

Dette er en oversettelse av den fastsatte læreplanteksten. Læreplanen er fastsatt på Bokmål

Laid down as a regulation by the Norwegian Directorate for Education and Training on 9 January 2007 as delegated in a letter of 26 September 2005 from the Ministry of Education and Research pursuant to the Act of 17 July 1998 no. 61 relating to primary and secondary education (Education Act) Section 3-4 first paragraph.

Valid from 01.08.2018

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Utdanningsdirektoratet

## Purpose

Aquaculture is a technologically advanced and export-oriented industry based on biological production with a demand for quality in processes and products. The programme subjects shall develop an understanding of the market and provide an insight into the industry's role in society and role as an international food producer. The programme subjects shall also lay the foundation for professional competence that can contribute to the industry's continued growth and development, and teach about framework conditions and national administration of the industry.

Teaching shall be organized so that the individual develops knowledge and skills in the day-to-day running and operation of different types of aquaculture facilities, based on environmental requirements and biological conditions. In addition, teaching shall help develop an understanding of the relationship between biological production, nature's tolerance limits and human activity. From an ecological, sustainable and ethical perspective, teaching shall help develop the ability to cooperate and to think reflectively, creatively and interdisciplinary.

Teaching in the programme subjects shall embrace the broadness of the Norwegian aquaculture industry in terms of species, types of installations and modes of operation. The teaching shall help develop an understanding of the industry through cooperation with local business, where theory and practice are linked. The programme subjects shall provide the basis for further professional training as an apprentice in aquaculture or via general studies in agriculture, fishing and forestry.

## Structure

The programme area for Aquaculture consists of three programme subjects. The programme subjects complement each other, and should be viewed in relation to one another.

### Overview of the programme subjects:

Year level	Programme subject		
Vg2	Operation and production	Construction and technology	Aquaculture and the environment

## Description of the programme subjects

The programme subject covers work processes and vocational practice related to the operation and maintenance of an aquaculture facility. It involves hygiene, health, environment and safety, equipment selection, economics and the farmed organisms' optimal weight and welfare. The programme subject deals with the use of freshwater and seawater for growing fish, algae and animals in different stages of life, annual cycles and environments. It also deals with the quality assurance of work processes and products. Regulations and framework conditions that regulate the industry nationally and internationally are included in this programme subject.

The programme subject covers the construction, mode of operation and operation of facilities, tools and equipment. This includes the use and maintenance of equipment, tools, means of access, and instruments related to work at a fish farm. It also deals with knowledge of materials and the security and maintenance of facilities. It involves the use of trucks, cranes and limited radiotelephony.

The programme subject covers actual farmed species and the surrounding environment. It also involves the measurement and evaluation of chemical and physical environmental parameters, the fish's health and practice hygiene work. Feed and feeding of farmed organisms and species-specific dietary requirements are central elements in the programme subject. It also deals with ecology and the mutual effect between the fish farming facility and the environment.

## Teaching hours

Teaching hours are given in 60-minute units.

Vg2

Operation and production 197 teaching hours per year

Construction and technology 140 teaching hours per year

Aquaculture and the environment 140 teaching hours per year

## Basic skills

Basic skills are integrated into the competence aims for this course in areas where they contribute to the development of and are part of the subject competence. In Aquaculture, basic skills are understood as follows:

*Being able to express oneself orally* in Aquaculture involves communicating with others to achieve safe and effective processes. It means explaining, substantiating and participating in discussions about various proposals and solutions. In addition, it means explaining and describing processes and products for customers, the authorities and others.

*Being able to express oneself in writing* in Aquaculture involves reporting and documenting production, as well as presenting processes and products. It means participating in digital communication and information exchange.

*Being able to read* in Aquaculture involves using operating manuals and HSE data sheets, reading and understanding regulations and keeping oneself updated about the industry through specialist press and other media.

*Numeracy* in Aquaculture involves using numbers in calculation to find volumes, areas, biomass, growth-rate and density. It also means being able to understand budgets and accounts. It involves taking simple measurements of physical and chemical parameters, setting up and interpreting tables, diagrams and basic statistics.

