production, utilizing elements of the environment for practical purposes.	[SU1] oral statement/conversation/ discussion [SU4] test/exam - oral or written
[AKWAL3-W12] knows and understands the role of aquaculture in the modern economy and its impact on the natural environment	Students are familiar with and understand the role of fish nutrition in aquaculture, as well as the relationship between the level of feeding intensity and the quality of the feed used, as well as the level of pollutants generated, which may potentially impact the natural environment.	[SW4] test/exam - oral or written
[AKWAL3_W03] has an advanced understanding of the conceptual categories and terminology related to the biological basis of aquatic organisms breeding, as well as concepts directly relevant to the practical applications of this knowledge	Students are familiar with and understand conceptual categories and terminology related to the biological fundamentals of fish nutrition in aquaculture conditions, as well as concepts directly relevant to the practical applications of this knowledge.	[SW4] test/exam - oral or written

Subject contents

1. Energy requirements and processes of digestion and nutrient absorption in fish.
2. Introduction to fish nutrition and feed science.
3. Basic feed components: from macronutrients to micronutrients.
4. Functional additives in fish nutrition.
5. Industrial feed production technology.

Prerequisites and co-requisites

Basic knowledge of fish biology and physiology.

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Test	51.0%	75.0%
Activity during classes - engagement in the discussions undertaken	51.0%	25.0%

Recommended reading

Basic literature

1. Lovell RT. Nutrition and Feeding Fish. 1989. Wyd. Van Nostrand Reinhold, New York.

2. Goryczko K. 2008. Pstrągi. Chów i hodowla. Wyd. Instytut Rybactwa Śródlądowego Olsztyn.

3. Wojda R. 2009. Karpie, Chów i hodowla. Wyd. Instytut Rybactwa Śródlądowego Olsztyn.

4. Ryszard Kolman, 2010 - JESIOTRY. Chów i hodowla. Poradnik hodowcy. II wydanie, Rozszerzone i poprawione, Wyd. IRS,

5. Halver J. 2003. Fish nutrition. Wyd. Academic Press. New York London,

6. Wylęgarnictwo, podchowy ryb i zarybienia. Ed. Zakęsia, Zdzisława; Demska-Zakęś, Krystyna. Instytut Rybactwa Śródlądowego, Olsztyn 2016 (ISBN 978-83-60111-86-4),

7. Monografia: Żywienie ryb i inne problemy akwakultury. Wylęgarnia 2020.

	Supplementary literature	Articles on fish nutrition and aquaculture published in industry journals such as Aquaculture, Aquaculture International, Aquaculture Research, and Komunikaty Rybackie: 1. Poczyczynski, P., & Wozniak, M. (2013). Pasze sztuczne w żywieniu ryb. I. Pasze sztuczne w żywieniu ryb. I. Wprowadzenie. Komunikaty Rybackie, 3, 2. Poczyczyński, P., & Wozniak, M. (2013). Pasze sztuczne w zywieniu ryb. II. Zapotrzebowanie energetyczne ryb oraz wpływ temperatury na procesy trawienne i dawki pasz. Komunikaty Rybackie, 3, 3. Poczyczynski, P., & Wozniak, M. (2013). Pasze sztuczne w zywieniu ryb. III. Zapotrzebowanie na makronutrienty białko i aminokwasy egzogenne. Komunikaty Rybackie, 3, 4. Poczyczynski, P., & Wozniak, M. (2013). Pasze sztuczne w zywieniu ryb. IV. Pozostałe makronutrienty - lipidy i weglowodany. Komunikaty Rybackie, (6), 5. Golez, N. V. (2002). Processing of feedstuffs and aquafeeds. In Nutrition in Tropical Aquaculture: Essentials of fish nutrition, feeds, and feeding of tropical aquatic species (pp. 125-147). Aquaculture Department, Southeast Asian Fisheries Development Center.
	eResources addresses	
Example issues/ example questions/ tasks being completed	1. Feeding strategies of fish, 2. Basics of metabolic transformations dynamics in fish, 3. Factors determining the energy requirements of fish, 4. Energy requirements of fish, 5. Energy balance of fish, 6. Structure of the fish gastrointestinal tract, 7. Length of the fish gastrointestinal tract, 8. Development of the gastrointestinal system throughout the life of fish, 9. Basics of the process of digestion and nutrient absorption in fish, 10. Basics of enzymology of the digestion process in fish, 11. Digestion of proteins, fats, carbohydrates, and nucleic acids in fish, 12. Development of the enzymatic digestive apparatus in fish, 13. Concepts of nutrition and feed science, 14. Levels of intensification of fish production (feeding) in aquaculture, 15. Fish feeding techniques, 16. Methods for determining the frequency of fish feeding, 17. When not to feed fish? 18. Criteria for selecting fish feeds and assessing their quality, 19. Feed conversion ratio (FCR) and fish growth rate, 20. Micro- and macronutrients in fish diets, 21. Importance of protein and its requirements in fish diets, 22. Importance of lipids and their requirements in fish diets, 23. Importance of carbohydrates and their requirements in fish diets, 24. Importance of trace elements and their requirements in fish diets, 25. Importance of vitamins and their requirements in fish diets, 26. Functional additives in fish nutrition, 27. Feed quality and its significance in aquaculture production, 28. Basic classification and characteristics of anti-nutrients observed in feed components for fish, 29. Characteristics of selected components for fish feed production, 30. Basics of formulating feed mixtures, 31. Digestibility of feed components, 32. Amount of pollutants generated depending on the quality of feed components used, 33. Methods of preliminary processing of feed components, 34. Formation and stabilization of industrial feeds - technology of industrial feed production for fish, 35. Methods of stabilizing aquafeeds and controlling their quality during production, 36. Influence of starch addition on feed buoyancy.	
Work placement	Not applicable	

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