Degree Programme in Electrical Engineering (240 cr)

English translation, degree programme conducted in swedish.

Degree: **YH-examen inom teknik**
Qualification title: **Ingenjör (YH)**
Duration of studies: **4 år**
Study type: **Full-time**

» Generic competences
» Language Information for Students with Swedish or Finnish as Prior Language of Instruction.

Kontaktuppgifter: Enheter | Utbildningsansvariga

Code	Name	Cr/year/total					
		1	2	3	4	5	Total
Gru	**Core Studies**						60 cr
TKV18TG01	**Engineering Core Studies 1**	15					15 cr
TKV18IN01	• **Introduction to UAS Studies**	1					1 cr
TKV18MA01	• **Functions and Equations 1**	3					3 cr
TKV18MA02	• **Geometry and Vectors**	3					3 cr
TKV18GF01	• **Basic Course in Business Economics**	3					3 cr
TKV18TD01	• **Applied Software Tools**	5					5 cr
TKV18TG02	**Engineering Core Studies 2**	17					17 cr
TKV18MA03	• **Functions and Equations 2**	3					3 cr
TKV18MA04	• **Derivatives and Integrals**	3					3 cr
TKV18ME01	• **Mechanics**	5					5 cr
TKV18EL01	• **Electricity and Magnetism**	3					3 cr
TKV18SV01	• **Swedish for Engineers**	3					3 cr
TKV18TG03	**Engineering Core Studies 3**		15				15 cr
TKV18MA05	• **Differential Equations**		3				3 cr
TKV18EN01	• **English for Working Life** *The course enables the students to become confident in using English at work and in situations connected with work by providing them tools for basic job related documents and, to improve their understanding of grammar to allow them to work more successfully in English.* *The course will also give tools for students to be able to negotiate and manage meetings and other working life related situations in English, while at the same time developing fluency in English.*		3				3 cr
TKV18HV01	• **Hydromechanics and Thermal Physics**		4				4 cr
TKV18FI01	• **Finnish**		2				2 cr
TKV18AE01	• **General Energy Technology**		3				3 cr
TKV18TG04	**Engineering Core Studies 4**			13			13 cr
TKV18EN02	• **Technical English for Engineers** *The course enables the students to understand the differences between Standard English and language for special purposes.* *Students will also broaden their knowledge of common features of academic and technical writing and are able to apply their skills to their future engineering reports.* *Students learn how to express themselves orally by presenting and discussing technical phenomena whereby they will also be given tools to expand their grammatical knowledge and engineering English vocabulary enabling them to use a greater range of structures while speaking and writing in English.*			3			3 cr
TKV18FI02	• **Finnish for Working Life**			4			4 cr

TKV18TR01	• **Technical Reporting**			3			3 cr
TKV18KE01	• **Chemistry**			3			3 cr
Yrk	**Common Professional Studies**						60 cr
ELA18G1	**BASICS IN ELECTRICAL AND AUTOMATION ENGINEERING 1**	15					15 cr
ELA18GY01	• **Digital Technology**	6					6 cr
ELA18GY02	• **Computer Systems**	3					3 cr
ELA18GY03	• **Programmable Controllers**	3					3 cr
ELA18GY04	• **Basics in Programming**	3					3 cr
ELA18G2	**BASICS IN ELECTRICAL AND AUTOMATION ENGINEERING 2**	15					15 cr
ELA18GY05	• **Basics in Electrical Engineering, AC**	3					3 cr
ELA18GY06	• **Electrical Safety and Measurements**	3					3 cr
ELA18GY07	• **Software Tools for Electrical Engineering and IT**	3					3 cr
ELA18GY08	• **Internet Technology**	3					3 cr
ELA18GY09	• **Analog Electronics**	3					3 cr
ELA18G3	**BASICS IN ELECTRICAL AND AUTOMATION ENGINEERING 3**		15				15 cr
ELA18GY10	• **Vector and Matrix Algebra**		3				3 cr
ELA18GY11	• **Database Technology**		3				3 cr
ELA18GY12	• **Basics in Three-Phase Systems**		3				3 cr
ELA18GY13	• **Networks**		3				3 cr
ELA18GY14	• **Electrostatic and Magnetic Fields**		3				3 cr
ELA18G4	**BASICS IN ELECTRICAL AND AUTOMATION ENGINEERING 4**		15				15 cr
ELA18GY15	• **Frequency Analysis**		3				3 cr
ELA18GY16	• **Basics in Technical Drawing**		3				3 cr
ELA18GY17	• **Battery Technology**		6				6 cr
ELA18GY18	• **Basics in Installations**		3				3 cr
	Professional Studies: Automation Technology *The profile choice must be approved by the Head of Degree Programme. The profiling studies in the field of electrical and automation engineering education are completed within the vocational studies with a total degree*						60 cr

