# Applied Physics and Electrical Engineering - International, M Sc in Engineering

300 credits

Civilingenjör i teknisk fysik och elektroteknik - internationell

6CYYI

Valid from: 2017 Spring semester

**Determined by**
Board of Studies for Electrical Engineering, Physics and Mathematics

**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** | | | | | |
| TATM79 | Foundation Course in Mathematics | 6* | G1X | - | C |
| **Period 1** | | | | | |
| TATA24 | Linear Algebra | 8* | G1X | 1 | C |
| TATM79 | Foundation Course in Mathematics | 6* | G1X | 4 | C |
| TEII21 | Japanese for Engineers I, Part 1 | 2* | G1X | 3 | C |
| TFYY51 | Engineering Project | 6* | G1X | 4 | C |
| TSEA51 | Switching Theory and Logical Design | 4 | G1X | 2 | C |
| TATA40 | Perspectives on Mathematics | 1* | G1X | - | V |
| **Period 2** | | | | | |
| TATA24 | Linear Algebra | 8* | G1X | 4 | C |
| TATA41 | Calculus in One Variable 1 | 6 | G1X | 2 | C |
| TEII21 | Japanese for Engineers I, Part 1 | 2* | G1X | 1 | C |
| TFYY51 | Engineering Project | 6* | G1X | 3 | C |
| TATA40 | Perspectives on Mathematics | 1* | G1X | - | V |

## Semester 2 (Spring 2018)

| Course code | Course name | Credits | Level | Timetable module | ECV |
|---|---|---|---|---|---|
| **Period 1** | | | | | |
| TATA42 | Calculus in One Variable 2 | 6 | G1X | 1 | C |
| TEII22 | Japanese for Engineers I, Part 2 | 6* | G1X | 3 | C |
| TFYA81 | Oscillations and Mechanical Waves | 4 | G1X | 4 | C |
| TSRT04 | Introduction in Matlab | 2 | G1X | 2 | C |
| TBMT32 | Perspectives on Biomedical Engineering | 2* | G1X | 3 | E |
| TFFM12 | Perspectives on Physics | 2* | G1X | - | E |
| TSIT04 | The Language of Mathematics | 4* | G1X | 3 | E |
| TATA40 | Perspectives on Mathematics | 1* | G1X | - | V |
| TGTU35 | Introduction to University Studies | 2* | G1X | - | V |
| **Period 2** | | | | | |
| TATA43 | Calculus in Several Variables | 8 | G1X | 2 | C |
| TEII22 | Japanese for Engineers I, Part 2 | 6* | G1X | 1 | C |
| TFYA84 | Optics - Theory and Application | 4 | G1X | 4 | C |
| TBMT32 | Perspectives on Biomedical Engineering | 2* | G1X | 3 | E |
| TFFM12 | Perspectives on Physics | 2* | G1X | - | E |
| TSIT04 | The Language of Mathematics | 4* | G1X | 3 | E |
| TATA40 | Perspectives on Mathematics | 1* | G1X | - | V |
| TGTU35 | Introduction to University Studies | 2* | G1X | - | V |

## Semester 3 (Autumn 2018)

| Course code | Course name | Credits | Level | Timetable module | ECV |
|---|---|---|---|---|---|
| **Period 1** | | | | | |
| TATA44 | Vector Analysis | 4 | G1X | 1 | C |
| TEII41 | Japanese for Engineers II, Part 1 | 6* | G1X | 4 | C |
| TFYA76 | Mechanics | 6 | G1X | 3 | C |
| TSTE05 | Electronics and Measurement Technology | 8* | G1X | 2 | C |
| **Period 2** | | | | | |
| TATA45 | Complex Analysis | 6 | G2X | 1 | C |
| TEII41 | Japanese for Engineers II, Part 1 | 6* | G1X | 4 | C |
| TSTE05 | Electronics and Measurement Technology | 8* | G1X | 3 | C |

## Semester 4 (Spring 2019)

| Course code | Course name | Credits | Level | Timetable module | ECV |
|---|---|---|---|---|---|
| **Period 1** | | | | | |
| TAOP07 | Introduction to Optimization | 6 | G1X | 3 | C |
| TEII42 | Japanese for Engineers II, Part 2 | 2* | G1X | - | C |
| TMME32 | Mechanics, second course | 4 | G1X | 4 | C |
| TSEA28 | Computer Hardware and Architecture Y | 6* | G1X | 2 | C |
| TGTU63 | Visits to Industry | 1* | G1X | - | V |
| **Period 2** | | | | | |
| TATA57 | Transform Theory | 4 | G1X | 1 | C |
| TEII42 | Japanese for Engineers II, Part 2 | 2* | G1X | 4 | C |
| TFYA13 | Electromagnetic Field Theory | 8 | G2X | 2 | C |
| TSEA28 | Computer Hardware and Architecture Y | 6* | G1X | 3 | C |
| TPTE06 | Industrial Placement | 6 | G1X | - | E |
| TGTU63 | Visits to Industry | 1* | G1X | - | V |

## Semester 5 (Autumn 2019)

| Course code | Course name | Credits | Level | Timetable module | ECV |
|---|---|---|---|---|---|
| **Period 1** | | | | | |
| TAMS24 | Statistics, First Course | 4 | G2X | 4 | C |
| TDDC76 | Programming and Data Structures | 8* | G2X | 2 | C |
| TFYA43 | Nanotechnology | 6 | G2X | 3 | E |
| **Period 2** | | | | | |
| TDDC76 | Programming and Data Structures | 8* | G2X | 2 | C |
| TFYA12 | Thermodynamics and Statistical Mechanics | 6 | G2X | 4 | C |
| TSDT18 | Signals and Systems | 6 | G2X | 3 | C |

## Semester 6 (Spring 2020)

| Course code | Course name | Credits | Level | Timetable module | ECV |
|---|---|---|---|---|---|
| **Period 1** | | | | | |
| TFYA73 | Modern Physics I | 4 | G2X | 3 | C |
| TSRT12 | Automatic Control | 6 | G2X | 1 | C |
| TFYA75 | Applied Physics - Bachelor Project | 16* | G2X | 2 | E |
| TSEA56 | Electronics Engineering - Bachelor Project | 16* | G2X | 2 | E |
| **Period 2** | | | | | |
| TAMS14 | Probability, first course | 4 | G1X | 4 | C |
| TEAE01 | Industrial Economics, Basic Course | 6 | G1X | 2 | E |
| TFYA74 | Modern Physics II | 4 | G2X | 1 | E |
| TFYA75 | Applied Physics - Bachelor Project | 16* | G2X | - | E |
| TSEA56 | Electronics Engineering - Bachelor Project | 16* | G2X | - | E |
| TSKS10 | Signals, Information and Communication | 4 | G2X | 3 | E |

## Semester 7 (Autumn 2020)

| Course code | Course name | Credits | Level | Timetable module | ECV |
|---|---|---|---|---|---|
| **Period 1** | | | | | |
| TEII18 | Japanese for Engineers III | 6* | G2X | - | C |
| TAMS22 | Probability Theory and Bayesian Networks | 6* | A1X | 4 | E |
| TAMS32 | Stochastic Processes | 6 | A1X | 1 | E |
| TAMS46 | Probability Theory, Second Course | 6 | A1X | 3 | E |
| TAOP34 | Large Scale Optimization | 6 | A1X | 3 | E |
| TATA34 | Real Analysis, Honours Course | 6* | G2X | 4 | E |
| TATA55 | Abstract Algebra | 6* | G2X | 3 | E |
| TATM85 | Functional Analysis | 6* | A1X | 2 | E |
| TBME04 | Anatomy and Physiology | 6 | G2X | 3 | E |
| TBMI19 | Medical Information Systems | 6* | A1X | 2 | E |
| TDDC17 | Artificial Intelligence | 6 | G2X | 3 | E |
| TDDD08 | Logic Programming | 6 | A1X | 4 | E |
| TDDD38 | Advanced Programming in C++ | 6* | A1X | 2 | E |
| TDTS06 | Computer Networks | 6 | G2X | 1 | E |

