Master of Science in Mechanical Engineering

300 credits

Civilingenjörsprogram i maskinteknik

6CMMM

Valid from: 2019 Spring semester

Determined by
Board of Studies for Mechanical Engineering and Design

Date determined
2018-08-31

Entry requirements

Degree in Swedish

Civilingenjör 300 hp och Teknologie master 120 hp

Degree in English

Master of Science in Engineering 300 credits and Master of Science 120 credits

Curriculum

Semester 1 (Autumn 2019)

Course code	Course name	Credits	Level	Timetable module	ECV
Period 0					
TATM79	Foundation Course in Mathematics	6*	G1X	-	C
Period 1					
TATA67	Linear Algebra with Geometry	6*	G1X	4	C
TATM79	Foundation Course in Mathematics	6*	G1X	4	C
TMKT94	Introduction to CAD	6*	G1X	1	C
TMMV04	Engineering Thermodynamics	6	G1X	2	C
Period 2					
TATA67	Linear Algebra with Geometry	6*	G1X	4	C
TDDE04	Introduction to Programming and Computational Thinking	6	G1X	3	C
TMKT94	Introduction to CAD	6*	G1X	2	C

Semester 2 (Spring 2020)

Course code	Course name	Credits	Level	Timetable module	ECV
Period 1					
TATA41	Calculus in One Variable 1	6	G1X	3	C
TEAE04	Industrial Economics and Organisation	6	G1X	2	C
TMMT04	Experimental Mechanical Engineering	6*	G1X	1	C
THEN18	English	6*	G1X	4	E
TGTU96	Sustainable study situation	2*	G1X	-	V
Period 2					
TATA42	Calculus in One Variable 2	6	G1X	3	C
TMME63	Engineering Mechanics - Statics	6	G1X	2	C
TMMT04	Experimental Mechanical Engineering	6*	G1X	1	C
THEN18	English	6*	G1X	4	E
TGTU96	Sustainable study situation	2*	G1X	-	V

Semester 3 (Autumn 2020)

Course code	Course name	Credits	Level	Timetable module	ECV
Period 1					
TATA69	Calculus in Several Variables	6	G1X	4	C
TMHL22	Solid Mechanics	6	G2X	3	C
TMPS34	Manufacturing Engineering	6*	G1X	2	C
Period 2					
TMME28	Engineering Mechanics - Dynamics	6	G1X	2	C
TMMV11	Fluid Mechanics and Heat Transfer	6	G2X	3	C
TMPS34	Manufacturing Engineering	6*	G1X	4	C

Semester 4 (Spring 2021)

Course code	Course name	Credits	Level	Timetable module	ECV
Period 1					
TAMS11	Probability and Statistics, First Course	6	G2F	1	C
TMKA02	Mechanical Design Methodology and Product Development	6*	G2X	3	C
TMKM12	Engineering Materials Metals	6	G1X	4	C
TSRT04	Introduction in Matlab	2	G1X	2	E
Period 2					
TKMJ24	Environmental Engineering	6	G1N	4	C
TMHL24	Solid Mechanics - Design Criteria	6	G2X	1	C
TMKA02	Mechanical Design Methodology and Product Development	6*	G2X	2	C
TPTE06	Industrial Placement	6	G1X	-	E

Semester 5 (Autumn 2021)

Course code	Course name	Credits	Level	Timetable module	ECV
Period 1					
TMEL08	Electrical Systems	6	G2X	2	C
TMHL63	Introduction to Computational Mechanics	6	G2X	3	C
TMKM14	Industrial Material Selection	6*	G2X	1	C
THFR05	Communicative French	6*	G1X	4	E
THSP05	Spanish	6*	G1X	4	E
THTY05	German	6*	G1X	4	E
Period 2					
TMKM14	Industrial Material Selection	6*	G2X	1	C
TMKT39	Machine Elements	6	G2X	2	C
TSRT19	Automatic Control	6	G2X	4	C
THFR05	Communicative French	6*	G1X	4	E
THSP05	Spanish	6*	G1X	4	E
THTY05	German	6*	G1X	4	E

Semester 6 (Spring 2022)

Course code	Course name	Credits	Level	Timetable module	ECV
Period 1					
TMMS21	Mechatronics	6	G2X	1	C
TMMT31	Bachelor Thesis - Mechanical Engineering	18*	G2X	-	C
TPPE91	Production System Planning and Management	6	G2X	2	C
THFR27	French with a technical focus	6*	G1N	4	E
THSP27	Spanish with a technical focus	6*	G1N	4	E
THTY27	German with a Technical Focus	6*	G1N	4	E
Period 2					
TMMT31	Bachelor Thesis - Mechanical Engineering	18*	G2X	-	C
THFR27	French with a technical focus	6*	G1N	4	E
THSP27	Spanish with a technical focus	6*	G1N	4	E
THTY27	German with a Technical Focus	6*	G1N	4	E

Semester 7 (Autumn 2022)

Course code	Course name	Credits	Level	Timetable module	ECV
Period 1					
TANA21	Scientific Computing	6	G1X	3	E
TDDE18	Programming C++	6*	G2X	2	E
TDDE56	Foundations of AI and Machine Learning	6*	G2F	-	E
TEIM11	Industrial Marketing	6	G2X	3	E
TEIO19	Industrial Management	6	G2F	4	E
TETS37	Basics in Logistics Management	6	G2X	4	E
TFYA88	Additive Manufacturing: Tools, Materials and Methods	6	A1X	3	E
TKMJ31	Biofuels for Transportation	6	A1N	1	E
TMAL02	Aircraft and Vehicle Design	6	G2F	4	E
TMHL03	Mechanics of Light Structures	6	A1X	4	E
TMHP02	Fluid Power Systems	6	G2X	2	E
TMKO02	Engineering Materials and Manufacturing Technology	6	A1X	2	E
TMKT69	Conceptual Design - Project Course	6	A1N	4	E
TMKT80	Wood - Material	6	G2X	2	E
TMME14	Machine Elements, Second Course	6	A1X	3	E
TMME40	Vibration Analysis of Structures	6	A1X	3	E
TMME67	Musculoskeletal Biomechanics and Human Movements	6	A1X	2	E
TMMI68	CAD and Drafting Techniques, Continued Course	6*	G2X	2	E
TMMV01	Aerodynamics	6	A1X	2	E
TMMV18	Fluid Mechanics	6	A1X	1	E
TMPS33	Virtual Manufacturing	6	A1N	4	E
TMPT03	Production Engineering - Continuing Course	6	G2F	2	E
TMQU03	Quality Management and Engineering	6	G2X	2	E
TPPE16	Manufacturing Strategies	6	A1X	2	E
TSFS09	Modelling and Control of Engines and Drivelines	6*	A1X	4	E
TMPP02	Project Course - Race Vehicle Engineering	6*	G1X	-	V

Course code	Course name	Credits	Level	Timetable module	ECV
Period 2					
TATA71	Ordinary Differential Equations and Dynamical Systems	6	G2X	2	E
TDDE18	Programming C++	6*	G2X	1	E
TDDE56	Foundations of AI and Machine Learning	6*	G2F	1	E
TEIE42	Industrial Sales Management	6	A1X	4	E
TEIM10	Industrial Service Development	6	A1X	2	E
TETS27	Supply Chain Logistics	6	A1X	2	E
TFYA96	The physics behind technology	6	G2X	4	E
TGTU04	Leadership	6	G2X	2	E
TGTU49	History of Technology	6	G1X	3	E
TMES17	Building Energy Systems	6	A1N	3	E
TMES51	International Energy Markets	6	A1N	1	E
TMHL41	Continuum Mechanics	6	A1X	4	E
TMHP03	Engineering Systems Design	6	A1X	4	E
TMKA03	Industrial Design	6	G2X	1	E
TMKM90	Engineering Materials - Deformation and Fracture	6	A1X	2	E
TMKO05	Additive Manufacturing for Industrial Applications	6	G2X	3	E
TMKT71	Affective Engineering	6	A1X	2	E
TMME50	Flight Mechanics	6	A1X	2	E
TMMI68	CAD and Drafting Techniques, Continued Course	6*	G2X	4	E
TMMS31	Biomechanical Modelling of Tissues and Systems	6	A1N	4	E
TMMV62	Computational Heat Transfer	6	A1X	1	E
TMPR01	Wood - Realisation	6	G2X	1	E
TMPS31	Sustainable Manufacturing	6	A1N	1	E
TMQU12	Lean Production	6	A1X	2	E
TPPE76	Operations Planning and Control	6	A1N	4	E
TSEA81	Computer Engineering and Real-time Systems	6	A1X	4	E
TSFS02	Vehicle Dynamics and Control	6	A1N	1	E

