Media Technology and Engineering, M Sc in Engineering

300 credits

Civilingenjör i medieteknik

6CMEN

Valid from: 2017 Spring semester

Determined by
Board of Studies for Computer Science and Media Technology

Date determined
2017-01-25

Entry requirements

Degree in Swedish

Civilingenjör 300 hp och Teknologie master 120 hp

Curriculum

Semester 1 (Autumn 2017)

Course code	Course name	Credits	Level	Timetable module	ECV
Period 0					
TNA001	Foundation Course in Mathematics	6*	G1X	-	C
Period 1					
TNA001	Foundation Course in Mathematics	6*	G1X	-	C
TND012	Programming	6	G1X	-	C
TNM088	Digital Media	6*	G1X	-	C
Period 2					
TNA002	Linear Algebra	6	G1X	-	C
TNM088	Digital Media	6*	G1X	-	C
TNMK30	Electronic Publishing	6	G1X	-	C

Semester 2 (Spring 2018)

Course code	Course name	Credits	Level	Timetable module	ECV
Period 1					
TNA003	Calculus I	6	G1X	2	C
TNA005	Applied Mathematics in Science and Technology	6*	G1X	4	C
TND002	Object-Oriented Programming	6	G1X	1	C
Period 2					
TNA004	Calculus II	6	G1X	2	C
TNA005	Applied Mathematics in Science and Technology	6*	G1X	4	C
TNM046	Computer Graphics	6	G1X	1	C

Semester 3 (Autumn 2018)

Course code	Course name	Credits	Level	Timetable module	ECV
Period 1					
TNA006	Calculus III	6	G1X	3	C
TNE043	Mechanics and Wave Physics	6	G2X	1	C
TNM040	Communication and User Interfaces	6*	G1X	2	C
Period 2					
TNA007	Vector Analysis	6	G2X	4	C
TNG033	Programming in C++	6	G2X	3	C
TNM040	Communication and User Interfaces	6*	G1X	2	C

Semester 4 (Spring 2019)

Course code	Course name	Credits	Level	Timetable module	ECV
Period 1					
TNG032	Applied Transform Theory	6	G2X	4	C
TNM059	Graphic Arts	6	G1X	3	C
TNM061	3-D Computer Graphics	6*	G2X	1	C
Period 2					
TNG006	Statistics	6	G2X	1	C
TNG015	Signals and Systems	6	G2X	3	C
TNM061	3-D Computer Graphics	6*	G2X	4	C
TPTE06	Industrial Placement	6	G1X	-	E

Semester 5 (Autumn 2019)

Course code	Course name	Credits	Level	Timetable module	ECV
Period 1					
TFYA65	Physics of Sound	6	G2X	1	C
TNG028	Automatic Control	6	G2X	2	C
TNM093	Practical Data Visualization and Virtual Reality	6*	G2X	3	C
Period 2					
TNG022	Modelling and Simulation	6	G2X	1	C
TNM087	Image Processing and Analysis	6	G2X	2	C
TNM093	Practical Data Visualization and Virtual Reality	6*	G2X	3	C

Semester 6 (Spring 2020)

Course code	Course name	Credits	Level	Timetable module	ECV
Period 1					
TNM085	Modelling Project	6	G2X	1	C
TNM094	Media Technology - Bachelor Project	18*	G2X	-	C
Period 2					
TND004	Data Structures	6	G2X	3	C
TNM094	Media Technology - Bachelor Project	18*	G2X	-	C
TPTE06	Industrial Placement	6	G1X	-	E

Semester 7 (Autumn 2020)

Course code	Course name	Credits	Level	Timetable module	ECV
Period 1					
TEIO87	Project Management	6*	G2X	1	E
TGTU94	Technology and Ethics	6	G1X	4	E
THEN09	Advanced English	6*	G2X	4	E
TNCG15	Advanced Global Illumination and Rendering	6	A1X	4	E
TNM031	Network Programming and Security	6	A1X	3	E
TNM067	Scientific Visualization	6	A1X	3	E
TNM103	Sound Technology	6	A1X	2	E
TNM108	Machine Learning for Social Media	6*	A1X	3	E
Period 2					
TEAE11	Intellectual Property Rights	6	G1X	2	E
TEIO87	Project Management	6*	G2X	1	E
THEN09	Advanced English	6*	G2X	4	E
TNA009	Computational Methods for Science and Engineering	6	G2X	2	E
TNM034	Advanced Image Processing	6	A1X	3	E
TNM069	Graphics Design and Communication	6	A1X	1	E
TNM084	Procedural Methods for Images	6	A1X	4	E
TNM086	Virtual Reality Techniques	6	A1X	2	E
TNM108	Machine Learning for Social Media	6*	A1X	3	E
TSBB09	Image Sensors	6	A1X	4	E

Specialisation: Advanced Techniques for Audio and Image Media

Course code	Course name	Credits	Level	Timetable module	ECV
Period 1					
TNM103	Sound Technology	6	A1X	2	E
Period 2					
TNM034	Advanced Image Processing	6	A1X	3	E
TNM069	Graphics Design and Communication	6	A1X	1	E
TNM084	Procedural Methods for Images	6	A1X	4	E

Specialisation: Computer Graphics and Game Programming

Course code	Course name	Credits	Level	Timetable module	ECV
Period 1					
TNCG15	Advanced Global Illumination and Rendering	6	A1X	4	E
TNM067	Scientific Visualization	6	A1X	3	E
TNM091	Media Production for Immersive Environments	6*	A1X	1	E
Period 2					
TNM084	Procedural Methods for Images	6	A1X	4	E
TNM086	Virtual Reality Techniques	6	A1X	2	E
TNM091	Media Production for Immersive Environments	6*	A1X	1	E