| Course code | Course name | Credits | Level | Timetable module | ECV |
|---|---|---|---|---|---|
| TDTS08 | Advanced Computer Architecture | 6 | A1X | 2 | E |
| TEAE05 | Resource Theory | 6 | G1X | 2 | E |
| TFFM08 | Experimental Physics | 6* | A1X | 1 | E |
| TFFY54 | Quantum Mechanics | 6 | A1X | 2 | E |
| TFKE59 | Fundamentals of Chemistry | 6 | G1X | 2 | E |
| TFYA18 | Mathematical Methods of Physics | 6 | A1X | 3 | E |
| TFYA43 | Nanotechnology | 6 | G2X | 3 | E |
| TFYA88 | Additive Manufacturing: Tools, Materials and Methods | 6 | A1X | 3 | E |
| TFYA95 | Principles of Materials Science | 6 | A1X | 2 | E |
| TFYA97 | Modern Optics | 6 | A1X | 4 | E |
| TFYY67 | Classical Electrodynamics | 6* | A1X | 3 | E |
| TKMJ24 | Environmental Engineering | 6 | G1X | 1 | E |
| TMHL03 | Mechanics of Light Structures | 6 | A1X | 2 | E |
| TMMV18 | Fluid Mechanics | 6 | A1X | 1 | E |
| TPPE17 | Corporate Finance | 6 | G2X | 4 | E |
| TSBB06 | Multidimensional Signal Analysis | 6* | A1X | 2 | E |
| TSBB08 | Digital Image Processing | 6 | A1X | 4 | E |
| TSDT14 | Signal Theory | 6 | A1X | 1 | E |
| TSFS09 | Modelling and Control of Engines and Drivelines | 6* | A1X | 4 | E |
| TSKS01 | Digital Communication | 6* | A1X | 4 | E |
| TSKS15 | Detection and Estimation of Signals | 6 | A1X | 2 | E |
| TSRT92 | Modelling and Learning for Dynamical Systems | 6 | A1X | 3 | E |
| TSTE12 | Design of Digital Systems | 6 | A1X | 3 | E |
| TSTE86 | Digital Integrated Circuits | 6 | A1X | 2 | E |
| **Period 2** | | | | | |
| TEII18 | Japanese for Engineers III | 6* | G2X | - | C |
| TAMS17 | Statistical Theory, advanced course | 6 | A1X | 1 | E |
| TAMS22 | Probability Theory and Bayesian Networks | 6* | A1X | 4 | E |
| TAMS41 | Statistical Modelling with Regression Methods | 6 | A1X | 3 | E |
| TAOP04 | Mathematical Optimization | 6 | A1X | 2 | E |

| Course code | Course name | Credits | Level | Timetable module | ECV |
|---|---|---|---|---|---|
| TATA34 | Real Analysis, Honours Course | 6* | G2X | 4 | E |
| TATA55 | Abstract Algebra | 6* | G2X | 3 | E |
| TATA71 | Ordinary Differential Equations and Dynamical Systems | 6 | G2X | 2 | E |
| TATM85 | Functional Analysis | 6* | A1X | 1 | E |
| TBME03 | Biochemistry and Cell Biology | 6 | G2X | 2 | E |
| TBMI19 | Medical Information Systems | 6* | A1X | 3 | E |
| TBMT01 | Biomedical Signal Processing | 6 | A1X | 1 | E |
| TDDD38 | Advanced Programming in C++ | 6* | A1X | - | E |
| TFFM08 | Experimental Physics | 6* | A1X | 1 | E |
| TFFY70 | Physics of Condensed Matter part I | 6 | A1X | 2 | E |
| TFYA20 | Surface Physics | 6 | A1X | 4 | E |
| TFYA39 | Semiconductor Technology | 6 | A1X | 3 | E |
| TFYA60 | Astronomy and Geophysics | 6 | G1X | 3 | E |
| TFYA90 | Computational Physics | 6 | A1X | 4 | E |
| TFYY67 | Classical Electrodynamics | 6* | A1X | 3 | E |
| TGTU04 | Leadership | 6 | G2X | 2 | E |
| TGTU49 | History of Technology | 6 | G1X | 3 | E |
| TMKM90 | Engineering Materials - Deformation and Fracture | 6 | A1X | 2 | E |
| TMMS31 | Biomechanical Modelling of Tissues and Systems | 6 | A1X | 4 | E |
| TMMV54 | Computational Heat Transfer | 6 | A1X | 1 | E |
| TPPE29 | Financial Markets and Instruments | 6 | A1X | 2 | E |
| TSBB06 | Multidimensional Signal Analysis | 6* | A1X | 3 | E |
| TSBB09 | Image Sensors | 6 | A1X | 4 | E |
| TSEA81 | Computer Engineering and Real-time Systems | 6 | A1X | 4 | E |
| TSEK02 | Radio Electronics | 6 | A1X | 3 | E |
| TSEK37 | Analog CMOS Integrated Circuits | 6 | A1X | 1 | E |
| TSFS02 | Vehicle Dynamics and Control | 6 | A1X | 1 | E |
| TSFS09 | Modelling and Control of Engines and Drivelines | 6* | A1X | 3 | E |
| TSIN02 | Internetworking | 6 | A1X | 1 | E |

| Course code | Course name | Credits | Level | Timetable module | ECV |
|---|---|---|---|---|---|
| TSIT02 | Computer Security | 6 | G2X | 2 | E |
| TSKS01 | Digital Communication | 6* | A1X | 4 | E |
| TSKS33 | Complex networks and big data | 6 | A1X | 3 | E |
| TSRT78 | Digital Signal Processing | 6 | A1X | 2 | E |

*Specialisation: Applied Physics - Materials and Nano Physics*

| Course code | Course name | Credits | Level | Timetable module | ECV |
|---|---|---|---|---|---|
| **Period 1** | | | | | |
| TFFM08 | Experimental Physics | 6* | A1X | 1 | C |
| TFFY54 | Quantum Mechanics | 6 | A1X | 2 | C |
| TFYA43 | Nanotechnology | 6 | G2X | 3 | E |
| **Period 2** | | | | | |
| TFFM08 | Experimental Physics | 6* | A1X | 1 | C |
| TFFY70 | Physics of Condensed Matter part I | 6 | A1X | 2 | C |
| TFYA20 | Surface Physics | 6 | A1X | 4 | E |
| TFYA39 | Semiconductor Technology | 6 | A1X | 3 | E |

*Specialisation: Applied physics -Theory, Modelling and Computation*

| Course code | Course name | Credits | Level | Timetable module | ECV |
|---|---|---|---|---|---|
| **Period 1** | | | | | |
| TFFY54 | Quantum Mechanics | 6 | A1X | 2 | C |
| TFYA18 | Mathematical Methods of Physics | 6 | A1X | 3 | C |
| TATA75 | Theory of Relativity | 6* | A1X | - | E |
| TFYY67 | Classical Electrodynamics | 6* | A1X | 3 | E |
| **Period 2** | | | | | |
| TFYA90 | Computational Physics | 6 | A1X | 4 | C |
| TATA75 | Theory of Relativity | 6* | A1X | 3 | E |
| TDDE01 | Machine Learning | 6 | A1X | 1 | E |
| TFFY70 | Physics of Condensed Matter part I | 6 | A1X | 2 | E |
| TFYY67 | Classical Electrodynamics | 6* | A1X | 3 | E |

*Specialisation: Biomedical Engineering*

| Course code | Course name | Credits | Level | Timetable module | ECV |
|---|---|---|---|---|---|
| **Period 1** | | | | | |
| TBME04 | Anatomy and Physiology | 6 | G2X | 3 | C |
| TBMI19 | Medical Information Systems | 6* | A1X | 2 | E |
| TSDT14 | Signal Theory | 6 | A1X | 1 | E |
| **Period 2** | | | | | |
| TBMT01 | Biomedical Signal Processing | 6 | A1X | 1 | C |
| TBME03 | Biochemistry and Cell Biology | 6 | G2X | 2 | E |
| TBMI19 | Medical Information Systems | 6* | A1X | 3 | E |