Course code	Course name	Credits	Level	Timetable module	ECV
TSFS09	Modelling and Control of Engines and Drivelines	6*	A1X	3	E
TSIU02	Computer Hardware and Architecture	4	G1X	2	E
TSRT06	Automatic Control, Advanced Course	6	A1N	2	E
TSRT78	Digital Signal Processing	6	A1F	2	E
TMPP02	Project Course - Race Vehicle Engineering	6*	G1X	-	V

Specialisation: Aeronautical Engineering

Course code	Course name	Credits	Level	Timetable module	ECV
Period 1					
TMAL02	Aircraft and Vehicle Design	6	G2F	4	C
TMMV01	Aerodynamics	6	A1X	2	C
TAOP88	Engineering Optimization	6	G2X	1	E
TMHL03	Mechanics of Light Structures	6	A1X	4	E
Period 2					
TMHP03	Engineering Systems Design	6	A1X	4	C
TMME50	Flight Mechanics	6	A1X	2	C
TMHL41	Continuum Mechanics	6	A1X	4	E
TMMS20	Structural Optimization	6	A1X	1	E

Specialisation: Energy and Environmental Engineering

Course code	Course name	Credits	Level	Timetable module	ECV
Period 1					
TAOP88	Engineering Optimization	6	G2X	1	C
TKMJ53	Perspectives on energy and environmental systems	12	G2F	2/4	C
Period 2					
TMES17	Building Energy Systems	6	A1N	3	C
TMES51	International Energy Markets	6	A1N	1	E

Specialisation: Engineering Design and Product Development

Course code	Course name	Credits	Level	Timetable module	ECV
Period 1					
TAOP88	Engineering Optimization	6	G2X	1	C
TMKT69	Conceptual Design - Project Course	6	A1N	4	C
TDDE56	Foundations of AI and Machine Learning	6*	G2F	-	E
TMHL03	Mechanics of Light Structures	6	A1X	4	E
TMKO02	Engineering Materials and Manufacturing Technology	6	A1X	2	E
TMME14	Machine Elements, Second Course	6	A1X	3	E
TMMI68	CAD and Drafting Techniques, Continued Course	6*	G2X	2	E
TMPT03	Production Engineering - Continuing Course	6	G2F	2	E
Period 2					
TDDE56	Foundations of AI and Machine Learning	6*	G2F	1	E
TFYA96	The physics behind technology	6	G2X	4	E
TMHP03	Engineering Systems Design	6	A1X	4	E
TMKA11	Model-based System-of-Systems Engineering	6	A1X	3	E
TMKM90	Engineering Materials - Deformation and Fracture	6	A1X	2	E
TMKO05	Additive Manufacturing for Industrial Applications	6	G2X	3	E
TMKT71	Affective Engineering	6	A1X	2	E
TMMI68	CAD and Drafting Techniques, Continued Course	6*	G2X	4	E
TMMV62	Computational Heat Transfer	6	A1X	1	E
TMPS31	Sustainable Manufacturing	6	A1N	1	E

Specialisation: Engineering materials

Course code	Course name	Credits	Level	Timetable module	ECV
Period 1					
TAOP88	Engineering Optimization	6	G2X	1	C
TMKO02	Engineering Materials and Manufacturing Technology	6	A1X	2	C
TMHL03	Mechanics of Light Structures	6	A1X	4	E
TMKT69	Conceptual Design - Project Course	6	A1N	4	E
TMKT80	Wood - Material	6	G2X	2	E
TMME14	Machine Elements, Second Course	6	A1X	3	E
TMPT03	Production Engineering - Continuing Course	6	G2F	2	E
Period 2					
TMKM90	Engineering Materials - Deformation and Fracture	6	A1X	2	C
TMHL41	Continuum Mechanics	6	A1X	4	E
TMKO05	Additive Manufacturing for Industrial Applications	6	G2X	3	E
TMMV62	Computational Heat Transfer	6	A1X	1	E
TMPS31	Sustainable Manufacturing	6	A1N	1	E

Specialisation: Engineering Mechanics

Course code	Course name	Credits	Level	Timetable module	ECV
Period 1					
TMHL03	Mechanics of Light Structures	6	A1X	4	C
TAOP88	Engineering Optimization	6	G2X	1	E
TMME40	Vibration Analysis of Structures	6	A1X	3	E
TMME67	Musculoskeletal Biomechanics and Human Movements	6	A1X	2	E
TMMV01	Aerodynamics	6	A1X	2	E
TMMV18	Fluid Mechanics	6	A1X	1	E
Period 2					
TMHL41	Continuum Mechanics	6	A1X	4	C
TMMS31	Biomechanical Modelling of Tissues and Systems	6	A1N	4	E
TMMV62	Computational Heat Transfer	6	A1X	1	E

Specialisation: Logistics and Supply Chain Management

Course code	Course name	Credits	Level	Timetable module	ECV
Period 1					
TAOP88	Engineering Optimization	6	G2X	1	C
TETS37	Basics in Logistics Management	6	G2X	4	C
TDDE56	Foundations of AI and Machine Learning	6*	G2F	-	E
TEIM11	Industrial Marketing	6	G2X	3	E
TMQU03	Quality Management and Engineering	6	G2X	2	E
TPPE16	Manufacturing Strategies	6	A1X	2	E
Period 2					
TETS27	Supply Chain Logistics	6	A1X	2	C
TDDE56	Foundations of AI and Machine Learning	6*	G2F	1	E
TMQU12	Lean Production	6	A1X	2	E
TPPE76	Operations Planning and Control	6	A1N	4	E

Specialisation: Mechatronics

Course code	Course name	Credits	Level	Timetable module	ECV
Period 1					
TAOP88	Engineering Optimization	6	G2X	1	C
TMHP02	Fluid Power Systems	6	G2X	2	C
TSFS09	Modelling and Control of Engines and Drivelines	6*	A1X	4	C
Period 2					
TSFS09	Modelling and Control of Engines and Drivelines	6*	A1X	3	C
TSRT06	Automatic Control, Advanced Course	6	A1N	2	C
TMME50	Flight Mechanics	6	A1X	2	E
TSFS02	Vehicle Dynamics and Control	6	A1N	1	E

Specialisation: Operations Management

Course code	Course name	Credits	Level	Timetable module	ECV
Period 1					
TAOP88	Engineering Optimization	6	G2X	1	C
TMPS33	Virtual Manufacturing	6	A1N	4	E
TMPT03	Production Engineering - Continuing Course	6	G2F	2	E
TPPE17	Corporate Finance	6	G2X	4	E
TPPE99	Simulation in Production and Logistics	6	A1X	3	E
Period 2					
TMQU12	Lean Production	6	A1X	2	C
TPPE76	Operations Planning and Control	6	A1N	4	C
TMPS31	Sustainable Manufacturing	6	A1N	1	E

Specialisation: Production Engineering

Course code	Course name	Credits	Level	Timetable module	ECV
Period 1					
TAOP88	Engineering Optimization	6	G2X	1	C
TMPT03	Production Engineering - Continuing Course	6	G2F	2	C
TDDE56	Foundations of AI and Machine Learning	6*	G2F	-	E
TETS37	Basics in Logistics Management	6	G2X	4	E
TMKO02	Engineering Materials and Manufacturing Technology	6	A1X	2	E
TMPS33	Virtual Manufacturing	6	A1N	4	E
TMQU03	Quality Management and Engineering	6	G2X	2	E
TPPE16	Manufacturing Strategies	6	A1X	2	E
Period 2					
TPPE76	Operations Planning and Control	6	A1N	4	C
TDDE56	Foundations of AI and Machine Learning	6*	G2F	1	E
TMKO05	Additive Manufacturing for Industrial Applications	6	G2X	3	E
TMPS31	Sustainable Manufacturing	6	A1N	1	E
TMQU12	Lean Production	6	A1X	2	E

Specialisation: Quality Management

Course code	Course name	Credits	Level	Timetable module	ECV
Period 1					
TAOP88	Engineering Optimization	6	G2X	1	C
TMQU03	Quality Management and Engineering	6	G2X	2	C
TEIM11	Industrial Marketing	6	G2X	3	E
TETS37	Basics in Logistics Management	6	G2X	4	E
TPPE16	Manufacturing Strategies	6	A1X	2	E
Period 2					
TMQU12	Lean Production	6	A1X	2	C
TETS27	Supply Chain Logistics	6	A1X	2	E

Semester 8 (Spring 2023)

