Diploma in Mechanical Technology (fyrst cycle, level 1)

The programme leading to a Diploma in Mechanical Technology is 90 ECTS credits, taught through distance learning. The requirements for the Diploma in Mechanical Technology reflect the requirements for the professional title of Certified Technician (Icelandic: iðnfræðingur), as accredited by the Icelandic Ministry of Industries.

The programme is practically orientated, rooted in the machine, metal and energy industry. Emphasis is placed on practical project work and the application of computer design tools. Most of the teachers have extensive industrial experience. In the final semester, students complete a final project of 12 ECTS dealing with technical solutions in development, design and planning, wherein they demonstrate the knowledge and professional competence they have gained.

The main objective of the programme is to qualify students for jobs as intermediate professionals, filling the gap between certified tradesmen and higher level technical staff.

Upon completion of the programme, the following criteria shall be fulfilled.

KNOWLEDGE Upon completion of the programme, the student should have gained general knowledge and understanding of basic principles of the following:	
	• Mechanics, materials science, thermodynamics, hydraulics, machine elements and design, digital technology and programmable controllers. • Computer-aided drawing and design, including the methods and tools most commonly used i.e. AutoCad, and Inventor or SolidWorks. • Project management, including the methods and software most commonly used in scheduling and planning i.e. MSc Project. • The general structure of design projects in the metal and energy industry. • The provisions of Icelandic laws, regulations, standards and ethics relating to the metal, machine and energy industry. • Basic principles of finance, management, administration, and operational safety related to the management of smaller industrial enterprises. • Didactics, especially pertaining to the instruction of apprentices.

SKILLS

Upon completion of the programme, the student should have gained the skills to:

Disciplinary skills	• Work with design software such as AutoCad and Inventor/SolidWorks. • Make technial drawings according to standards. • Assess the load bearing capacity of relatively simple machine elements in Inventor. • Prepare tender documents and offers for construction projects, as well as project plans, schedules and cost estimates. • Draft the size and design of individual and assembled machine elements, and choose spare parts. • Calculate energy and pressure losses in pipes and simple installation systems. • Draft the size and type of heat transformers, and choose pumps. • Utilize basic knowledge of digital technology and programmable controllers to solve problems. • Do accounting for small businesses, both by hand and using appropriate software. • Make calculations relating to administration, salaries, taxes, cash-flow, indexation and bonds for small businesses. • Apply knowledge of safety standards and procedures, administration and management to processes in production and industrial enterprises. • Integrate knowledge from all subjects taught in the Mechanical Technology programme to analyse problems in the field, suggest solutions and evaluate the need for expert assistance.
Personal skills	• Express him-/herself orally and in writing, and convey knowledge in a concise and professional manner. • Use practical knowledge to solve technical problems. • Apply technical methods in a systematic manner to define problems, and to collect and assess information. • Use independent and effective procedures to solve problems in practical project work for the industry. • Present possible solutions and results in a professional manner.
Interpersonal skills	• Work and communicate effectively in a team, also in interdisciplinary teams, and share knowledge. • Collect information relevant to a specific task by using personal and professional contacts, libraries, and search engines. • Use freehand sketches for explaining and communicating on site. • Make presentations of technical projects, using appropriate technical language and software. • Associate with owners, employers and employees in accordance with the laws, regulations, ethics, and codes of conduct that are applicable in the industry.

COMPETENCE

Upon completion of the programme, the student should be able to utilize the knowledge and skills he/she has acquired to:

- Work on traditional and common tasks in the designing of machines, machine elements and instillation systems, alongside mechanical engineers.
- Work as supervisors and inspectors in the metal and machine industry, and on sites.
- Work in manufacturing, production and maintenance of machines and equipment.
- Work on accounting in industrial enterprises, albeit with professional assistance in more complex tasks.
- Instruct and be responsible for apprentices, as a master tradesman.
- Pursue further studies, through life-long learning or towards a more advanced degree i.e. at BSc level.