*Specialisation: Communication*

| Course code | Course name | Credits | Level | Timetable module | ECV |
|---|---|---|---|---|---|
| **Period 1** | | | | | |
| TSDT14 | Signal Theory | 6 | A1X | 1 | C |
| TSKS01 | Digital Communication | 6* | A1X | 4 | C |
| TSKS15 | Detection and Estimation of Signals | 6 | A1X | 2 | C |
| **Period 2** | | | | | |
| TSKS01 | Digital Communication | 6* | A1X | 4 | C |
| TDDE01 | Machine Learning | 6 | A1X | 1 | E |
| TSEK02 | Radio Electronics | 6 | A1X | 3 | E |
| TSIN02 | Internetworking | 6 | A1X | 1 | E |
| TSKS33 | Complex networks and big data | 6 | A1X | 3 | E |
| TSRT78 | Digital Signal Processing | 6 | A1X | 2 | E |

*Specialisation: Control and Information Systems*

| Course code | Course name | Credits | Level | Timetable module | ECV |
|---|---|---|---|---|---|
| **Period 1** | | | | | |
| TSRT92 | Modelling and Learning for Dynamical Systems | 6 | A1X | 3 | C |
| TSDT14 | Signal Theory | 6 | A1X | 1 | E |
| TSFS09 | Modelling and Control of Engines and Drivelines | 6* | A1X | 4 | E |
| TSKS15 | Detection and Estimation of Signals | 6 | A1X | 2 | E |
| **Period 2** | | | | | |
| TSRT78 | Digital Signal Processing | 6 | A1X | 2 | C |
| TSEA81 | Computer Engineering and Real-time Systems | 6 | A1X | 4 | C/E |
| TSFS02 | Vehicle Dynamics and Control | 6 | A1X | 1 | E |
| TSFS09 | Modelling and Control of Engines and Drivelines | 6* | A1X | 3 | E |
| TSKS33 | Complex networks and big data | 6 | A1X | 3 | E |

*Specialisation: Data Science and Machine Intelligence*

| Course code | Course name | Credits | Level | Timetable module | ECV |
|---|---|---|---|---|---|
| **Period 1** | | | | | |
| TAMS22 | Probability Theory and Bayesian Networks | 6* | A1X | 4 | C |
| TSKS15 | Detection and Estimation of Signals | 6 | A1X | 2 | C |
| TSRT92 | Modelling and Learning for Dynamical Systems | 6 | A1X | 3 | C |
| **Period 2** | | | | | |
| TAMS22 | Probability Theory and Bayesian Networks | 6* | A1X | 4 | C |
| TDDE01 | Machine Learning | 6 | A1X | 1 | C |
| TSKS33 | Complex networks and big data | 6 | A1X | 3 | C |

*Specialisation: Electronics*

| Course code | Course name | Credits | Level | Timetable module | ECV |
|---|---|---|---|---|---|
| **Period 1** | | | | | |
| TSKS01 | Digital Communication | 6* | A1X | 4 | C |
| TSTE86 | Digital Integrated Circuits | 6 | A1X | 2 | C |
| TSTE12 | Design of Digital Systems | 6 | A1X | 3 | E |
| **Period 2** | | | | | |
| TSEK37 | Analog CMOS Integrated Circuits | 6 | A1X | 1 | C |
| TSKS01 | Digital Communication | 6* | A1X | 4 | C |
| TSEA26 | Design of Embedded DSP Processor | 6 | A1X | 2 | E |
| TSEK02 | Radio Electronics | 6 | A1X | 3 | E |

*Specialisation: Engineering Mathematics*

| Course code | Course name | Credits | Level | Timetable module | ECV |
|---|---|---|---|---|---|
| **Period 1** | | | | | |
| TAMS32 | Stochastic Processes | 6 | A1X | 1 | C |
| TATM85 | Functional Analysis | 6* | A1X | 2 | C |
| TAMS46 | Probability Theory, Second Course | 6 | A1X | 3 | E |
| TAOP34 | Large Scale Optimization | 6 | A1X | 3 | E |
| TATA32 | Discrete Mathematics | 8* | G1X | 3 | E |
| TATA55 | Abstract Algebra | 6* | G2X | 3 | E |
| TDDD08 | Logic Programming | 6 | A1X | 4 | E |
| TFYA18 | Mathematical Methods of Physics | 6 | A1X | 3 | E |
| TSKS15 | Detection and Estimation of Signals | 6 | A1X | 2 | E |
| **Period 2** | | | | | |
| TATM85 | Functional Analysis | 6* | A1X | 1 | C |
| TAOP04 | Mathematical Optimization | 6 | A1X | 2 | E |
| TATA32 | Discrete Mathematics | 8* | G1X | 1 | E |
| TATA55 | Abstract Algebra | 6* | G2X | 3 | E |
| TATA71 | Ordinary Differential Equations and Dynamical Systems | 6 | G2X | 2 | E |

*Specialisation: Financial Mathematics*

| Course code | Course name | Credits | Level | Timetable module | ECV |
|---|---|---|---|---|---|
| **Period 1** | | | | | |
| TAMS32 | Stochastic Processes | 6 | A1X | 1 | C |
| TPPE17 | Corporate Finance | 6 | G2X | 4 | C |
| TAMS46 | Probability Theory, Second Course | 6 | A1X | 3 | E |
| TATM85 | Functional Analysis | 6* | A1X | 2 | E |
| **Period 2** | | | | | |
| TAOP04 | Mathematical Optimization | 6 | A1X | 2 | E |
| TATM85 | Functional Analysis | 6* | A1X | 1 | E |
| TPPE29 | Financial Markets and Instruments | 6 | A1X | 2 | E |

*Specialisation: Mechanics and Control*

| Course code | Course name | Credits | Level | Timetable module | ECV |
|---|---|---|---|---|---|
| **Period 1** | | | | | |
| TMMV11 | Fluid Mechanics and Heat Transfer | 6 | G2X | 2 | E |
| TSFS09 | Modelling and Control of Engines and Drivelines | 6* | A1X | 4 | E |
| TSRT92 | Modelling and Learning for Dynamical Systems | 6 | A1X | 3 | E |
| **Period 2** | | | | | |
| TSEA81 | Computer Engineering and Real-time Systems | 6 | A1X | 4 | C |
| TSFS02 | Vehicle Dynamics and Control | 6 | A1X | 1 | E |
| TSFS09 | Modelling and Control of Engines and Drivelines | 6* | A1X | 3 | E |
| TSRT78 | Digital Signal Processing | 6 | A1X | 2 | E |

*Specialisation: Photonics and Quantum Technology*

| Course code | Course name | Credits | Level | Timetable module | ECV |
|---|---|---|---|---|---|
| **Period 1** | | | | | |
| TFFY54 | Quantum Mechanics | 6 | A1X | 2 | C |
| TFYA97 | Modern Optics | 6 | A1X | 4 | C |
| TFYY67 | Classical Electrodynamics | 6* | A1X | 3 | C |
| TFFM08 | Experimental Physics | 6* | A1X | 1 | E |
| **Period 2** | | | | | |
| TFYY67 | Classical Electrodynamics | 6* | A1X | 3 | C |
| TFFM08 | Experimental Physics | 6* | A1X | 1 | E |
| TFYA28 | Quantum Dynamics | 6 | A1X | 1 | E |
| TSIN02 | Internetworking | 6 | A1X | 1 | E |

*Specialisation: Signal and Image Processing*

| Course code | Course name | Credits | Level | Timetable module | ECV |
|---|---|---|---|---|---|
| **Period 1** | | | | | |
| TSBB06 | Multidimensional Signal Analysis | 6* | A1X | 2 | C |
| TSBB08 | Digital Image Processing | 6 | A1X | 4 | C |
| TSDT14 | Signal Theory | 6 | A1X | 1 | C |
| **Period 2** | | | | | |
| TSBB06 | Multidimensional Signal Analysis | 6* | A1X | 3 | C |
| TSBB09 | Image Sensors | 6 | A1X | 4 | C |
| TSRT78 | Digital Signal Processing | 6 | A1X | 2 | C |