Course code	Course name	Credits	Level	Timetable module	ECV
Period 1					
TDDE10	Object Oriented Programming in Java	6	G2X	1	E
TDDE50	Megagame - Design for Sustainable Development in the light of Climate Change	6*	G2X	-	E
TEIO13	Leadership and Organizational Change	6	A1X	4	E
TEIO94	Entrepreneurship and Idea Development	6*	G2F	4	E
TETS56	Logistics and Quality in Health Care	6	A1X	4	E
TETS57	Logistics Analysis	6	A1X	2	E
TGTU91	Oral and Written Communication	6	G1X	2	E
TGTU94	Technology and Ethics	6	G1X	1	E
TKMJ15	Environmental Management Strategies	6	G1F	3	E
TKMJ55	Industrial Ecology	6	A1N	1	E
TMAL51	Aircraft Conceptual Design	6	A1F	2	E
TMAL56	Aircraft Systems Engineering	6	A1F	1	E
TMES21	Industrial Energy Systems	6	A1F	3	E
TMES41	Strategic Development of Sustainable Energy Systems	6	A1F	1	E
TMES53	Energy management	6	A1N	2	E
TMHL62	The Finite Element Method; advanced course	6	A1X	4	E

Course code	Course name	Credits	Level	Timetable module	ECV
TMHP51	Hydraulic Servo Systems	6	A1X	3	E
TMKA13	Wood - Innovation	6	A1X	1	E
TMKO01	Advanced materials and the environment	6	A1X	2	E
TMKO04	Composite materials	6*	A1X	1	E
TMKT48	Design Optimization	6	A1X	3	E
TMKT59	Computers as Design Tools	6*	G2X	3	E
TMKT74	Advanced CAD	6	A1X	4	E
TMMI46	Industrial Automation	6	G2F	4	E
TMMS30	Multi Body Dynamics and Robotics	6	A1X	1	E
TMMV08	Computational Fluid Dynamics	6	A1X	3	E
TMPS22	Assembly Technology	6	A1N	3	E
TMQU31	Statistical Quality Control	6	A1X	2	E
TPPE78	Quantitative Models and Analysis in Operations Management	6	A1N	1	E
TSFS04	Electrical Drives	6	G2X	4	E
TSIU51	Project with Microcontroller	8*	G1X	3	E
TSRT07	Industrial Control Systems	6	A1N	2	E
Period 2					
TANA31	Computational Methods for Ordinary and Partial Differential Equations	6	A1X	2	E
TDDD12	Database Technology	6	G2X	4	E
TDDE50	Megagame - Design for Sustainable Development in the light of Climate Change	6*	G2X	-	E
TEAE13	Civil and Commercial Law	6	G1F	2	E
TEIO41	Corporate Social Responsibility	6	A1X	3	E
TEIO94	Entrepreneurship and Idea Development	6*	G2F	4	E
TETS36	Sustainable Logistics Systems	6	A1X	4	E
TGTU84	Diversity and Gender in Engineering	6	G1F	4	E
TGTU95	Philosophy of Science and Technology	6	G1X	4	E
TKMJ29	Resource Efficient Products	6	A1N	1	E
TMAL06	Aircraft Conceptual Design - Project Course	6	A1X	2	E
TMES43	Analysis and Modelling of Industrial Energy Systems	6	A1F	3	E

Course code	Course name	Credits	Level	Timetable module	ECV
TMHL61	Damage Mechanics and Life Analysis	6	A1X	2	E
TMHP06	Fluid power systems, advanced course	6	A1X	2	E
TMKO03	Metals for lightweight applications	6	A1X	3	E
TMKO04	Composite materials	6*	A1X	4	E
TMKO06	Biopolymers and Biocomposites	6	A1N	2	E
TMKT57	Product Modelling	6	A1X	3	E
TMKT59	Computers as Design Tools	6*	G2X	3	E
TMKT77	System Safety	6	A1X	4	E
TMKT83	Small Scale Renewable Energy Conversion	6	A1X	4	E
TMME11	Road Vehicle Dynamics	6	A1X	1	E
TMME19	Mechanics, second course	6	A1X	1	E
TMMV07	Computational Fluid Dynamics, advanced course	6	A1X	4	E
TMMV63	Computational Aerodynamics	6	A1X	3	E
TMPS27	Production Systems	6	A1X	3	E
TMQU04	Six Sigma Quality	6	A1X	2	E
TMQU13	Customer Focused Product and Service Development	6	A1X	4	E
TPPE74	Design and Development of Manufacturing Operations	6	A1X	4	E
TSFS03	Vehicle Propulsion Systems	6	A1X	3	E
TSFS06	Diagnosis and Supervision	6	A1N	1	E
TSFS11	Electrical and Energy Technology	6	G2F	4	E
TSIU51	Project with Microcontroller	8*	G1X	-	E

Specialisation: Aeronautical Engineering

Course code	Course name	Credits	Level	Timetable module	ECV
Period 1					
TMAL51	Aircraft Conceptual Design	6	A1F	2	C
TMMV08	Computational Fluid Dynamics	6	A1X	3	C
TMAL56	Aircraft Systems Engineering	6	A1F	1	E
TMHL62	The Finite Element Method; advanced course	6	A1X	4	E
TMKO01	Advanced materials and the environment	6	A1X	2	E
TMMS30	Multi Body Dynamics and Robotics	6	A1X	1	E
Period 2					
TMAL06	Aircraft Conceptual Design - Project Course	6	A1X	2	C
TMHL61	Damage Mechanics and Life Analysis	6	A1X	2	E
TMKO03	Metals for lightweight applications	6	A1X	3	E
TMKT57	Product Modelling	6	A1X	3	E
TMME11	Road Vehicle Dynamics	6	A1X	1	E
TMMV07	Computational Fluid Dynamics, advanced course	6	A1X	4	E
TMMV63	Computational Aerodynamics	6	A1X	3	E

Specialisation: Energy and Environmental Engineering

Course code	Course name	Credits	Level	Timetable module	ECV
Period 1					
TKMJ55	Industrial Ecology	6	A1N	1	C
TMES21	Industrial Energy Systems	6	A1F	3	C
TMES41	Strategic Development of Sustainable Energy Systems	6	A1F	1	E
TMES53	Energy management	6	A1N	2	E
TMKO01	Advanced materials and the environment	6	A1X	2	E
Period 2					
TKMJ29	Resource Efficient Products	6	A1N	1	C
TMES43	Analysis and Modelling of Industrial Energy Systems	6	A1F	3	E
TMKT83	Small Scale Renewable Energy Conversion	6	A1X	4	E

Specialisation: Engineering Design and Product Development

Course code	Course name	Credits	Level	Timetable module	ECV
Period 1					
TMKT48	Design Optimization	6	A1X	3	C
TMKT74	Advanced CAD	6	A1X	4	C
TDDE10	Object Oriented Programming in Java	6	G2X	1	E
Period 2					
TMKT77	System Safety	6	A1X	4	C
TKMJ29	Resource Efficient Products	6	A1N	1	E
TMKT57	Product Modelling	6	A1X	3	E

Specialisation: Engineering materials

Course code	Course name	Credits	Level	Timetable module	ECV
Period 1					
TMKO01	Advanced materials and the environment	6	A1X	2	C
TMKO04	Composite materials	6*	A1X	1	C/E
TFYM04	Growth and characterization of nanomaterials	6*	A1X	1	E
TMHL62	The Finite Element Method; advanced course	6	A1X	4	E
TMKT48	Design Optimization	6	A1X	3	E
Period 2					
TMKO06	Biopolymers and Biocomposites	6	A1N	2	C
TMKO03	Metals for lightweight applications	6	A1X	3	C/E
TMKO04	Composite materials	6*	A1X	4	C/E
TFYA21	Physical Metallurgy	6	A1F	3	E
TFYM04	Growth and characterization of nanomaterials	6*	A1X	1	E
TMHL61	Damage Mechanics and Life Analysis	6	A1X	2	E

Specialisation: Engineering Mechanics

Course code	Course name	Credits	Level	Timetable module	ECV
Period 1					
TMHL62	The Finite Element Method; advanced course	6	A1X	4	C/E
TMMV08	Computational Fluid Dynamics	6	A1X	3	C/E
TMKO01	Advanced materials and the environment	6	A1X	2	E
TMKO04	Composite materials	6*	A1X	1	E
TMMS30	Multi Body Dynamics and Robotics	6	A1X	1	E
Period 2					
TMHL61	Damage Mechanics and Life Analysis	6	A1X	2	E
TMKO04	Composite materials	6*	A1X	4	E
TMME11	Road Vehicle Dynamics	6	A1X	1	E
TMME19	Mechanics, second course	6	A1X	1	E
TMMV07	Computational Fluid Dynamics, advanced course	6	A1X	4	E
TMMV63	Computational Aerodynamics	6	A1X	3	E