	of 60 credits. *In order for studies within a particular profile to begin, it is necessary that at least 10 students have chosen the profile in question. The maximum number of seats in the profiling studies is limited. The content of the profiling studies may vary based on individual students' wishes and the course's courses offered on a yearly basis.*						
ELA18PT	**Process Engineering**		15				15 cr
ELA18PT01	**• Process Systems Engineering**		6				6 cr
ELA18PT02	**• Signals and Measurement Systems**		3				3 cr
ELA18PT03	**• Process Measurements**		6				6 cr
ELA18RE	**Control Engineering and System Design**			15			15 cr
ELA18RE01	**• Basics of Control Engineering**			6			6 cr
ELA18RE02	**• Control Systems**			3			3 cr
ELA18RE03	**• Autonomous Systems**			3			3 cr
ELA18SS04	**• Relays and Station Automation**			3			3 cr
ELA18AD	**Analog and Digital Electronics**			15			15 cr
ELA18AD01	**• Analog Circuits**			3			3 cr
ELA18AD02	**• Microprocessor Technology**			6			6 cr
ELA18AD03	**• Applied A/D-Technology**			6			6 cr
ELA18AU	**Automation Systems**				15		15 cr
ELA18AU01	**• Building Automation**				3		3 cr
ELA18AU02	**• Industrial Communications**				6		6 cr
ELA18AU03	**• Industrial Automation Systems**				6		6 cr
	Professional Studies: Information Technology *The profile choice must be approved by the Head of Degree Programme. The profiling studies in the field of electrical and automation engineering education are completed within the vocational studies with a total degree of 60 credits.* *In order for studies within a particular profile to begin, it is necessary that at least 10 students have chosen the profile in question. The maximum number of seats in the profiling studies is limited. The content of the profiling studies may vary based on individual students' wishes and the course's courses offered on a yearly basis.*						60 cr
ELA18PR	**Programming Techniques**		15				15 cr
ELA18PR01	**• Data Structures and Algorithms**		3				3 cr
ELA18PR02	**• Database Programming**		3				3 cr
ELA18PR03	**• Extended Programming**		3				3 cr

ELA18PR04	• **Object Orientated Programming**		3				3 cr
ELA18PR05	• **User Interfaces**		3				3 cr
ELA18AM	**Administration**			15			15 cr
ELA18AM01	• **Database Administration**			4			4 cr
ELA18AM02	• **System Administration**			5			5 cr
ELA18AM03	• **System Programming**			3			3 cr
ELA18AM04	• **Software Engineering**			3			3 cr
ELA18DS	**Distributed Systems**			15			15 cr
ELA18DS01	• **Signals and Systems**			3			3 cr
ELA18DS02	• **Graphic Programming**			3			3 cr
ELA18DS03	• **Service Orientated Systems**			4			4 cr
ELA18DS04	• **Hybrid Systems**			5			5 cr
ELA18IK	**ICT**				15		15 cr
ELA18IK01	• **Embedded Systems**				3		3 cr
ELA18IK02	• **Network Systems**				3		3 cr
ELA18IK03	• **Mobile Systems**				4		4 cr
ELA18IK04	• **Web Systems**				5		5 cr
	Professional Studies: Electric Power Engineering *The profile choice must be approved by the Head of Degree Programme. The profiling studies in the field of electrical and automation engineering education are completed within the vocational studies with a total degree of 60 credits.* *In order for studies within a particular profile to begin, it is necessary that at least 10 students have chosen the profile in question. The maximum number of seats in the profiling studies is limited. The content of the profiling studies may vary based on individual students' wishes and the course's courses offered on a yearly basis.*						60 cr
ELA18EA	**Power Stations**		15				15 cr
ELA18EA01	• **Transient Analysis**		3				3 cr
ELA18EA02	• **Transformers**		3				3 cr
ELA18EA03	• **Rotating Motors**		6				6 cr
ELA18EA04	• **Switchgears**		3				3 cr
ELA18EI	**Electrical Installations**			15			15 cr