*Specialisation: System-on-Chip*

| Course code | Course name | Credits | Level | Timetable module | ECV |
|---|---|---|---|---|---|
| **Period 1** | | | | | |
| TSTE12 | Design of Digital Systems | 6 | A1X | 3 | C |
| TSTE86 | Digital Integrated Circuits | 6 | A1X | 2 | C |
| TDTS06 | Computer Networks | 6 | G2X | 1 | E |
| TSKS01 | Digital Communication | 6* | A1X | 4 | E |
| **Period 2** | | | | | |
| TSEA26 | Design of Embedded DSP Processor | 6 | A1X | 2 | C |
| TSEA81 | Computer Engineering and Real-time Systems | 6 | A1X | 4 | E |
| TSEK37 | Analog CMOS Integrated Circuits | 6 | A1X | 1 | E |
| TSKS01 | Digital Communication | 6* | A1X | 4 | E |

## Semester 8 (Spring 2021)

| Course code | Course name | Credits | Level | Timetable module | ECV |
|---|---|---|---|---|---|
| **Period 1** | | | | | |
| TAMS29 | Stochastic Processes Applied to Financial Models | 6 | A1X | 3 | E |
| TANA15 | Numerical Linear Algebra | 6 | A1X | 1 | E |
| TATA27 | Partial Differential Equations | 6* | A1X | 2 | E |
| TATA53 | Linear Algebra, Honours Course | 6* | G2X | - | E |
| TATA54 | Number Theory | 6* | G2X | 3 | E |
| TATA66 | Fourier and Wavelet Analysis | 6* | A1X | 4 | E |
| TATA78 | Complex Analysis, second course | 6* | A1X | 2 | E |
| TBMI26 | Neural Networks and Learning Systems | 6 | A1X | 2 | E |
| TBMI31 | Medical Information and Knowledge | 6 | A1X | 4 | E |
| TBMT02 | Medical Imaging | 6 | A1X | 3 | E |
| TBMT09 | Physiological Pressures and Flows | 6 | A1X | 1 | E |
| TDDD41 | Data Mining - Clustering and Association Analysis | 6 | A1X | 3 | E |
| TDDD95 | Algorithmic Problem Solving | 6* | A1X | 1 | E |
| TDDE09 | Natural Language Processing | 6 | A1X | 2 | E |
| TDTS07 | System Design and Methodology | 6 | A1X | 1 | E |

| Course code | Course name | Credits | Level | Timetable module | ECV |
|---|---|---|---|---|---|
| TEAE04 | Industrial Economics and Organisation | 6 | G1X | 2 | E |
| TEIO94 | Entrepreneurship and Idea Development | 6* | G2X | 4 | E |
| TFYA17 | Advanced Project Work in Applied Physics | 6* | A1X | - | E |
| TFYA38 | Optoelectronics | 6 | A1X | 3 | E |
| TFYA85 | Alternative Energy Sources and their Applications | 6 | G2X | 4 | E |
| TFYB03 | Advanced Quantum Mechanics | 6 | A1X | 4 | E |
| TFYM02 | Solid State Physics II | 6 | A1X | 2 | E |
| TFYM04 | Growth and characterization of nanomaterials | 6* | A1X | 1 | E |
| TGTU91 | Oral and Written Communication | 6 | G1X | 2 | E |
| TGTU94 | Technology and Ethics | 6 | G1X | 1 | E |
| TKMJ10 | Industrial Ecology | 6 | A1X | 1 | E |
| TKMJ15 | Environmental Management Strategies | 6 | G1X | 3 | E |
| TMMS30 | Multi Body Dynamics and Robotics | 6 | A1X | 1 | E |
| TNM048 | Information Visualisation | 6 | A1X | 3 | E |
| TPPE32 | Financial Risk Management | 6 | A1X | 2 | E |
| TSBB15 | Computer Vision | 12* | A1X | 1 | E |
| TSBB15 | Computer Vision | 12* | A1X | 1 | E |
| TSBK07 | Computer Graphics | 6* | A1X | 4 | E |
| TSBK08 | Data Compression | 6 | A1X | 2 | E |
| TSEK06 | VLSI Design | 12* | A1X | 4 | E |
| TSEK38 | Radio Frequency Transceiver Design | 6 | A1X | 2 | E |
| TSFS04 | Electrical Drives | 6 | G2X | 4 | E |
| TSIT12 | Quantum Electronics and Quantum Optics | 6* | A1X | 1 | E |
| TSKS13 | Wireless Communications | 6 | A1X | 4 | E |
| TSRT07 | Industrial Control Systems | 6 | A1X | 2 | E |
| TSRT09 | Control Theory | 6 | A1X | 3 | E |
| TSTE14 | Analog Filters | 6 | A1X | 2 | E |
| TSTE27 | Analog and Discrete-Time Integrated Circuits | 6 | A1X | 3 | E |
| TSTE93 | Analog Circuits | 6* | G2X | 1 | E |
| **Period 2** | | | | | |
| TANA31 | Computational Methods for Ordinary and Partial Differential Equations | 6 | A1X | 2 | E |

| Course code | Course name | Credits | Level | Timetable module | ECV |
|---|---|---|---|---|---|
| TAOP24 | Optimization, Advanced Course | 6 | G2X | 1 | E |
| TAOP87 | Applied Optimization Project Course | 6 | A1X | 3 | E |
| TATA27 | Partial Differential Equations | 6* | A1X | 4 | E |
| TATA53 | Linear Algebra, Honours Course | 6* | G2X | - | E |
| TATA54 | Number Theory | 6* | G2X | 1 | E |
| TATA66 | Fourier and Wavelet Analysis | 6* | A1X | 2 | E |
| TATA78 | Complex Analysis, second course | 6* | A1X | 3 | E |
| TBME08 | Biomedical Modeling and Simulation | 6 | A1X | 3 | E |
| TBMT26 | Technology in Intensive Care and Surgery | 6 | A1X | 1 | E |
| TDDC78 | Programming of Parallel Computers - Methods and Tools | 6 | A1X | 3 | E |
| TDDD12 | Database Technology | 6 | G2X | 4 | E |
| TDDD95 | Algorithmic Problem Solving | 6* | A1X | 4 | E |
| TDDE07 | Bayesian Learning | 6 | A1X | 2 | E |
| TDDE31 | Big Data Analytics | 6 | A1X | 3 | E |
| TEAE13 | Civil and Commercial Law | 6 | G1X | 2 | E |
| TEIE44 | Intellectual Property Rights | 4 | G1X | 1 | E |
| TEIO94 | Entrepreneurship and Idea Development | 6* | G2X | 4 | E |
| TFMT19 | Chemical Sensor Systems | 6 | A1X | 4 | E |
| TFYA17 | Advanced Project Work in Applied Physics | 6* | A1X | - | E |
| TFYA21 | Physical Metallurgy | 6 | A1X | 3 | E |
| TFYM04 | Growth and characterization of nanomaterials | 6* | A1X | 1 | E |
| TGTU95 | Philosophy of Science and Technology | 6 | G1X | 4 | E |
| TKMJ29 | Resource Efficient Products | 6 | A1X | 1 | E |
| TNM079 | Modelling and Animation | 6 | A1X | 2 | E |
| TPPE33 | Portfolio Management | 6 | A1X | 2 | E |
| TSBB15 | Computer Vision | 12* | A1X | 3 | E |
| TSBB15 | Computer Vision | 12* | A1X | 3 | E |
| TSBK02 | Image and Audio Coding | 6 | A1X | 4 | E |
| TSBK07 | Computer Graphics | 6* | A1X | 1 | E |
| TSEK06 | VLSI Design | 12* | A1X | 4 | E |
| TSFS03 | Vehicle Propulsion Systems | 6 | A1X | 3 | E |

| Course code | Course name | Credits | Level | Timetable module | ECV |
|---|---|---|---|---|---|
| TSFS06 | Diagnosis and Supervision | 6 | A1X | 1 | E |
| TSFS11 | Electrical and Energy Technology | 6 | G2X | 4 | E |
| TSIT11 | Quantum Algorithms and Quantum Information | 6 | A1X | 3 | E |
| TSIT12 | Quantum Electronics and Quantum Optics | 6* | A1X | 1 | E |
| TSKS14 | Multiple Antenna Communications | 6 | A1X | 3 | E |
| TSKS16 | Signal Processing for Communications | 6 | A1X | 1 | E |
| TSRT14 | Sensor Fusion | 6 | A1X | 2 | E |
| TSTE06 | Digital Filters | 6 | A1X | 3 | E |
| TSTE87 | Application-Specific Integrated Circuits | 6 | A1X | 2 | E |
| TSTE93 | Analog Circuits | 6* | G2X | 1 | E |