Specialisation: Logistics and Supply Chain Management

Course code	Course name	Credits	Level	Timetable module	ECV
Period 1					
TETS57	Logistics Analysis	6	A1X	2	C
TETS56	Logistics and Quality in Health Care	6	A1X	4	E
Period 2					
TETS36	Sustainable Logistics Systems	6	A1X	4	C
TKMJ29	Resource Efficient Products	6	A1N	1	E
TMPS27	Production Systems	6	A1X	3	E

Specialisation: Mechatronics

Course code	Course name	Credits	Level	Timetable module	ECV
Period 1					
TMHP51	Hydraulic Servo Systems	6	A1X	3	E
TMMS30	Multi Body Dynamics and Robotics	6	A1X	1	E
TSFS04	Electrical Drives	6	G2X	4	E
TSRT07	Industrial Control Systems	6	A1N	2	E
Period 2					
TMHP06	Fluid power systems, advanced course	6	A1X	2	E
TMME11	Road Vehicle Dynamics	6	A1X	1	E
TSFS03	Vehicle Propulsion Systems	6	A1X	3	E
TSFS06	Diagnosis and Supervision	6	A1N	1	E
TSRT14	Sensor Fusion	6	A1N	2	E

Specialisation: Operations Management

Course code	Course name	Credits	Level	Timetable module	ECV
Period 1					
TPPE78	Quantitative Models and Analysis in Operations Management	6	A1N	1	C/E
TMPS22	Assembly Technology	6	A1N	3	E
TMQU31	Statistical Quality Control	6	A1X	2	E
Period 2					
TPPE74	Design and Development of Manufacturing Operations	6	A1X	4	C
TMPS27	Production Systems	6	A1X	3	E

Specialisation: Production Engineering

Course code	Course name	Credits	Level	Timetable module	ECV
Period 1					
TMMI46	Industrial Automation	6	G2F	4	C
TDDE10	Object Oriented Programming in Java	6	G2X	1	E
TMPS22	Assembly Technology	6	A1N	3	E
TMQU31	Statistical Quality Control	6	A1X	2	E
Period 2					
TMPS27	Production Systems	6	A1X	3	C
TMQU04	Six Sigma Quality	6	A1X	2	E

Specialisation: Quality Management

Course code	Course name	Credits	Level	Timetable module	ECV
Period 1					
TMQU31	Statistical Quality Control	6	A1X	2	C
TEIO13	Leadership and Organizational Change	6	A1X	4	E
TETS56	Logistics and Quality in Health Care	6	A1X	4	E
Period 2					
TMQU04	Six Sigma Quality	6	A1X	2	C/E
TMQU13	Customer Focused Product and Service Development	6	A1X	4	C/E
TKMJ29	Resource Efficient Products	6	A1N	1	E
TMPS27	Production Systems	6	A1X	3	E
TPPE74	Design and Development of Manufacturing Operations	6	A1X	4	E

Semester 9 (Autumn 2023)

Course code	Course name	Credits	Level	Timetable module	ECV
Period 1					
TAOP34	Large Scale Optimization	6	A1X	3	E
TBME04	Anatomy and Physiology	6	G2X	3	E
TETS23	Purchasing	6	A1N	2	E
TKMJ31	Biofuels for Transportation	6	A1N	1	E
TMES27	Modelling of Energy Systems	6	A1N	3	E
TMHL19	Advanced Material and Computational Mechanics	6	A1X	1	E
TMKT79	Collaborative Multidisciplinary Design Optimization	6	A1X	2	E
TMMS13	Electro Hydraulic Systems	6	A1X	3	E
TMMV12	Gas Turbine Engines	6	A1X	4	E
TMPS35	Emerging Factory Technologies	6	A1N	3	E
TMQU47	Quality Engineering and Design	6	A1N	4	E
TPPE99	Simulation in Production and Logistics	6	A1X	3	E
TSFS12	Autonomous Vehicles - Planning, Control, and Learning Systems	6	A1N	1	E
TSRT92	Modelling and Learning for Dynamical Systems	6	A1X	3	E
Period 2					
TAOP18	Supply Chain Optimization	6	A1X	1	E
TETS31	Logistics Strategies	6	A1F	4	E
TKMJ32	Integrated Product Service Engineering	6	A1N	3	E
TMES45	Energy Planning and Modelling of Communities	6	A1F	4	E
TMKA11	Model-based System-of-Systems Engineering	6	A1N	3	E
TMMS20	Structural Optimization	6	A1X	1	E
TSRT08	Optimal Control	6	A1X	3	E
TSTE26	Powergrid and Technology for Renewable Production	6	A1X	3	E

Specialisation: Aeronautical Engineering

Course code	Course name	Credits	Level	Timetable module	ECV
Period 1					
TMAL07	Prototype Realization - Project Course	6	A1X	-	C
TMMV12	Gas Turbine Engines	6	A1X	4	C
TMME40	Vibration Analysis of Structures	6	A1X	3	E
Period 2					
TMAL08	Aircraft Systems Engineering - Project Course	6	A1X	-	C/E
TMHL26	Aircraft Structures - Project Course	6	A1X	-	C/E
TMMV26	Aircraft Aerodynamics - Project Course	6	A1X	-	C/E
TMKA11	Model-based System-of-Systems Engineering	6	A1N	3	E
TMKM90	Engineering Materials - Deformation and Fracture	6	A1X	2	E
TMMV62	Computational Heat Transfer	6	A1X	1	E

Specialisation: Energy and Environmental Engineering

Course code	Course name	Credits	Level	Timetable module	ECV
Period 1					
TMPE10	Project Course Advanced - Sustainability Engineering and Management	12*	A1F	-	C
TKMJ31	Biofuels for Transportation	6	A1N	1	E
TMES27	Modelling of Energy Systems	6	A1N	3	E
Period 2					
TMPE10	Project Course Advanced - Sustainability Engineering and Management	12*	A1F	-	C
TKMJ32	Integrated Product Service Engineering	6	A1N	3	E
TMES45	Energy Planning and Modelling of Communities	6	A1F	4	E

Specialisation: Engineering Design and Product Development

Course code	Course name	Credits	Level	Timetable module	ECV
Period 1					
TMPM05	Project Course Advanced - Design Engineering and Product Development	12*	A1X	1	C
TMKT79	Collaborative Multidisciplinary Design Optimization	6	A1X	2	E
TMPS35	Emerging Factory Technologies	6	A1N	3	E
TMQU47	Quality Engineering and Design	6	A1N	4	E
Period 2					
TMPM05	Project Course Advanced - Design Engineering and Product Development	12*	A1X	4	C
TMKA11	Model-based System-of-Systems Engineering	6	A1N	3	E
TMKU01	Design Automation of Customized Products	6	A1X	2	E

Specialisation: Engineering materials

Course code	Course name	Credits	Level	Timetable module	ECV
Period 1					
TMPM09	Project Course Advanced - Engineering Materials	12*	A1F	-	C
TMHL19	Advanced Material and Computational Mechanics	6	A1X	1	E
TMMI68	CAD and Drafting Techniques, Continued Course	6*	G2X	2	E
Period 2					
TMPM09	Project Course Advanced - Engineering Materials	12*	A1F	-	C
TMMI68	CAD and Drafting Techniques, Continued Course	6*	G2X	4	E

Specialisation: Engineering Mechanics

Course code	Course name	Credits	Level	Timetable module	ECV
Period 1					
TMPM10	Project Course Advanced - Applied Mechanics	12*	A1F	-	C
TMHL19	Advanced Material and Computational Mechanics	6	A1X	1	E
TMMV59	Applied Computational Fluid Dynamics	6	A1X	2	E
Period 2					
TMPM10	Project Course Advanced - Applied Mechanics	12*	A1F	-	C
TMMS20	Structural Optimization	6	A1X	1	E

Specialisation: Logistics and Supply Chain Management

Course code	Course name	Credits	Level	Timetable module	ECV
Period 1					
TETS38	Logistics Project	12*	A1X	4	C
TETS23	Purchasing	6	A1N	2	E
TPPE99	Simulation in Production and Logistics	6	A1X	3	E
Period 2					
TETS38	Logistics Project	12*	A1X	2	C
TAOP18	Supply Chain Optimization	6	A1X	1	E
TETS31	Logistics Strategies	6	A1F	4	E