ELA18EI01	• **Electrical Drawing Design**			3			3 cr
ELA18EI02	• **Luminaries and Lighing Techniques**			3			3 cr
ELA18EI03	• **Planning of Electrical Installations**			6			6 cr
ELA18EI04	• **Electrical Networks**			3			3 cr
ELA18SS	**Control and Protection**			15			15 cr
ELA18SS01	• **Power Electronics**			3			3 cr
ELA18SS02	• **Frequency Converters**			3			3 cr
ELA18SS03	• **Applied Control Engineering**			3			3 cr
ELA18SS04	• **Relays and Substation Automation**			3			3 cr
ELA18SS05	• **Distribution Automation**			3			3 cr
ELA18EK	**Electrical Power Systems**				15		15 cr
ELA18EK01	• **Electrical Power Utilization**				6		6 cr
ELA18EK02	• **Power Quality**				3		3 cr
ELA18EK03	• **High Voltage Engineering**				3		3 cr
ELA18EK04	• **Electric Power Transmission**				3		3 cr
	PROFESSIONAL STUDIES: ENERGY TECHNOLOGY *The profile choice must be approved by the Head of Degree Programme. The profiling studies in the field of electrical and automation engineering education are completed within the vocational studies with a total degree of 60 credits.* *In order for studies within a particular profile to begin, it is necessary that at least 10 students have chosen the profile in question. The maximum number of seats in the profiling studies is limited. The content of the profiling studies may vary based on individual students' wishes and the course's courses offered on a yearly basis.*						60 cr
ELA18EE	**Environmental Engineering**		15				15 cr
ELA18EE01	• **Environmental Awareness**						6 cr
ELA18EE02	• **Sustainability in Engineering Solutions**						9 cr
ELA18TE	**Process Technology**			15			15 cr
ELA18TE01	• **Energy; Resources, Transfer and Storage**						6 cr
ELA18TE02	• **Combustion Engineering**						9 cr
ELA18CO	**Control and Optimization**			15			15 cr
ELA18CO01	• **Modelling, Simulations and Optimization of Energy Systems**						6 cr

ELA18CO02	• **Control and Systems Engineering**						9 cr
ELA18ES	**Energy Systems**				15		15 cr
ELA18ES01	• **Technology; Solutions, Design and Engineering**						6 cr
ELA18ES02	• **Bio-economy Innovation**						3 cr
ELA18ES03	• **Distributed Energy Systems**						6 cr
Pra	**Working Experience** *In all courses, 30 ECTS credits are included. The internship periods are divided into three periods at 10 credits per internship. The periods are based on each other and usually take place one at a time with theoretical courses between the respective internships.*						30 cr
ELA18PRA1	**Practical Trainig 1**	10					10 cr
ELA18PRA2	• **Practical Trainig 2**		10				10 cr
Val	**Elective Studies** *The optional studies are study units or courses that the student can choose freely, but the content should support the student's professional growth. Elective studies must be university studies (Article 9 of the Degree Regulations).*						15 cr
ELA18VAL	**Elective Studies**				15		15 cr
EXA	**Thesis**						15 cr
ELA18EXA	**Bachelor Thesis**				15		15 cr