Specialisation: Visualization

Course code	Course name	Credits	Level	Timetable module	ECV
Period 1					
TNCG15	Advanced Global Illumination and Rendering	6	A1X	4	E
TNM067	Scientific Visualization	6	A1X	3	E
Period 2					
TNM084	Procedural Methods for Images	6	A1X	4	E
TNM086	Virtual Reality Techniques	6	A1X	2	E

Semester 8 (Spring 2021)

Course code	Course name	Credits	Level	Timetable module	ECV
Period 1					
TEIE53	Industrial Economics	6	G1X	1	E
TNKA10	Rethoric in Speech, Texts and Images	6*	G1X	1	E
TNM048	Information Visualisation	6	A1X	3	E
TNM097	Image Reproduction and Image Quality	6	A1X	2	E
TNM100	Structural Methods for User Experience (UX)	6*	A1X	1	E
TSBK35	Audio and Image Compression	6	A1X	4	E
Period 2					
TDDD27	Advanced Web Programming	6	A1X	3	E
TNKA10	Rethoric in Speech, Texts and Images	6*	G1X	1	E
TNM079	Modelling and Animation	6	A1X	2	E
TNM096	Artificial Intelligence - Principles and Techniques	6	G2X	1	E
TNM098	Advanced Visual Data Analysis	6	A1X	4	E
TNM100	Structural Methods for User Experience (UX)	6*	A1X	3	E

Specialisation: Advanced Techniques for Audio and Image Media

Course code	Course name	Credits	Level	Timetable module	ECV
Period 1					
TNM097	Image Reproduction and Image Quality	6	A1X	2	E
TSBK35	Audio and Image Compression	6	A1X	4	E

Specialisation: Computer Graphics and Game Programming

Course code	Course name	Credits	Level	Timetable module	ECV
Period 1					
TNM100	Structural Methods for User Experience (UX)	6*	A1X	1	E
TSBK35	Audio and Image Compression	6	A1X	4	E
Period 2					
TNM079	Modelling and Animation	6	A1X	2	E
TNM100	Structural Methods for User Experience (UX)	6*	A1X	3	E

Specialisation: Visualization

Course code	Course name	Credits	Level	Timetable module	ECV
Period 1					
TNM048	Information Visualisation	6	A1X	3	E
TNM100	Structural Methods for User Experience (UX)	6*	A1X	1	E
Period 2					
TNM098	Advanced Visual Data Analysis	6	A1X	4	E
TNM100	Structural Methods for User Experience (UX)	6*	A1X	3	E

Semester 9 (Autumn 2021)

Course code	Course name	Credits	Level	Timetable module	ECV
Period 1					
TDDE45	Software Design and Construction	6	A1X	4	E
TNCG15	Advanced Global Illumination and Rendering	6	A1X	4	E
TNM031	Network Programming and Security	6	A1X	3	E
TNM067	Scientific Visualization	6	A1X	3	E
TNM089	Imaging Technology	6	A1X	1	E
TNM091	Media Production for Immersive Environments	6*	A1X	1	E
TNM095	Artificial Intelligence for Interactive Media	6	A1X	2	E
TNM103	Sound Technology	6	A1X	2	E
TSBK03	Advanced Game Programming	6*	A1X	1	E
Period 2					
TNM107	Scientific Method	6	A1X	3	C
TDDC73	Interaction Programming	6	G2X	1	E
TDDD56	Multicore and GPU Programming	6	A1X	2	E
TNCG13	SFX - Tricks of the Trade	6	A1X	4	E
TNM084	Procedural Methods for Images	6	A1X	4	E
TNM086	Virtual Reality Techniques	6	A1X	2	E
TNM091	Media Production for Immersive Environments	6*	A1X	1	E
TSBK03	Advanced Game Programming	6*	A1X	-	E

Specialisation: Advanced Techniques for Audio and Image Media

Course code	Course name	Credits	Level	Timetable module	ECV
Period 1					
TNM089	Imaging Technology	6	A1X	1	E
TNM091	Media Production for Immersive Environments	6*	A1X	1	E
Period 2					
TNM084	Procedural Methods for Images	6	A1X	4	E
TNM091	Media Production for Immersive Environments	6*	A1X	1	E

Specialisation: Computer Graphics and Game Programming

Course code	Course name	Credits	Level	Timetable module	ECV
Period 1					
TDDD23	Design and Programming of Computer Games	6	A1X	2	E
TDDE45	Software Design and Construction	6	A1X	4	E
TSBK03	Advanced Game Programming	6*	A1X	1	E
Period 2					
TDDD89	Scientific Method	6	A1X	3	C/E
TDDC73	Interaction Programming	6	G2X	1	E
TDDD56	Multicore and GPU Programming	6	A1X	2	E
TDDE02	Software Entrepreneurship	6	A1X	2	E
TSBK03	Advanced Game Programming	6*	A1X	-	E

Specialisation: Visualization

Course code	Course name	Credits	Level	Timetable module	ECV
Period 1					
TNM067	Scientific Visualization	6	A1X	3	E
TNM091	Media Production for Immersive Environments	6*	A1X	1	E
Period 2					
TNM084	Procedural Methods for Images	6	A1X	4	E
TNM091	Media Production for Immersive Environments	6*	A1X	1	E

Semester 10 (Spring 2022)

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/VisaBeslut/622693.

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.

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.

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.

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.

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.

Timetabling

Courses are timetabled after a decision has been made concerning the assignment of the course to a study period. 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 are specified in: http://styrdokument.liu.se/Regelsamling/VisaBeslut/622362. Special regulations apply for the compulsory study abroad within Ii (Industrial Engineering and Management – International) and Yi (Applied Physics and Electrical Engineering – International).

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.