Specialisation: Mechatronics

Course code	Course name	Credits	Level	Timetable module	ECV
Period 1					
TMPM06	Project Course Advanced - Mechatronics	12*	A1X	4	C/E
TSRT10	Automatic Control - Project Course	12*	A1F	4	C/E
TDDE18	Programming C++	6*	G2X	2	E
TDDE56	Foundations of AI and machine learning	6*	G2X	2	E
TMMS13	Electro Hydraulic Systems	6	A1X	3	E
TSFS12	Autonomous Vehicles - Planning, Control, and Learning Systems	6	A1N	1	E
TSRT92	Modelling and Learning for Dynamical Systems	6	A1X	3	E
Period 2					
TMPM06	Project Course Advanced - Mechatronics	12*	A1X	-	C/E
TSRT10	Automatic Control - Project Course	12*	A1F	4	C/E
TDDE18	Programming C++	6*	G2X	1	E
TDDE56	Foundations of AI and machine learning	6*	G2X	1	E
TMKA11	Model-based System-of-Systems Engineering	6	A1N	3	E
TSRT08	Optimal Control	6	A1X	3	E

Specialisation: Operations Management

Course code	Course name	Credits	Level	Timetable module	ECV
Period 1					
TPPE73	Operations Management - Project Course	12*	A1X	4	C
TPPE16	Manufacturing Strategies	6	A1X	2	C/E
TAOP34	Large Scale Optimization	6	A1X	3	E
TMPS35	Emerging Factory Technologies	6	A1N	3	E
Period 2					
TPPE73	Operations Management - Project Course	12*	A1X	4	C
TAOP18	Supply Chain Optimization	6	A1X	1	E

Specialisation: Production Engineering

Course code	Course name	Credits	Level	Timetable module	ECV
Period 1					
TMPM08	Project Course Advanced - Manufacturing Engineering	12*	A1F	1	C
TMPS35	Emerging Factory Technologies	6	A1N	3	C
TMKO02	Engineering Materials and Manufacturing Technology	6	A1X	2	E
TPPE16	Manufacturing Strategies	6	A1X	2	E
TPPE99	Simulation in Production and Logistics	6	A1X	3	E
Period 2					
TMPM08	Project Course Advanced - Manufacturing Engineering	12*	A1F	4	C

Specialisation: Quality Management

Course code	Course name	Credits	Level	Timetable module	ECV
Period 1					
TMQU27	Quality Management - Project Course	12*	A1X	2	C
TMQU47	Quality Engineering and Design	6	A1N	4	E
TPPE16	Manufacturing Strategies	6	A1X	2	E
Period 2					
TMQU27	Quality Management - Project Course	12*	A1X	4	C

Semester 10 (Spring 2024)

Course code	Course name	Credits	Level	Timetable module	ECV
Period 1					
TQXX33	Degree project - Master's Thesis	30*	A1X	-	C
Period 2					
TQXX33	Degree project - Master's Thesis	30*	A1X	-	C

ECV = Elective / Compulsory /Voluntary
*The course is divided into several semesters and/or periods

Common rules

Structure and organisation of study programmes

The contents and design of the programmes are to be continuously revised such that new knowledge is integrated into courses and specialisations. Within one programme, several study specialisations or profiles may be available. The identities of the study specialisations or profiles and the regulations governing how these may be selected are given in the syllabus and curriculum for the particular field of study and programmes.

The structure and organisation of the programmes are to follow specified criteria that are summarised in the syllabus for each programme.

- The syllabus defines the aims of the study programme.
- The curriculum, which constitutes one part of the syllabus for the field of study, gives details of the terms in which the various courses have been timetabled, and their scheduling through the academic year.
- The course syllabus specifies, among other things, the aim and contents of the course, and the prior knowledge that a student must have in order to be able to benefit from the course.

Qualification requirements

The qualification requirements specified in the Higher Education Ordinance 2007 apply to students admitted after 1 July 2007. A student who has completed components of a programme after 1 July 2007 has the right to be assessed with respect to the qualification requirements specified by the Higher Education Ordinance 2007. In addition, local regulations laid down by the faculty boards and university board apply, see http://styrdokument.liu.se/Regelsamling/Innehall/Utbildning_pa_grund-_och_avancerad_niva/Examina.

Higher Education Act Chapter 1, Section 8:

First-cycle courses and study programmes are to develop:

- the ability to make independent and critical assessments
- the ability to identify, formulate and solve problems autonomously, and
- the preparedness to deal with changes in working life.

In addition to knowledge and skills in their field of study, students shall develop the ability to:

- gather and interpret information at a scholarly level
- stay abreast of the development of knowledge, and
- communicate their knowledge to others, including those who lack specialist knowledge in the field.

Qualifications within a study programme

Qualification requirements that are specific to a study programme are given in the syllabus for that programme.

Matriculation and postponement of matriculation

A person who has been accepted for a study programme is to start their studies (matriculate) in the term that is specified in the decision about admission. The date and location of the compulsory matriculation procedure will be communicated to those admitted to the first term of the programme.

At any one admission occasion, it is possible to be admitted to only one place on a study programme. A student who has been granted a place on a study programme and who is offered and accepts a place on another study programme during a supplementary round of admission will lose the place offered for the first study programme.

Regulations concerning postponement of matriculation have been laid down in the admission regulations for Linköping University, http://styrdokument.liu.se/Regelsamling/VisaBeslut/622645.

A person who has been granted postponement must present to the admitting authority, before the term in which the studies are to be started and before the date of application, a renewed registration for the programme and a copy of the decision granting postponement.

Admission to a later part of a programme

Admission to a part of a study programme is used here to refer to admission with the purpose of completing the programme and taking a degree. Admission to a later part of a programme may take place only if sufficient resources and space on the programme are available. Furthermore, the applicant must satisfy the entry requirements for the relevant term of the programme, as specified in http://styrdokument.liu.se/Regelsamling/Innehall/Utbildning_pa_grund-_och_avancerad_niva/Tekniska_fakulteten.

Interruption in studies

Notification of an interruption in studies is to be made through the Student Portal. If such a notification is not made and if the student does not register for the first term during which the interruption is to take place, the interruption will be considered to be a withdrawal. An interruption in studies must cover a complete term, and notification of interruptions can be given for a maximum of two consecutive terms. Notification of resumption of studies is to take place at the term registration for the term that follows the interruption. If the student does not register at the term registration, this will be regarded as withdrawal from studies.

A student who is taking an interruption in studies may during this period retake examinations if he or she has re-registered for the most recent study term of the programme. A student who wishes to take another course during the interruption in studies must apply for this separately. The student is responsible that

registration for courses is carried out at the correct times in preparation for the resumption of studies.

Withdrawal from a study programme

A student who wishes to withdraw from a study programme must notify the study guidance counsellor. A student who leaves the studies without giving notification of an interruption in study and who fails to register for the immediately subsequent term is considered to have withdrawn. A student who has withdrawn may return to the study programme if a vacancy is available that is not required for students returning after an interruption in study, and not required for students who are changing their location of study and/or study programme.

Courses within a study programme

The curriculum for the various years of a study programme specify which courses are compulsory (o), elective (v) and voluntary (f). If a student wishes to study a different combination than the one specified in the curriculum, an application must be made to the board of studies.

Voluntary courses

The course specified as voluntary (labelled with "f") in the programme syllabus are assessed solely as voluntary courses, and credits from these may not contribute to the requirements for a degree.

Courses from another study programme

Courses that are elective courses in another study programme may be included as elective courses in a degree, if the board of studies so decides. If such a decision is not taken, such courses are regarded as voluntary courses.

When selecting a course from another programme, the admission requirements specified in the course syllabus must be satisfied.

Admission is granted to the extent that resources allow, provided that places are available on the course.

Students taking a master's programme in engineering

Students taking a master's programme in engineering can take courses given in Term 7 and later terms of the programme from all engineering master's programmes. Admission to courses at advanced level requires the possession of at least 150 credits within the programme to which the student has been admitted.

Students taking a Bachelor of Science (Engineering)

Student taking Bachelor of Science (Engineering) degrees may take courses specified in the programme syllabuses of all Bachelor of Science (Engineering) programmes.

Students taking a Bachelor of Science

Student taking Bachelor of Science degrees may take courses specified in the programme syllabuses of all Bachelor of Science programmes.

Third-cycle courses

The credits from third-cycle courses may be included as elective courses in a degree, if the board of studies so decides. If such a decision is not taken, such courses are regarded as voluntary courses.

Students taking a master's programme in engineering

It is possible for students taking master's programmes in engineering to take certain third-cycle courses. It is, however, required in this case that the student has achieved master's level (i.e. year 4 or 5 of the study programme). Information can be obtained from the relevant director of advanced studies.

Students on Master's programmes

It is possible for students taking master's programmes to take certain third-cycle courses. Information can be obtained from the relevant director of advanced studies.