*Digital literacy* in Aquaculture involves producing and presenting calculations and processed information digitally. It involves using specialised instruments for measuring, monitoring and controlling processes and production such as feeding, water temperature, salinity, pH, oxygen and light. In addition, it means using digital tools to plan production and register growth, mortality and feed factor. The use of digital maps is also included.

## Competence aims

*The aims of the studies are to enable pupils to*

- carry out work at a fish farm in line with current regulations and ethical guidelines
- register feed amounts, mortality, average weight, density and environmental parameters

- calculate feed amounts and feed farmed organisms
- explain the importance of optimal feeding
- observe organisms and environments and evaluate changes in relation to the species' normal appearance and behaviour
- plan, implement, evaluate and document the cleaning and maintenance of boats, engines and equipment in the aquaculture industry
- carry out sorting, weighing and transport of farmed organisms
- assess risk in work operations and implement measures to reduce the risk of injury or damage to personnel, farmed organisms and equipment
- prepare routines for safeguarding the quality of processes and products in the fish farming industry
- carry out work at a fish farm in accordance with relevant environment, health and safety regulations
- plan, implement and evaluate a production schedule with numbers, growth rate, biomass, density, water and oxygen requirements and feed consumption
- elaborate on regulations that regulate the fish farming industry, and retrieve essential information related to the establishment of a new fish farm business in a specific area
- describe the organization of an aquaculture company, starting with type of organization and an organizational chart
- explain the difference between a budget and a financial statement for operation and investment in an aquaculture business, and highlight any disparities and the possible reasons for these disparities
- explain connections between input factors and finance in an aquaculture firm, with particular emphasis on the significance of their own work
- describe how the market for fish-farmed products has changed, and discuss possible future prospects
- give examples of the market's demand for quality and choice of fish-farmed products

*The aims of the studies are to enable pupils to*

- describe the construction and function of facilities for egg, brood, table fish, algae and shellfish production
- use the correct tools and equipment based on the situation, the equipment's construction and mode of operation
- clean, inspect and maintain a facility and equipment based on the materials' properties and application
- choose ropes and chains according to purpose and connect them together using appropriate methods
- operate modern fish-farm boats in line with relevant regulations

- use digital tools in production control, environmental monitoring and documentation
- use a truck in accordance with relevant regulations
- carry out stropping, hooking, rigging and signalling in accordance with relevant regulations with the use of a quayside crane or boat derrick
- use modern radio communication equipment and follow emergency procedures

*The aims of the studies are to enable pupils to*

- plan, implement, document and evaluate optimal operations based on the biology of the farmed species
- describe chemical and physical properties in water and elaborate on the most important environmental factors in the aquatic environment
- carry out routine measurements of relevant environmental parameters and assess the results based on the species' environmental requirements and tolerance limits
- carry out work in line with relevant regulations for preventive health work, animal welfare and hygiene
- identify environmental problems linked to aquaculture and discuss how they can be prevented locally and globally
- propose damage limitation measures for an incident at a fish farm
- recognise normal behaviour and appearance in fish farm organisms and elaborate on common diseases and parasites
- handle and use chemicals correctly in accordance with information in an EHS data sheet
- elaborate on breeding targets for actual fish-farm organisms
- discuss how an aquaculture business can be run in co-existence with other commercial interests, preservation and leisure activities

## Assessment

### Vg2 Aquaculture

Provisions for final assessment:

#### **Overall achievement marks**

Programme subject	Provisions
Operation and production	The pupil shall have an overall achievement mark in each programme subject.
Construction and technology	
Aquaculture and the environment	

#### **Examination for pupils**

Programme subject	Provisions
Operation and production	<p>The pupil shall take an interdisciplinary practical examination covering the common programme subjects.</p> <p>The examination is prepared and graded locally.</p>
Construction and technology	
Aquaculture and the environment	

**Examination for external candidates**

Programme subject	Provisions
Operation and production	<p>The external candidate shall take a written examination in each programme subject. The external candidate shall also take an interdisciplinary practical examination covering the common programme subjects.</p> <p>The examination is prepared and graded locally.</p>
Construction and technology	
Aquaculture and the environment	

The provisions for assessment are stipulated in the regulations of the Norwegian Education Act.