*Specialisation: Applied Physics - Materials and Nano Physics*

| Course code | Course name | Credits | Level | Timetable module | ECV |
|---|---|---|---|---|---|
| **Period 1** | | | | | |
| TFYM04 | Growth and characterization of nanomaterials | 6* | A1X | 1 | C |
| TFYA17 | Advanced Project Work in Applied Physics | 6* | A1X | - | E |
| TFYA38 | Optoelectronics | 6 | A1X | 3 | E |
| TFYM02 | Solid State Physics II | 6 | A1X | 2 | E |
| **Period 2** | | | | | |
| TFYA21 | Physical Metallurgy | 6 | A1X | 3 | C |
| TFYM04 | Growth and characterization of nanomaterials | 6* | A1X | 1 | C |
| TFMT19 | Chemical Sensor Systems | 6 | A1X | 4 | E |
| TFYA17 | Advanced Project Work in Applied Physics | 6* | A1X | - | E |

*Specialisation: Applied physics -Theory, Modelling and Computation*

| Course code | Course name | Credits | Level | Timetable module | ECV |
|---|---|---|---|---|---|
| **Period 1** | | | | | |
| TATA27 | Partial Differential Equations | 6* | A1X | 2 | E |
| TBMI26 | Neural Networks and Learning Systems | 6 | A1X | 2 | E |
| TFYA17 | Advanced Project Work in Applied Physics | 6* | A1X | - | E |
| TFYB03 | Advanced Quantum Mechanics | 6 | A1X | 4 | E |
| TFYM02 | Solid State Physics II | 6 | A1X | 2 | E |
| TSBK07 | Computer Graphics | 6* | A1X | 4 | E |
| **Period 2** | | | | | |
| TATA27 | Partial Differential Equations | 6* | A1X | 4 | E |
| TFYA17 | Advanced Project Work in Applied Physics | 6* | A1X | - | E |
| TFYA21 | Physical Metallurgy | 6 | A1X | 3 | E |
| TSBK07 | Computer Graphics | 6* | A1X | 1 | E |
| TSIT11 | Quantum Algorithms and Quantum Information | 6 | A1X | 3 | E |

*Specialisation: Biomedical Engineering*

| Course code | Course name | Credits | Level | Timetable module | ECV |
|---|---|---|---|---|---|
| **Period 1** | | | | | |
| TBMT02 | Medical Imaging | 6 | A1X | 3 | C |
| TBMT09 | Physiological Pressures and Flows | 6 | A1X | 1 | C |
| TBMI26 | Neural Networks and Learning Systems | 6 | A1X | 2 | E |
| TBMI31 | Medical Information and Knowledge | 6 | A1X | 4 | E |
| **Period 2** | | | | | |
| TBME08 | Biomedical Modeling and Simulation | 6 | A1X | 3 | E |
| TBMT26 | Technology in Intensive Care and Surgery | 6 | A1X | 1 | E |

*Specialisation: Communication*

| Course code | Course name | Credits | Level | Timetable module | ECV |
|---|---|---|---|---|---|
| **Period 1** | | | | | |
| TBMI26 | Neural Networks and Learning Systems | 6 | A1X | 2 | E |
| TSBK08 | Data Compression | 6 | A1X | 2 | E |
| TSEK38 | Radio Frequency Transceiver Design | 6 | A1X | 2 | E |
| TSKS13 | Wireless Communications | 6 | A1X | 4 | E |
| **Period 2** | | | | | |
| TSBK02 | Image and Audio Coding | 6 | A1X | 4 | E |
| TSKS14 | Multiple Antenna Communications | 6 | A1X | 3 | E |
| TSKS16 | Signal Processing for Communications | 6 | A1X | 1 | E |

*Specialisation: Control and Information Systems*

| Course code | Course name | Credits | Level | Timetable module | ECV |
|---|---|---|---|---|---|
| **Period 1** | | | | | |
| TSRT07 | Industrial Control Systems | 6 | A1X | 2 | C |
| TSRT09 | Control Theory | 6 | A1X | 3 | C |
| **Period 2** | | | | | |
| TDDD12 | Database Technology | 6 | G2X | 4 | C/E |
| TDDC78 | Programming of Parallel Computers - Methods and Tools | 6 | A1X | 3 | E |
| TSFS06 | Diagnosis and Supervision | 6 | A1X | 1 | E |
| TSRT14 | Sensor Fusion | 6 | A1X | 2 | E |

*Specialisation: Data Science and Machine Intelligence*

| Course code | Course name | Credits | Level | Timetable module | ECV |
|---|---|---|---|---|---|
| **Period 1** | | | | | |
| TDDD95 | Algorithmic Problem Solving | 6* | A1X | 1 | C |
| TANA15 | Numerical Linear Algebra | 6 | A1X | 1 | E |
| TBMI26 | Neural Networks and Learning Systems | 6 | A1X | 2 | E |
| TDDD38 | Advanced Programming in C++ | 6* | A1X | 2 | E |
| TDDD41 | Data Mining - Clustering and Association Analysis | 6 | A1X | 3 | E |
| **Period 2** | | | | | |
| TDDD95 | Algorithmic Problem Solving | 6* | A1X | 4 | C |
| TAOP24 | Optimization, Advanced Course | 6 | G2X | 1 | E |
| TDDC78 | Programming of Parallel Computers - Methods and Tools | 6 | A1X | 3 | E |
| TDDD38 | Advanced Programming in C++ | 6* | A1X | - | E |
| TDDE07 | Bayesian Learning | 6 | A1X | 2 | E |
| TDDE31 | Big Data Analytics | 6 | A1X | 3 | E |
| TSRT14 | Sensor Fusion | 6 | A1X | 2 | E |

*Specialisation: Electronics*

| Course code | Course name | Credits | Level | Timetable module | ECV |
|---|---|---|---|---|---|
| **Period 1** | | | | | |
| TSTE27 | Analog and Discrete-Time Integrated Circuits | 6 | A1X | 3 | C |
| TSEK06 | VLSI Design | 12* | A1X | 4 | C/E |
| TSEK38 | Radio Frequency Transceiver Design | 6 | A1X | 2 | E |
| TSTE14 | Analog Filters | 6 | A1X | 2 | E |
| TSTE93 | Analog Circuits | 6* | G2X | 1 | E |
| **Period 2** | | | | | |
| TSTE87 | Application-Specific Integrated Circuits | 6 | A1X | 2 | C |
| TSEK06 | VLSI Design | 12* | A1X | 4 | C/E |
| TSKS16 | Signal Processing for Communications | 6 | A1X | 1 | E |
| TSTE06 | Digital Filters | 6 | A1X | 3 | E |
| TSTE93 | Analog Circuits | 6* | G2X | 1 | E |

*Specialisation: Engineering Mathematics*

| Course code | Course name | Credits | Level | Timetable module | ECV |
|---|---|---|---|---|---|
| **Period 1** | | | | | |
| TANA15 | Numerical Linear Algebra | 6 | A1X | 1 | C |
| TATA27 | Partial Differential Equations | 6* | A1X | 2 | E |
| TATA66 | Fourier and Wavelet Analysis | 6* | A1X | 4 | E |
| TATA78 | Complex Analysis, second course | 6* | A1X | 2 | E |
| TSRT09 | Control Theory | 6 | A1X | 3 | E |
| **Period 2** | | | | | |
| TAOP24 | Optimization, Advanced Course | 6 | G2X | 1 | C |
| TATA27 | Partial Differential Equations | 6* | A1X | 4 | E |
| TATA66 | Fourier and Wavelet Analysis | 6* | A1X | 2 | E |
| TATA78 | Complex Analysis, second course | 6* | A1X | 3 | E |