Registration for programme courses

Registration for courses that are given as part of a study programme must be made during the specified period, which has been preliminarily set to 1-10 April for the autumn term, and 1-10 October for the spring term. Information about course registration is published on a webpage, sent to students by email, and disseminated at scheduled information meetings.

Registration for programme courses as single-subject courses

Admission to a programme course as a single-subject subject course may take place only if sufficient resources and space on the course are available. Furthermore, the applicant must satisfy the entry requirements for the relevant course.

In the event of a scarcity of resources, the board of LiTH can decide to limit the possibilities of taking courses that are part of a programme as freestanding courses.

Timetabling

Courses are timetabled after a decision has been made concerning the assignment of the course to a timetable module. A central timetable is not drawn up for courses with fewer than five participants. Most project courses do not have a central timetable.

Study planning

Students who require support in planning their continued studies can contact the study guidance counsellor of the programme. Study planning involves the student and the study guidance counsellor together drawing up an individual plan for studies during the subsequent term. The individual plan may allow the student to deviate from the general curriculum.

Completed first-cycle courses are a precondition for successful studies at more advanced levels. For this reason, study planning is based on giving priority to courses from earlier years of study that have not been completed. If further capacity is available, new courses may be taken.

Study planning takes place on a regular basis if the student:

- does not satisfy the requirements for progression to later terms. In order for a student to be able to participate in courses from later years in such cases, a decision of exemption is required.
- does not satisfy the requirements for starting a degree project.

Other situations in which study planning may be required:

- A student has fallen behind during the early part of a study programme and has failed to complete several courses.
- A student has not satisfied the entry requirements for a degree project before term 6 of an engineering degree.
- A student has applied for admission to a later part of a programme.
- Studies have been carried out abroad.
- A study programme is to be resumed after an interruption.

In these cases the study guidance counsellor supports the student in planning the continued studies, also in situations in which the student can register for the relevant courses without the need for a special decision for the continued studies.

Part of education abroad

Students can exchange study at LiTH for study at an institute of higher education abroad, and/or work on a degree project abroad.

In the event that study (courses) at LiTH are exchanged for study abroad, the relevant board of studies (faculty programme director) is responsible for a decision about an individual study plan, which is to be drawn up in advance, and about the final course approval and its inclusion in the qualification requirements. For this reason, students who plan to participate in an exchange should contact the faculty programme director (or equivalent) at the Dean's Office of the Institute of Technology.

Regulations for entry requirements, ranking and nomination for study abroad through LiTH's exchange agreements and for the compulsory study abroad period within Ii (Industrial Engineering and Management – International) and Yi (Applied Physics and Electrical Engineering – International) can be found at:

http://styrdokument.liu.se/Regelsamling/Innehall/Utbildning_pa_grund-_och_avancerad_niva/Tekniska_fakulteten.

Course syllabus

A syllabus has been established for each course. The syllabus specifies the aim and contents of the course, and the prior knowledge that a student must have in order to be able to benefit from the course.

Timetabling

Courses are timetabled after a decision has been made for this course concerning its assignment to a timetable module. A central timetable is not drawn up for courses with fewer than five participants. Most project courses do not have a central timetable.

Interrupting a course

The vice-chancellor's decision concerning regulations for registration, deregistration and reporting results (Dnr LiU-2015-01241) states that interruptions in study are to be recorded in Ladok. Thus, all students who do not participate in a course for which they have registered must record the interruption, such that the registration on the course can be removed. Deregistration from a course is carried out using a web-based form: www.lith.liu.se/for-studenter/kurskomplettering?l=sv.

Cancelled courses

Courses with few participants (fewer than 10) may be cancelled or organised in a manner that differs from that stated in the course syllabus. The board of studies is to deliberate and decide whether a course is to be cancelled or changed from the course syllabus.

Regulations relating to examinations and examiners

Details are given in a decision in the university's rule book: http://styrdokument.liu.se/Regelsamling/VisaBeslut/622678.

Forms of examination

Examination

Written and oral examinations are held at least three times a year: once immediately after the end of the course, once in August, and once (usually) in one of the re-examination periods. Examinations held at other times are to follow a decision of the board of studies.

Principles for examination scheduling for courses that follow the study periods:

- courses given in VT1 are examined for the first time in March, with re-examination in June and August
- courses given in VT2 are examined for the first time in May, with re-examination in August and October
- courses given in HT1 are examined for the first time in October, with re-examination in January and August
- courses given in HT2 are examined for the first time in January, with re-examination at Easter and in August.

The examination schedule is based on the structure of timetable modules, but there may be deviations from this, mainly in the case of courses that are studied and examined for several programmes and in lower grades (i.e. 1 and 2).

- Examinations for courses that the board of studies has decided are to be held in alternate years are held only three times during the year in which the course is given.
- Examinations for courses that are cancelled or rescheduled such that they are not given in one or several years are held three times during the year that immediately follows the course, with examination scheduling that corresponds to the scheduling that was in force before the course was cancelled or rescheduled.
- If teaching is no longer given for a course, three examination occurrences are held during the immediately subsequent year, while examinations are at the same time held for any replacement course that is given, or alternatively in association with other re-examination opportunities. Furthermore, an examination is held on one further occasion during the next subsequent year, unless the board of studies determines otherwise.
- If a course is given during several periods of the year (for programmes, or on different occasions for different programmes) the board or boards of studies determine together the scheduling and frequency of re-examination occasions.

Registration for examination

In order to take an examination, a student must register in advance at the Student Portal during the registration period, which opens 30 days before the date of the examination and closes 10 days before it. Candidates are informed of the location of the examination by email, four days in advance. Students who have not registered for an examination run the risk of being refused admittance to the examination, if space is not available.

Symbols used in the examination registration system:

** denotes that the examination is being given for the penultimate time.

* denotes that the examination is being given for the last time.

Code of conduct for students during examinations

Details are given in a decision in the university's rule book: http://styrdokument.liu.se/Regelsamling/VisaBeslut/622682.

Retakes for higher grade

Students at the Institute of Technology at LiU have the right to retake written examinations and computer-based examinations in an attempt to achieve a higher grade. This is valid for all examination components with code “TEN” and "DAT". The same right may not be exercised for other examination components, unless otherwise specified in the course syllabus.

Retakes of other forms of examination

Regulations concerning retakes of other forms of examination than written examinations and computer-based examinations are given in the LiU regulations for examinations and examiners,
http://styrdokument.liu.se/Regelsamling/VisaBeslut/622678.

Plagiarism

For examinations that involve the writing of reports, in cases in which it can be assumed that the student has had access to other sources (such as during project work, writing essays, etc.), the material submitted must be prepared in accordance with principles for acceptable practice when referring to sources (references or quotations for which the source is specified) when the text, images, ideas, data, etc. of other people are used. It is also to be made clear whether the author has reused his or her own text, images, ideas, data, etc. from previous examinations.

A failure to specify such sources may be regarded as attempted deception during examination.

Attempts to cheat

In the event of a suspected attempt by a student to cheat during an examination, or when study performance is to be assessed as specified in Chapter 10 of the Higher Education Ordinance, the examiner is to report this to the disciplinary board of the university. Possible consequences for the student are suspension from study and a formal warning. More information is available at https://www.student.liu.se/studenttjanster/lagar-regler-rattigheter?l=sv.

Grades

The grades that are preferably to be used are Fail (U), Pass (3), Pass not without distinction (4) and Pass with distinction (5). Courses under the auspices of the faculty board of the Faculty of Science and Engineering (Institute of Technology) are to be given special attention in this regard.

1. Grades U, 3, 4, 5 are to be awarded for courses that have written examinations.
2. Grades Fail (U) and Pass (G) may be awarded for courses with a large degree of practical components such as laboratory work, project work and group work.

Examination components

1. Grades U, 3, 4, 5 are to be awarded for written examinations (TEN).

2. Grades Fail (U) and Pass (G) are to be used for undergraduate projects and other independent work.
3. Examination components for which the grades Fail (U) and Pass (G) may be awarded are laboratory work (LAB), project work (PRA), preparatory written examination (KTR), oral examination (MUN), computer-based examination (DAT), home assignment (HEM), and assignment (UPG).
4. Students receive grades either Fail (U) or Pass (G) for other examination components in which the examination criteria are satisfied principally through active attendance such as other examination (ANN), tutorial group (BAS) or examination item (MOM).

The examination results for a student are reported at the relevant department.

Regulations (apply to LiU in its entirety)

The university is a government agency whose operations are regulated by legislation and ordinances, which include the Higher Education Act and the Higher Education Ordinance. In addition to legislation and ordinances, operations are subject to several policy documents. The Linköping University rule book collects currently valid decisions of a regulatory nature taken by the university board, the vice-chancellor and faculty/department boards.

