

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 8 December 2006 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 01.08.2007

Valid to 31.07.2018



Utdanningsdirektoratet

Purpose

The programme area for Machines shall form the basis for vocational practice in the maintenance and repair of machines used in agriculture and construction. Highly developed technology and a steady development of this technology set the pace for those who shall carry out repairs and maintenance on equipment and machines. The subject shall encourage a higher quality in workshop services and help promote the safe and rational use of industrial machines.

Teaching shall help the individual develop practical skills, technical insight and an ability to make independent assessments. The teaching shall advance knowledge and skills relating to the construction, mode of operation and maintenance of the most commonly used machines and equipment. The teaching shall also provide the basis for the individual's ability to work independently and in accordance with laws, regulations and procedures. Cooperation and communication skills shall be key elements in the teaching.

Teaching shall be work-related and shall prepare the pupil for a vocation that is constantly changing and which demands a high level of efficiency. Focus will be on the importance of product quality and reliability from an economic standpoint. The programme subjects shall help develop professional identity and promote respect for people, machines and the environment.

Structure

The programme area for Machines consists of two 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	Trouble-shooting and repair work	Documentation and quality

Description of the programme subjects

The programme subject covers trouble-shooting components, equipment and machines, as well as the repair and maintenance of these. The subject also deals with the planning of work processes. It also includes making repairs using different types of joining methods. The properties and characteristics of different construction materials are also included in the subject.

The programme subject covers use of working drawings, schedules, procedures, standards and digital tools as a basis for trouble-shooting, repair and maintenance. EHS evaluations and quality assurance, with related documentation and non-conformance processing, are key elements in the programme subject. Customer handling and cost estimates are included in the subject.

Teaching hours

Teaching hours are given in 60-minute units.

Vg2

Trouble-shooting and repair work 337 teaching hours per year

Documentation and quality 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 the programme area Machines, basic skills are understood as follows:

Being able to express oneself orally and in writing in Machines involves articulating and explaining what must be done, or has been done, to customers, colleagues and suppliers. It also involves formulating both orally and in writing risk assessments and preparation of reports.

Being able to read in Machines involves understanding and following work specifications, procedures, repair manuals and standards. It also involves being able to read information on the intranet or notice board in order to actively participate in the school and working environment.

Numeracy in Machines involves doing calculations in connection with pressure, temperature, electrical quantities, fluid mixing ratios and the financial consequences of use of resources and method selection. It also involves being able to carry out and document measurements in accordance with drawings, schedules and standards.

Digital literacy in Machines involves using digital tools for planning, trouble-shooting, repairing, testing and documentation. It also involves being able to search for essential documents and communicate with customers.

Competence aims

The aims of the studies are to enable pupils to

- prepare a work schedule for implementing and completing work assignments
- select tools and equipment, components and work methods based on standards and procedures
- use tools, analogue and digital instruments and equipment for trouble-shooting, maintenance and repairs
- repair worn and used components using different welding techniques
- strip down and assemble machine components in accordance with relevant safety criteria
- explain how machines and tools are constructed, how they work and their areas of use
- explain how certain types of engines are constructed, work and perform
- strip down and assemble different engine components and explain their construction and how they work
- explain the construction of simple systems and components in gearing, steering and braking mechanisms and how they work
- explain the construction of dry couplings and how they work

- explain the structure of simple electrical and electronic systems and how they work
- measure basic electrical and hydraulic quantities and evaluate the results
- explain the construction of simple hydraulic/pneumatic systems and how they work, and carry out measurements of pressure and make adjustments
- explain the properties and areas of use for oil and fluids used in industrial machines
- use correct work techniques and good working positions, and explain the connection between ergonomics and health
- implement periodic and preventive maintenance of machines and equipment

The aims of the studies are to enable pupils to

- plan work and processes in line with relevant environment, health and safety regulations
- read and follow drawings and schedules for basic hydraulic and electrical systems
- search for and use products and EHS data sheets
- search for and use relevant information in English and Norwegian in order to carry out assignments
- record non-conformances and write non-conformance reports
- describe and follow relevant regulations for using industrial equipment
- write a risk assessment report in connection with the work assignment
- evaluate and document the results of their own work in relation to specifications, regulations and standards
- explain the principle of good customer service
- describe certificate requirements for working with construction and agricultural machinery
- calculate repair costs

Assessment

Vg2 Machines

Provisions for final assessment:

Overall achievement marks

Programme subject	Provisions
Trouble-shooting and repair work	Pupils shall have an overall achievement mark in each programme subject.
Documentation and quality	

Examination for pupils

Programme subject	Provisions
Trouble-shooting and repair work	The pupil shall take an interdisciplinary practical examination covering the common programme subjects.
Documentation and quality	The examination is prepared and graded locally.

Examination for external candidates

Programme subject	Provisions
Trouble-shooting and repair work	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.
Documentation and quality	The examination is prepared and graded locally.

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