*Specialisation: Financial Mathematics*

| Course code | Course name | Credits | Level | Timetable module | ECV |
|---|---|---|---|---|---|
| **Period 1** | | | | | |
| TAMS29 | Stochastic Processes Applied to Financial Models | 6 | A1X | 3 | C |
| TANA15 | Numerical Linear Algebra | 6 | A1X | 1 | C |
| TPPE32 | Financial Risk Management | 6 | A1X | 2 | E |
| **Period 2** | | | | | |
| TAOP24 | Optimization, Advanced Course | 6 | G2X | 1 | E |
| TDDD12 | Database Technology | 6 | G2X | 4 | E |
| TPPE33 | Portfolio Management | 6 | A1X | 2 | E |

*Specialisation: Mechanics and Control*

| Course code | Course name | Credits | Level | Timetable module | ECV |
|---|---|---|---|---|---|
| **Period 1** | | | | | |
| TMMS30 | Multi Body Dynamics and Robotics | 6 | A1X | 1 | E |
| TSFS04 | Electrical Drives | 6 | G2X | 4 | E |
| TSRT07 | Industrial Control Systems | 6 | A1X | 2 | E |
| TSRT09 | Control Theory | 6 | A1X | 3 | E |
| **Period 2** | | | | | |
| TSFS03 | Vehicle Propulsion Systems | 6 | A1X | 3 | E |
| TSFS06 | Diagnosis and Supervision | 6 | A1X | 1 | E |
| TSRT14 | Sensor Fusion | 6 | A1X | 2 | E |

*Specialisation: Photonics and Quantum Technology*

| Course code | Course name | Credits | Level | Timetable module | ECV |
|---|---|---|---|---|---|
| **Period 1** | | | | | |
| TFYA38 | Optoelectronics | 6 | A1X | 3 | C |
| TSIT12 | Quantum Electronics and Quantum Optics | 6* | A1X | 1 | C |
| TFYB03 | Advanced Quantum Mechanics | 6 | A1X | 4 | E |
| **Period 2** | | | | | |
| TSIT12 | Quantum Electronics and Quantum Optics | 6* | A1X | 1 | C |
| TSIT11 | Quantum Algorithms and Quantum Information | 6 | A1X | 3 | E |

*Specialisation: Signal and Image Processing*

| Course code | Course name | Credits | Level | Timetable module | ECV |
|---|---|---|---|---|---|
| **Period 1** | | | | | |
| TBMI26 | Neural Networks and Learning Systems | 6 | A1X | 2 | E |
| TBMT02 | Medical Imaging | 6 | A1X | 3 | E |
| TDDE09 | Natural Language Processing | 6 | A1X | 2 | E |
| TNM048 | Information Visualisation | 6 | A1X | 3 | E |
| TSBB15 | Computer Vision | 12* | A1X | 1 | E |
| TSBB15 | Computer Vision | 12* | A1X | 1 | E |
| TSBK07 | Computer Graphics | 6* | A1X | 4 | E |
| TSBK08 | Data Compression | 6 | A1X | 2 | E |
| **Period 2** | | | | | |
| TSBB15 | Computer Vision | 12* | A1X | 3 | E |
| TSBB15 | Computer Vision | 12* | A1X | 3 | E |
| TSBK02 | Image and Audio Coding | 6 | A1X | 4 | E |
| TSBK07 | Computer Graphics | 6* | A1X | 1 | E |
| TSRT14 | Sensor Fusion | 6 | A1X | 2 | E |

*Specialisation: System-on-Chip*

| Course code | Course name | Credits | Level | Timetable module | ECV |
|---|---|---|---|---|---|
| **Period 1** | | | | | |
| TDTS07 | System Design and Methodology | 6 | A1X | 1 | C |
| TSEK06 | VLSI Design | 12* | A1X | 4 | C/E |
| TSBK07 | Computer Graphics | 6* | A1X | 4 | E |
| TSTE27 | Analog and Discrete-Time Integrated Circuits | 6 | A1X | 3 | E |
| **Period 2** | | | | | |
| TSEK06 | VLSI Design | 12* | A1X | 4 | C/E |
| TEIE44 | Intellectual Property Rights | 4 | G1X | 1 | E |
| TSBK07 | Computer Graphics | 6* | A1X | 1 | E |
| TSKS16 | Signal Processing for Communications | 6 | A1X | 1 | E |
| TSTE06 | Digital Filters | 6 | A1X | 3 | E |
| TSTE87 | Application-Specific Integrated Circuits | 6 | A1X | 2 | E |

## Semester 9 (Autumn 2021)

| Course code | Course name | Credits | Level | Timetable module | ECV |
|---|---|---|---|---|---|
| **Period 1** | | | | | |
| TAMS39 | Multivariate Statistical Methods | 6 | A1X | 4 | E |
| TATA32 | Discrete Mathematics | 8* | G1X | 3 | E |
| TATA62 | Project - Applied Mathematics | 12* | A1X | 4 | E |
| TATA75 | Theory of Relativity | 6* | A1X | - | E |
| TBMT14 | Biomedical Engineering - Project Course | 12* | A1X | 4 | E |
| TBMT57 | Biomedical Optics | 6 | A1X | 1 | E |
| TDDC88 | Software Engineering | 12* | A1X | 1 | E |
| TDDE15 | Advanced Machine Learning | 6 | A1X | 1 | E |
| TFKE59 | Fundamentals of Chemistry | 6 | G1X | 2 | E |
| TFYA36 | Chaos and Non-Linear Phenomena | 6 | A1X | 2 | E |
| TFYA40 | Analytical Mechanics | 6* | A1X | 1 | E |
| TFYA99 | Project Course in Applied Physics, CDIO | 12* | A1X | 4 | E |
| TFYM03 | Nanophysics | 6 | A1X | 3 | E |
| TMES09 | Industrial Energy Systems | 6 | A1X | 2 | E |
| TMMS11 | Models of Mechanics | 6* | A1X | 3 | E |
| TMMV01 | Aerodynamics | 6 | A1X | 2 | E |
| TNE071 | Microwave Engineering | 6 | A1X | 1 | E |
| TNE089 | Electromagnetic Compatibility (EMC) and Printed Circuit Board (PCB) Design | 6* | A1X | 2 | E |
| TNM067 | Scientific Visualization | 6 | A1X | 3 | E |
| TPPE53 | Financial Valuation Methodology | 6 | A1X | 2 | E |
| TSBB11 | Images and Graphics, Project Course CDIO | 12* | A1X | 4 | E |
| TSBB19 | Machine Learning for Computer Vision | 6 | A1X | 2 | E |
| TSBK03 | Advanced Game Programming | 6* | A1X | 1 | E |
| TSEA84 | Digital Design Project | 6* | A1X | 1 | E |
| TSEK03 | Radio Frequency Integrated Circuits | 6 | A1X | 2 | E |
| TSEK11 | Evaluation of an Integrated Circuit | 2 | A1X | 4 | E |
| TSFS12 | Autonomous Vehicles - Planning, Control, and Learning Systems | 6 | A1X | 1 | E |
| TSIN01 | Information Networks | 6 | A1X | 3 | E |
| TSIT03 | Cryptology | 6 | A1X | 2 | E |
| TSIT13 | Quantum Communication | 6 | A1X | 1 | E |