LiU's rule book for education at first-cycle and second-cycle levels is available at http://styrdokument.liu.se/Regelsamling/Innehall/Utbildning_pa_grund-_och_avancerad_niva.

Degree project for Master's Degree in Engineering 300 credits, Master of Science (Two years), Master of Philosophy (Two years), Master of Science (One year), and master's degrees without prefix

General provisions for the degree project are given here. A specific board of studies may have supplementary regulations that are specific for a study programme. These are specified, where relevant, in the syllabus for the field of education and/or the degree project. Information and links to course syllabuses, registration, reflection documents, etc. can be found at www.lith.liu.se/examensarbete/examensarbete?l=sv.

General provisions

To be awarded a Master's Degree in Engineering 300 credits, Master of Science (Two years), Master of Philosophy (Two years), Master of Science (One year), or master's degree without prefix a student must carry out an approved degree project. The components of the degree project are described in the relevant course syllabus.

Aim

The aim of the degree project is described in the relevant course syllabus,

www.lith.liu.se/examensarbete/examensarbete?l=sv. Links to respective course syllabus can be found under the heading "Utbildningarna" (Civilingenjörsutbildning (i.e. Master of Science in Engineering) or Masterutbildning (i.e. Master of Science)).

Extent

Requirements for the extent of the degree project for each type of degree are given in the syllabus of the study programme.

Locations for a degree project

The work is carried out in the form of:

- an internal degree project located at one of the participating departments at LiU
- an external degree project located at a company, government agency, or other organisation in Sweden or abroad, that an examiner has assessed is able to manage a degree project that satisfies the requirements, or
- a degree project within an exchange agreement in association with study abroad, whereby all study results are to be credited to the student by the relevant board of studies.

The main subject areas that are permitted within each study programme are described in the programme syllabus. Any individual subjects that may be relevant to the main subject area are to be determined by the relevant board of studies.

The examiner for a degree project within a certain subject area are determined by the board of studies that is responsible for general degrees within the main subject area. An up-to-date list is given at http://www.lith.liu.se/examensarbete/examensarbete?l=sv.

Degree projects within agreements relating to study abroad

During study abroad that takes place within the framework of an agreement, the provisions of the host institute relating to degree projects are applied. The student is to consult the board of studies and together ensure that the proposed degree project is carried out in a main subject area that is permitted within the study programme. Approved main subject areas for degree projects are specified in the syllabus for the relevant programme.

A certificate confirming that the degree project has been approved and a copy of the degree project thesis (in PDF format) are to be submitted to the relevant board of studies.

Selection of degree project

A degree project is to be selected in consultation with an examiner, who is also responsible that the specialisation, extent and level of the project satisfy the requirements specified in the course syllabus.

In cases in which issues relating to work-related copyright, patenting or remuneration may arise, provisions governing these should be established in

advance. A student working on a degree project may sign a confidentiality agreement in order to obtain access to confidential information necessary for the degree project. The supervisor and examiner, however, determine whether they are prepared to sign a confidentiality agreement, and thus the confidential information must not normally be of such nature that it is necessary to supervise or grade the work. The complete degree project thesis is to be published during the grading procedure, unless special circumstances prevent this. If any part of the thesis should not be published, this must be approved in advance by the examiner and the relevant head of department. Note that final decisions relating to confidentiality are taken by an administrative court.

Commencement of a degree project

Requirements that must be satisfied before a degree project can be started are given in the currently valid course syllabus, which can be obtained at www.lith.liu.se/examensarbete/examensarbete?l=sv.

Notification of a degree project is to be carried out when the degree project starts, at www.lith.liu.se/for-studenter/anmalan-till-exjobb?l=sv. Registration of the degree project is to take place before work commences, after the student has registered for the term.

Before the start of the degree project, the examiner is to ensure that the student satisfies the conditions for commencement of the degree project within the relevant main subject area. Support in this can be obtained from the study guidance counsellor, who checks the general requirements for starting the degree project.

The student is also to notify the relevant department of the start of the degree project.

Degree projects in collaboration with another student

In cases in which two students carry out a degree project together, the contribution of each student is to be specified. The extent of the work is to correspond to the extent of two individual projects. The examiner is to ensure that each student has contributed in a satisfactory manner to the work, and that each student satisfies the requirements for achieving a Pass grade for the degree project.

Degree projects carried out in collaboration between more than two students are not permitted.

Examiners

The examiner is to be employed at LiU as professor, associate professor, senior lecturer, research fellow, lecturer, research assistant, or postdoc (including guest and adjunct teachers), or is to have been appointed docent at LiU. He or she must have the expertise required to examine the degree project within the relevant main subject area, and must be appointed by the the board of studies. The examiner is to:

- ensure before the start of the degree project that the student satisfies the conditions for commencement of the degree project within the relevant main subject area. The study guidance counsellor is to check whether the commencement criteria are satisfied and inform the examiner of this
- check whether special admission requirements (where relevant) are satisfied, for example that the student can demonstrate a certain degree of in-depth knowledge within the field relevant for the degree project
- determine the specialisation and principal work of the degree project, based on an assessment of whether the degree project will result in the learning outcomes of the course syllabus being satisfied
- pass/fail the planning report
- pass/fail the mid-way assessment
- be responsible that the supervisor or supervisors carry out their duties
- before the presentation, check that the student has registered for the degree project
- approve the work for presentation
- before the presentation, check that the proposed opponent satisfies the conditions for commencement of the degree project and has attended three thesis presentations
- pass/fail the presentation and the opposition to it
- approve a concluding reflection document
- ensure that a degree project that has been passed satisfies the learning outcomes of the course syllabus and other requirements, and award a grade to the degree project (either G = Pass, or U = Fail).

Supervisors

A student working on a degree project is to have access to an internal supervisor at the department at which the degree project has been registered. The internal supervisor is to have a degree that corresponds at least to the level of the degree project to be supervised. The internal supervisor may, in exceptional circumstances, be the same individual as the examiner. A decision of whether to allow this in a particular case is to be made by the relevant board of studies before the degree project is started.

The supervisor is to ensure that the student obtains help with:

- expert support in general questions related to methods, specialist knowledge of the subject, and writing the thesis
- problem formulation, and setting the limits of the work
- scheduling and planning work, and selection of appropriate methods.

If the degree project is being carried out outside of LiTH, an external supervisor from the commissioner is to be appointed.

Planning report

During the first weeks of the degree project, the student is to draw up a planning report that contains:

- a preliminary title of the degree project

- a preliminary statement of the research question, against the background of a literature search
- a preliminary description of the approach to be taken
- planned literature foundation
- a schedule for the execution of the degree project, including suggested dates for the mid-way assessment and presentation.

Formulation of the research question is to be bounded, realistic and viewed from a perspective of societal or commercial benefit. The term “societal” is to be understood here to include universities and university colleges.

Mid-way assessment

Approximately half-way through the degree project, the student is to describe to the examiner at a mid-way assessment how the work is progressing relative to the planning report. The supervisor should also participate. The form of the mid-way assessment may be anything from an oral presentation to a public seminar. The conclusion of the mid-way assessment may be one of three possibilities:

1. The work has been carried out essentially as planned, and can continue as planned. The mid-way assessment has been passed.
2. The work has been carried out with certain deviations from the planning report. It is, however, believed that it will be possible to complete the work with minor adjustments to the formulation of the research question, approach and/or schedule. The mid-way assessment has been passed.
3. The work has deviated from the planning report in a significant manner, and there is a risk that a Pass grade cannot be given. The mid-way assessment has been failed. A new planning report must be drawn up and a new mid-way assessment carried out.

Reporting

Both oral and written reports of the degree project are to be made, in Swedish or English. For the international Master's programmes, both the oral and written examination should be made in English. The board of studies can allow the reporting to be carried out in another language than Swedish or English.

The oral presentation is to take place in public, unless there are special grounds that this should not be done. The written report is to be in the form of a professionally produced degree project thesis. The presentation and thesis are to follow the instructions given below.

Presentation

The oral presentation is to take place when the examiner considers that the work has been completed and is ready to be presented. The presentation is to take place at LiTH at a time when other students can attend. This means that the presentation can take place on a date that the student has agreed with the examiner, normally between the re-examination period in August and midsummer, and after the student has attended three thesis presentations.

The oral presentation is to describe the background to the problem that has been

studied, describe the methods used, and present the results and conclusions. The presentation is to be at a level suitable for everyone present, not just for specialists. After the oral presentation, the student is to counter any criticism that the opponent may raise, and allow other participants to pose questions. The presentation and the opposition are to be approved by the examiner. When any required adjustments of the thesis have been made, the reflection document has been approved, and the student has functioned as an opponent for another degree project, the degree project is reported as a passed course and the credits can be used to satisfy the requirements for a qualification.

