

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 January 2008 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 01.08.2008

Purpose

Individuals and society are becoming more dependent on computer and electronic systems and devices. This applies to everything from consumer electronics to industrial and international communication, navigation and surveillance systems. Serious consequences can arise if these systems stop working. That is why it is important to have such systems installed and maintained by qualified professionals.

Learning in Production electronics is meant to promote the pupil's understanding of systems and devices and to inspire a comprehensive approach to thinking, combined with a good mind for details and the ability to evaluate problems. Furthermore, learning in the subject shall contribute to personal development, creativity and the ability to reorganize, and inspire innovation. Learning in the subject shall also promote an understanding of safety, an understanding of the need for personal data protection and the ability to see the consequences of choices one makes that are related to Environment, Health and Safety. Awareness of local, national and global ecological interrelationships related to electromechanical and electronic systems can help ensure a more environmentally friendly use of resources and promote sustainable development.

Learning in the subject shall emphasise mastery, reflection, insight and conscious choices related to electromechanical and electronic systems and devices. This part of the learning process will advance quality of production processes. An understanding of safety and applying existing rules for the profession shall be central elements in learning. Business studies and training in using the company's internal control routines and procedures will promote independence and cooperation with others in one's same field and with other professionals in other trades. Furthermore, this part of the learning will emphasise customer relations, service attitudes and the ability to communicate with users, support personnel and colleagues. Precision, creativity and problem solving are thought processes involved in performing work and are central elements in the subject.

The apprentice shall learn planning skills, gain an understanding of systems and devices and learn technical skills through comprehensive learning tasks that shall form the basis for taking the Trade Examination and function as building blocks for lifelong learning.

Successful completion of one's training leads to a Trade Certificate. The professional title is Production electronics technician.

Structure

Production Electronics consists of two main subject areas. The main subject areas complement each other, and should be viewed in relation to one another.

Overview of the main subject areas:

Year level	Main subject areas
Vg3 / In-service training at a training establishment	Electromechanics Electronics

Main subject areas

The main subject area covers assembly, functions testing and documentation of electromechanical systems. Integrated in this subject are business studies, knowledge of materials and components, measuring technology, calculations, communication, quality assurance, Environment, Health and Safety, the use of manual and digital tools and compliance to standards that are established for this trade.

The main subject area covers manual and automated production, and troubleshooting and repairing electronic systems and devices. Integrated in this subject are business studies, knowledge of

components, understanding schematics, measuring technology, testing, quality assurance, Environment, Health and Safety, the use of manual and digital tools and compliance to standards that are established for this trade.

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 Production electronics, basic skills are understood as follows:

Being able to express oneself orally and in writing in Production electronics involves communicating clearly and precisely with customers, colleagues and professionals from other trades. Professional discussions about safety and the choice of solutions, planning, guidance, user training and documentation of work that was done are some examples of working situations that require good language skills. This involves developing a precise language and good communication skills so that misunderstandings and dangerous situations can be avoided while current quality requirements are upheld.

Being able to read in Production electronics involves understanding different expository texts in Norwegian and English that ensure work is always done in line with current standards, suggestions and the needs of customers. These texts may include installation or assembly instructions, rules, standards, work descriptions, data sheets and Environment, Health and Safety procedures. This also involves developing an understanding of texts related to service manuals as a basis for preventive maintenance and systematic troubleshooting.

Numeracy in Production electronics involves performing calculations during planning, setting up time use and price estimates, calculating expected measurement values, evaluating measurement results and understanding electrical systems and in connection with systematic troubleshooting.

Digital and computer literacy in Production electronics involves searching for information and production of technical documents for systems and devices. Digital tools are also used for programming, configuring, measuring, logging and troubleshooting.

Competence aims

Electromechanics

The aims of the training are to enable the apprentice to

- plan, install, control, do functions tests, start-up operation and document electromechanical products based on local business and industry
- plan, carry out and document measurements using analogue and digital measuring tools
- perform work in accordance with current standards
- use automated assembly equipment
- use tools and machines for mechanical work
- plan, carry out and document control checks, repairs and maintenance on assembly equipment, tools and machines
- use data sheets and reference books when selecting components and materials
- describe the company's organization, quality assurance system and internal control routines
- describe the history of your trade and its place in society
- describe and work according to current rules for Environment, Health and Safety
- communicate in a precise and professional manner with colleagues, customers and representatives from other trades
- plan, document and bring to life new ideas for products and services that might simplify and improve the trade

- document own learning and training in the field of electromechanics

Electronics

The aims of the training are to enable the apprentice to

- plan, install, control, do functions tests, start-up operation and document electronic products based on local business and industry
- perform soft soldering work
- perform manual and automated production of printed circuit boards
- use a microscope as a tool
- use tools and machines for working on components
- plan, carry out and document control checks, repairs and maintenance on assembly equipment, tools and machines
- plan, document and carry out measurements with analogue and digital measuring tools based on a circuit diagram
- plan, document and carry out troubleshooting and repairs to electronic systems and devices
- plan, document and carry out testing and final inspections on electronic systems and devices
- perform work in accordance with current standards and ESD routines
- use data sheets and reference books when selecting components and materials
- describe clean room processes
- describe the company's organization, quality assurance system and internal control routines
- describe and work according to current rules for Environment, Health and Safety
- plan, document and bring to life new ideas for products and services that might simplify and improve the trade
- communicate in a precise and professional manner with colleagues, customers and representatives from other trades
- document own learning and training in the field of electronics

Assessment

Vg3 Production Electronics

Provisions for final assessment:

Main subject areas	Provision
Electromechanics	All apprentices shall sit for a trade examination, which is normally carried out over a period of six working days.
Electronics	

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