| Course code | Course name | Credits | Level | Timetable module | ECV |
|---|---|---|---|---|---|
| TSKS12 | Modern Channel Coding, Inference and Learning | 6 | A1X | 1 | E |
| TSKS23 | Project Course in Signal Processing, Communications and Networking, CDIO | 12* | A1X | 4 | E |
| TSRT10 | Automatic Control - Project Course | 12* | A1X | 4 | E |
| TSTE17 | System Design | 12* | A1X | 4 | E |
| TSTE25 | Power Electronics | 6 | A1X | 3 | E |
| **Period 2** | | | | | |
| TATA32 | Discrete Mathematics | 8* | G1X | 1 | E |
| TATA62 | Project - Applied Mathematics | 12* | A1X | 4 | E |
| TATA75 | Theory of Relativity | 6* | A1X | 3 | E |
| TBMI02 | Medical Image Analysis | 6 | A1X | 1 | E |
| TBMT14 | Biomedical Engineering - Project Course | 12* | A1X | 4 | E |
| TDDC88 | Software Engineering | 12* | A1X | 1 | E |
| TDDD37 | Database Technology | 6 | G2X | 1 | E |
| TDDD49 | Programming in C# and .NET Framework | 4 | G2X | 3 | E |
| TDDD56 | Multicore and GPU Programming | 6 | A1X | 2 | E |
| TDDE01 | Machine Learning | 6 | A1X | 1 | E |
| TDDE16 | Text Mining | 6 | A1X | 2 | E |
| TFYA40 | Analytical Mechanics | 6* | A1X | 3 | E |
| TFYA99 | Project Course in Applied Physics, CDIO | 12* | A1X | 4 | E |
| TFYB02 | Elementary Particles and Quantum Fields | 6 | A1X | 1 | E |
| TMME50 | Flight Mechanics | 6 | A1X | 2 | E |
| TMMS11 | Models of Mechanics | 6* | A1X | 3 | E |
| TNE083 | Antenna Theory | 6 | A1X | 2 | E |
| TNE089 | Electromagnetic Compatibility (EMC) and Printed Circuit Board (PCB) Design | 6* | A1X | 1 | E |
| TNM086 | Virtual Reality Techniques | 6 | A1X | 2 | E |
| TPPE61 | Financial Optimization | 6 | A1X | 2 | E |
| TSBB11 | Images and Graphics, Project Course CDIO | 12* | A1X | 4 | E |
| TSBK03 | Advanced Game Programming | 6* | A1X | - | E |
| TSEA26 | Design of Embedded DSP Processor | 6 | A1X | 2 | E |
| TSEA44 | Computer Hardware - a System on Chip | 6 | A1X | 1 | E |

| Course code | Course name | Credits | Level | Timetable module | ECV |
|---|---|---|---|---|---|
| TSEA84 | Digital Design Project | 6* | A1X | 3 | E |
| TSKS23 | Project Course in Signal Processing, Communications and Networking, CDIO | 12* | A1X | 4 | E |
| TSRT08 | Optimal Control | 6 | A1X | 3 | E |
| TSRT10 | Automatic Control - Project Course | 12* | A1X | 4 | E |
| TSTE17 | System Design | 12* | A1X | 4 | E |
| TSTE26 | Powergrid and Technology for Renewable Production | 6 | A1X | 3 | E |
| TSTE85 | Low Power Electronics | 6 | A1X | 2 | E |

*Specialisation: Applied Physics - Materials and Nano Physics*

| Course code | Course name | Credits | Level | Timetable module | ECV |
|---|---|---|---|---|---|
| **Period 1** | | | | | |
| TFYA99 | Project Course in Applied Physics, CDIO | 12* | A1X | 4 | C |
| TFYA40 | Analytical Mechanics | 6* | A1X | 1 | E |
| TFYM03 | Nanophysics | 6 | A1X | 3 | E |
| **Period 2** | | | | | |
| TFYA99 | Project Course in Applied Physics, CDIO | 12* | A1X | 4 | C |
| TFYA40 | Analytical Mechanics | 6* | A1X | 3 | E |

*Specialisation: Applied physics -Theory, Modelling and Computation*

| Course code | Course name | Credits | Level | Timetable module | ECV |
|---|---|---|---|---|---|
| **Period 1** | | | | | |
| TFYA40 | Analytical Mechanics | 6* | A1X | 1 | C |
| TFYA99 | Project Course in Applied Physics, CDIO | 12* | A1X | 4 | C |
| TFYA36 | Chaos and Non-Linear Phenomena | 6 | A1X | 2 | E |
| **Period 2** | | | | | |
| TFYA40 | Analytical Mechanics | 6* | A1X | 3 | C |
| TFYA99 | Project Course in Applied Physics, CDIO | 12* | A1X | 4 | C |
| TFYB01 | Advanced Electromagnetics | 6 | A1X | 2 | E |
| TFYB02 | Elementary Particles and Quantum Fields | 6 | A1X | 1 | E |

*Specialisation: Biomedical Engineering*

| Course code | Course name | Credits | Level | Timetable module | ECV |
|---|---|---|---|---|---|
| **Period 1** | | | | | |
| TBMT14 | Biomedical Engineering - Project Course | 12* | A1X | 4 | C |
| TAMS39 | Multivariate Statistical Methods | 6 | A1X | 4 | E |
| TATM38 | Mathematical Models in Biology | 6 | A1X | 3 | E |
| TBMT57 | Biomedical Optics | 6 | A1X | 1 | E |
| **Period 2** | | | | | |
| TBMT14 | Biomedical Engineering - Project Course | 12* | A1X | 4 | C |
| TBMI02 | Medical Image Analysis | 6 | A1X | 1 | E |

*Specialisation: Communication*

| Course code | Course name | Credits | Level | Timetable module | ECV |
|---|---|---|---|---|---|
| **Period 1** | | | | | |
| TSIN01 | Information Networks | 6 | A1X | 3 | C |
| TSKS23 | Project Course in Signal Processing, Communications and Networking, CDIO | 12* | A1X | 4 | C |
| TSEK03 | Radio Frequency Integrated Circuits | 6 | A1X | 2 | E |
| TSIT03 | Cryptology | 6 | A1X | 2 | E |
| TSKS12 | Modern Channel Coding, Inference and Learning | 6 | A1X | 1 | E |
| **Period 2** | | | | | |
| TSKS23 | Project Course in Signal Processing, Communications and Networking, CDIO | 12* | A1X | 4 | C |

*Specialisation: Control and Information Systems*

| Course code | Course name | Credits | Level | Timetable module | ECV |
|---|---|---|---|---|---|
| **Period 1** | | | | | |
| TATA62 | Project - Applied Mathematics | 12* | A1X | 4 | C/E |
| TSRT10 | Automatic Control - Project Course | 12* | A1X | 4 | C/E |
| TDTS06 | Computer Networks | 6 | G2X | 1 | E |
| TSFS12 | Autonomous Vehicles - Planning, Control, and Learning Systems | 6 | A1X | 1 | E |
| **Period 2** | | | | | |
| TATA62 | Project - Applied Mathematics | 12* | A1X | 4 | C/E |
| TSRT10 | Automatic Control - Project Course | 12* | A1X | 4 | C/E |
| TSRT08 | Optimal Control | 6 | A1X | 3 | E |

*Specialisation: Data Science and Machine Intelligence*

| Course code | Course name | Credits | Level | Timetable module | ECV |
|---|---|---|---|---|---|
| **Period 1** | | | | | |
| TSBB11 | Images and Graphics, Project Course CDIO | 12* | A1X | 4 | C/E |
| TSKS23 | Project Course in Signal Processing, Communications and Networking, CDIO | 12* | A1X | 4 | C/E |
| TAMS39 | Multivariate Statistical Methods | 6 | A1X | 4 | E |
| TAOP34 | Large Scale Optimization | 6 | A1X | 3 | E |
| TDDC17 | Artificial Intelligence | 6 | G2X | 3 | E |
| TDDE15 | Advanced Machine Learning | 6 | A1X | 1 | E |
| TSBB06 | Multidimensional Signal Analysis | 6* | A1X | 2 | E |
| TSBB08 | Digital Image Processing | 6 | A1X | 4 | E |
| TSDT14 | Signal Theory | 6 | A1X | 1 | E |
| TSKS12 | Modern Channel Coding, Inference and Learning | 6 | A1X | 1 | E |
| **Period 2** | | | | | |
| TSBB11 | Images and Graphics, Project Course CDIO | 12* | A1X | 4 | C/E |
| TSKS23 | Project Course in Signal Processing, Communications and Networking, CDIO | 12* | A1X | 4 | C/E |
| TBMI02 | Medical Image Analysis | 6 | A1X | 1 | E |
| TDDD37 | Database Technology | 6 | G2X | 1 | E |
| TDDE16 | Text Mining | 6 | A1X | 2 | E |
| TSBB06 | Multidimensional Signal Analysis | 6* | A1X | 3 | E |
| TSRT78 | Digital Signal Processing | 6 | A1X | 2 | E |