Degree project thesis

The written degree project report is to be professionally written and comprehensive, and it is to demonstrate a scientific approach. The report must be prepared in accordance with principles for acceptable practice when referring to sources (references or quotations for which the source is specified) when the text, images, ideas, data, etc., of other people are used. It is also to be made clear whether the author has reused his or her own text, images, ideas, data, etc. from previous examinations, such as undergraduate work, project reports, etc. (This is sometimes known as “self-plagiarism”.) A failure to specify such sources may be regarded as attempted deception during examination.

The contents are to be easy to understand, and the way in which material is presented is important. It must describe the background to the project and the formulation of the research question. The choice of approach is to be clearly explained, and the thesis should make clear the coupling between the results and the conclusions. Commonly accepted scientific methods are to be used for processing the results. The discussion is to be comprehensive, and demonstrate that the student masters analytical thought processes. The thesis is to demonstrate good mastery of the literature in the field, and include an abstract. Theses that are principally written in Swedish should contain a summary in English. A publication-ready manuscript and a reflection document covering the work undertaken are to be submitted to the examiner within 10 days after the oral presentation. The examiner may grant an exemption from this requirement. If final versions of the required documents are not submitted as stipulated, the examiner may determine that the presentation is to be rescheduled.

The Faculty of Science and Engineering (Institute of Technology) at Linköping University recommends that degree project theses be published.

Opposition

An oral opposition is to be carried out either before or after the student presents his or her thesis. The opponent must satisfy the same requirements for the number and level of credits gained as those of the student’s degree project. The opponent must also have attended three thesis presentations as a member of the audience. Acting as an opponent during the thesis presentation of another student is subject to points-based assessment as described in the course syllabus.

The opponent is to:

- discuss and comment on the selection of methods, results and (where relevant) data processing, conclusions, possible alternative solutions and conclusions, and the management of literature
- comment on the general arrangement of the degree project thesis and related, formal aspects of style, and comment on the oral presentation technique
- illuminate the strengths and weaknesses of the thesis.

The duration of the opposition should be approximately the same as that of the presentation, and it is to include a discussion in which the student presenting the thesis replies to and comments on the criticism raised by the opponent.

Unless otherwise agreed, at least one week before the presentation the opponent is to present in writing to the examiner the important issues that will be discussed, and the structure of the opposition that will be taken. The opponent and the examiner discuss the structure that the opponent has drawn up.

In a normal case, the number of opponents will be the same as the number of respondents. In exceptional cases, the examiner may decide that this is not to be the case.

Attendance at presentations

A student is to attend presentations of degree project theses as described in the course syllabus. The presentations attended must be at the same level or a higher level than the degree project of the student.

It is advantageous that one of the presentations attended is a licenciate degree seminar or a doctoral disputation. The student is responsible for ensuring that a certification of attendance at the presentation is obtained and passed to the departmental administrator for registration in Ladok. Attendance at such presentations is a component of the degree work that is subject to points-based assessment.

The occasions on which a student attends presentations are to be completed before the student presents the degree project thesis. The course syllabus for the degree project describes the scheduling of the attendance at presentations.

Reflection document

A document reflecting on the work that has been carried out is to be submitted to the examiner within 10 working days of the oral presentation. Instructions for preparing a reflection document can be reached through www.lith.liu.se/examensarbete/examensarbete?l=sv.

Grades

The degree project is graded as either Pass or Fail. In order for a student to obtain a pass grade for the degree project, all components must be completed and be awarded a pass grade.

Right to obtain supervision

It is expected that the student complete and pass a degree project within specified time limits. The department is required to provide supervision for a maximum of 18 months after the student has registered the degree project in Ladok. The examiner may grant additional supervision after this period in special cases. If the examiner determines that supervision is to be ended, the degree project is to be awarded a Fail grade.

If the degree project is awarded a Fail grade for the reason described above or for any other reason, the student is to be directed towards carrying out a further degree project.

Quality assurance

The relevant board of studies has overall responsibility for the quality of study programmes. This responsibility covers also degree projects. Quality assurance is to be carried out as determined by the faculty board.

Exemptions

If special circumstances apply, a board of studies may grant exemptions from the regulations specified above. The oral opposition, for example, may be replaced by an extensive written opposition, if the board of studies approves this

- for international students for whom special circumstances apply
- for other students for whom all other components of the qualification have been satisfied, the degree project thesis has been submitted, and special circumstances apply.

Written opposition may be carried out in one of the following ways:

- The student presents a written opposition to a degree project thesis that has been written by another student, whose examiner subsequently examines the opposition.
- The student's examiner requests that the student prepare a written opposition to a degree project thesis that has previously been examined by an examiner.

If written opposition is used, it is not necessary that the student prepare an introductory statement describing the structure.

The board of studies must approve that opposition may take place in written form, before it is carried out.

Degree projects (included in Term 6 of study programmes in engineering)

General provisions

All study programmes in engineering (with the exception of the programme in Industrial Engineering and Management – International and the programme in Applied Physics and Electrical Engineering – International) have since 2014 included an obligatory degree project. The project undertaken may also be

included as part of the Bachelor of Science (Technology). During Term 6 of each programme, one or several special courses are given that constitute degree projects. The syllabuses of these courses contain course-specific provisions, which are supplemented with the general provisions given below.

Aim

The degree project is to contribute to general and programme-specific objectives of the study programmes in engineering being achieved. Specific learning outcomes are given in the relevant course syllabus. In addition, the degree project has also the following learning outcomes, which are common to all degree project-based courses at LiTH:

- Knowledge of the subject
  After carrying out the degree project, the student is expected to master the following:
  - integrating in a systematic manner the knowledge gained during the period of study
  - applying methodological knowledge and subject-specific knowledge within the main subject area
  - assimilating the contents of relevant technical publications and relating the study to such contents.
- Personal and professional skills
  After carrying out the degree project, the student is expected to possess the following skills:
  - formulating research questions and limiting the same, within a specified time schedule
  - seeking and evaluating scientific literature.
- Working and communicating in a group
  After carrying out the degree project, the student is expected to possess the following skills:
  - planning, executing and presenting independent work in the form of a project carried out in a group
  - expressing oneself professionally, in writing and orally
  - critically examining and discussing independent work presented in speech and in writing.
- CDIO engineering fundamentals
  After carrying out the degree project, the student is expected to master the following:
  - creating, analysing and/or evaluating technical solutions
  - making assessments that consider relevant scientific, societal and ethical aspects.

Degree projects undertaken while studying abroad

During study abroad, an individual plan is to be drawn up together with the faculty programme director to determine how the requirements for a degree project in engineering can be satisfied.

Commencing a degree project

Before a student commences a degree project, the following requirements must be satisfied:

- The student must have a minimum of 90 credits obtained from courses from Terms 1-4 of the programme (courses taken voluntarily are not counted). This requirement must be satisfied before the end of the third week of study period 2 of the autumn term before the degree project is to be carried out.
- The student must have completed the subject-specific courses listed in the course syllabus for the relevant degree project course. This requirement must be satisfied before the end of the third week of study period 2 of the autumn term before the degree project is to be carried out.
- When assessing whether the requirements have been satisfied, individual decisions (such as those taken in association with admission to subsequent parts of the programme) are to be considered.

Registration for a degree project is carried out during the course registration period 1-10 October in the autumn before the degree project is to be undertaken. Registration is to be made using a special web-based form: www.lith.liu.se/for-studenter/anmalan-till-kandidatprojekt?l=sv.

Forms of examination

The examiner for the degree project is responsible for ensuring that examination takes place as specified by the course syllabus, and, where appropriate, carries out the duties of an examiner for degree projects.

The written report of the degree project corresponds to a degree project for a bachelor's degree. This means that it is to be managed in an equivalent manner with respect to publication, unless special circumstances apply.

The report must be prepared in accordance with principles for acceptable practice when referring to sources (references or quotations for which the source is specified) when the text, images, ideas, data, etc., of other people are used. It is also to be made clear whether the author has reused his or her own text, images, ideas, data, etc. from previous examinations, such as undergraduate work, project reports, etc. (This is sometimes known as “self-plagiarism”.) A failure to specify such sources may be regarded as attempted deception during examination.

In cases in which several students carry out a degree project together, the contribution of each student is to be specified. The extent of the work for each student is to correspond to that of a degree project. The examiner is to ensure that each student has contributed in a satisfactory manner to the work, and that each student satisfies the requirements for achieving a Pass grade for the degree project.