*Specialisation: Electronics*

| Course code | Course name | Credits | Level | Timetable module | ECV |
|---|---|---|---|---|---|
| **Period 1** | | | | | |
| TSTE17 | System Design | 12* | A1X | 4 | C/E |
| TNE071 | Microwave Engineering | 6 | A1X | 1 | E |
| TNE089 | Electromagnetic Compatibility (EMC) and Printed Circuit Board (PCB) Design | 6* | A1X | 2 | E |
| TSEA84 | Digital Design Project | 6* | A1X | 1 | E |
| TSEK03 | Radio Frequency Integrated Circuits | 6 | A1X | 2 | E |
| TSEK11 | Evaluation of an Integrated Circuit | 2 | A1X | 4 | E |
| TSTE25 | Power Electronics | 6 | A1X | 3 | E |
| **Period 2** | | | | | |
| TSTE17 | System Design | 12* | A1X | 4 | C/E |
| TNE083 | Antenna Theory | 6 | A1X | 2 | E |
| TNE089 | Electromagnetic Compatibility (EMC) and Printed Circuit Board (PCB) Design | 6* | A1X | 1 | E |
| TSEA26 | Design of Embedded DSP Processor | 6 | A1X | 2 | E |
| TSEA44 | Computer Hardware - a System on Chip | 6 | A1X | 1 | E |
| TSEA84 | Digital Design Project | 6* | A1X | 3 | E |
| TSTE26 | Powergrid and Technology for Renewable Production | 6 | A1X | 3 | E |
| TSTE85 | Low Power Electronics | 6 | A1X | 2 | E |

*Specialisation: Engineering Mathematics*

| Course code | Course name | Credits | Level | Timetable module | ECV |
|---|---|---|---|---|---|
| **Period 1** | | | | | |
| TATA62 | Project - Applied Mathematics | 12* | A1X | 4 | C/E |
| TSRT10 | Automatic Control - Project Course | 12* | A1X | 4 | C/E |
| TATA75 | Theory of Relativity | 6* | A1X | - | E |
| TATM38 | Mathematical Models in Biology | 6 | A1X | 3 | E |
| TDDD38 | Advanced Programming in C++ | 6* | A1X | 2 | E |
| TFYA40 | Analytical Mechanics | 6* | A1X | 1 | E |
| TMMS11 | Models of Mechanics | 6* | A1X | 3 | E |
| TPPE53 | Financial Valuation Methodology | 6 | A1X | 2 | E |
| **Period 2** | | | | | |
| TATA62 | Project - Applied Mathematics | 12* | A1X | 4 | C/E |
| TSRT10 | Automatic Control - Project Course | 12* | A1X | 4 | C/E |
| TATA75 | Theory of Relativity | 6* | A1X | 3 | E |
| TDDD38 | Advanced Programming in C++ | 6* | A1X | - | E |
| TFYA40 | Analytical Mechanics | 6* | A1X | 3 | E |
| TMMS11 | Models of Mechanics | 6* | A1X | 3 | E |
| TPPE61 | Financial Optimization | 6 | A1X | 2 | E |

*Specialisation: Financial Mathematics*

| Course code | Course name | Credits | Level | Timetable module | ECV |
|---|---|---|---|---|---|
| **Period 1** | | | | | |
| TATA62 | Project - Applied Mathematics | 12* | A1X | 4 | C |
| TPPE53 | Financial Valuation Methodology | 6 | A1X | 2 | C |
| **Period 2** | | | | | |
| TATA62 | Project - Applied Mathematics | 12* | A1X | 4 | C |
| TPPE61 | Financial Optimization | 6 | A1X | 2 | C |

*Specialisation: Mechanics and Control*

| Course code | Course name | Credits | Level | Timetable module | ECV |
|---|---|---|---|---|---|
| **Period 1** | | | | | |
| TSRT10 | Automatic Control - Project Course | 12* | A1X | 4 | C |
| TFYA40 | Analytical Mechanics | 6* | A1X | 1 | E |
| TSFS12 | Autonomous Vehicles - Planning, Control, and Learning Systems | 6 | A1X | 1 | E |
| **Period 2** | | | | | |
| TSRT10 | Automatic Control - Project Course | 12* | A1X | 4 | C |
| TFYA40 | Analytical Mechanics | 6* | A1X | 3 | E |
| TMME50 | Flight Mechanics | 6 | A1X | 2 | E |
| TSRT08 | Optimal Control | 6 | A1X | 3 | E |

*Specialisation: Photonics and Quantum Technology*

| Course code | Course name | Credits | Level | Timetable module | ECV |
|---|---|---|---|---|---|
| **Period 1** | | | | | |
| TFYA99 | Project Course in Applied Physics, CDIO | 12* | A1X | 4 | C |
| TBMT57 | Biomedical Optics | 6 | A1X | 1 | E |
| TFYM03 | Nanophysics | 6 | A1X | 3 | E |
| TSIT03 | Cryptology | 6 | A1X | 2 | E |
| TSIT13 | Quantum Communication | 6 | A1X | 1 | E |
| **Period 2** | | | | | |
| TFYA99 | Project Course in Applied Physics, CDIO | 12* | A1X | 4 | C |
| TSIT02 | Computer Security | 6 | G2X | 2 | E |

*Specialisation: Signal and Image Processing*

| Course code | Course name | Credits | Level | Timetable module | ECV |
|---|---|---|---|---|---|
| **Period 1** | | | | | |
| TSBB11 | Images and Graphics, Project Course CDIO | 12* | A1X | 4 | C |
| TNM067 | Scientific Visualization | 6 | A1X | 3 | E |
| TSBB19 | Machine Learning for Computer Vision | 6 | A1X | 2 | E |
| TSBK03 | Advanced Game Programming | 6* | A1X | 1 | E |
| TSKS15 | Detection and Estimation of Signals | 6 | A1X | 2 | E |
| **Period 2** | | | | | |
| TSBB11 | Images and Graphics, Project Course CDIO | 12* | A1X | 4 | C |
| TBMI02 | Medical Image Analysis | 6 | A1X | 1 | E |
| TDDD56 | Multicore and GPU Programming | 6 | A1X | 2 | E |
| TDDE01 | Machine Learning | 6 | A1X | 1 | E |
| TNM086 | Virtual Reality Techniques | 6 | A1X | 2 | E |
| TSBK03 | Advanced Game Programming | 6* | A1X | - | E |

*Specialisation: System-on-Chip*

| Course code | Course name | Credits | Level | Timetable module | ECV |
|---|---|---|---|---|---|
| **Period 1** | | | | | |
| TSTE17 | System Design | 12* | A1X | 4 | C/E |
| TDTS08 | Advanced Computer Architecture | 6 | A1X | 2 | E |
| TSEA84 | Digital Design Project | 6* | A1X | 1 | E |
| TSEK11 | Evaluation of an Integrated Circuit | 2 | A1X | 4 | E |
| **Period 2** | | | | | |
| TSEA26 | Design of Embedded DSP Processor | 6 | A1X | 2 | C |
| TSTE17 | System Design | 12* | A1X | 4 | C/E |
| TDDD56 | Multicore and GPU Programming | 6 | A1X | 2 | E |
| TSEA44 | Computer Hardware - a System on Chip | 6 | A1X | 1 | E |
| TSEA84 | Digital Design Project | 6* | A1X | 3 | E |
| TSIT02 | Computer Security | 6 | G2X | 2 | E |
| TSTE85 | Low Power Electronics | 6 | A1X | 2 | 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.