

# Computer Science and Software Engineering, M Sc in Engineering

300 credits

Civilingenjör i mjukvaruteknik

6CMJU

Valid from: 2016 Spring semester

**Determined by**

Board of Studies for Computer Science  
and Media Technology

**Date determined**

2016-01-19

## Entry requirements

### Degree in Swedish

Civilingenjör 300 hp och Teknologie master 120 hp

## Curriculum

### Semester 2 (Spring 2017)

| Course code     | Course name                             | Credits | Level | Timetable module | ECV |
|-----------------|---|---------|-------|------------------|-----|
| <b>Period 1</b> |   |         |       |                  |     |
| TDDD78          | Object Oriented Programming and Java    | 6*      | G1X   | 1                | C   |
| TDDD79          | Professionalism for Engineers, part 2   | 1*      | G1X   | -                | C   |
| TDDD80          | Project: Mobile and Social Applications | 11*     | G1X   | 3/4              | C   |
| TSEA28          | Computer Hardware and Architecture Y    | 6*      | G1X   | 2                | C   |
| <b>Period 2</b> |   |         |       |                  |     |
| TDDD78          | Object Oriented Programming and Java    | 6*      | G1X   | 1                | C   |
| TDDD79          | Professionalism for Engineers, part 2   | 1*      | G1X   | -                | C   |
| TDDD80          | Project: Mobile and Social Applications | 11*     | G1X   | 4                | C   |
| TDDD85          | Formal Languages and Automata Theory    | 6       | G1X   | 2                | C   |
| TSEA28          | Computer Hardware and Architecture Y    | 6*      | G1X   | 3                | C   |

### Semester 3 (Autumn 2017)

| Course code     | Course name   | Credits | Level | Timetable module | ECV |
|-----------------|---|---------|-------|------------------|-----|
| <b>Period 1</b> |   |         |       |                  |     |
| TATA24          | Linear Algebra  | 8*      | G1X   | 4                | C   |
| TDDC93          | Software Engineering Theory                           | 4       | G2X   | 1                | C   |
| TDDD84          | Professionalism for Engineers, part 3                 | 1*      | G1X   | -                | C   |
| TDDD86          | Data Structures, Algorithms and Programming Paradigms | 11*     | G1X   | 2                | C   |
| TATA40          | Perspectives on Mathematics                           | 1*      | G1X   | -                | V   |
| <b>Period 2</b> |   |         |       |                  |     |
| TATA24          | Linear Algebra  | 8*      | G1X   | 4                | C   |
| TATA79          | Introductory Course in Calculus                       | 6       | G1X   | 2                | C   |
| TDDD84          | Professionalism for Engineers, part 3                 | 1*      | G1X   | -                | C   |
| TDDD86          | Data Structures, Algorithms and Programming Paradigms | 11*     | G1X   | 3                | C   |
| TATA40          | Perspectives on Mathematics                           | 1*      | G1X   | -                | V   |

## Semester 4 (Spring 2018)

| Course code     | Course name                                  | Credits | Level | Timetable module | ECV |
|-----------------|--|---------|-------|------------------|-----|
| <b>Period 1</b> |  |         |       |                  |     |
| TATA41          | Calculus in One Variable 1                   | 6       | G1X   | 4                | C   |
| TDDB68          | Concurrent Programming and Operating Systems | 6       | G2X   | 3                | C   |
| TDDD79          | Professionalism for Engineers, part 2        | 1*      | G1X   | -                | C   |
| TDDD94          | Professionalism for Engineers, part 4        | 1*      | G1X   | -                | C   |
| TDDD98          | Professionalism for Engineers, part 6        | 1*      | G1X   | -                | C   |
| TDDE35          | Large-Scale Distributed Systems and Networks | 11*     | G1X   | 2                | C   |
| THEN18          | English                                      | 6*      | G1X   | 1                | E   |
| TATA40          | Perspectives on Mathematics                  | 1*      | G1X   | -                | V   |
| TGTU63          | Visits to Industry                           | 1*      | G1X   | -                | V   |
| <b>Period 2</b> |  |         |       |                  |     |
| TATA91          | Calculus in One and Several Variables        | 6       | G1X   | 4                | C   |
| TDDD79          | Professionalism for Engineers, part 2        | 1*      | G1X   | -                | C   |
| TDDD94          | Professionalism for Engineers, part 4        | 1*      | G1X   | -                | C   |
| TDDD98          | Professionalism for Engineers, part 6        | 1*      | G1X   | -                | C   |
| TDDE35          | Large-Scale Distributed Systems and Networks | 11*     | G1X   | 2                | C   |
| THEN18          | English                                      | 6*      | G1X   | 3                | E   |
| TPTE06          | Industrial Placement                         | 6       | G1X   | -                | E   |
| TATA40          | Perspectives on Mathematics                  | 1*      | G1X   | -                | V   |
| TGTU63          | Visits to Industry                           | 1*      | G1X   | -                | V   |

## Semester 5 (Autumn 2018)

| Course code     | Course name                           | Credits | Level | Timetable module | ECV |
|-----------------|---------------------------------------|---------|-------|------------------|-----|
| <b>Period 1</b> |                                       |         |       |                  |     |
| TDAB01          | Probability and Statistics            | 6       | G2X   | 1                | C   |
| TDDC17          | Artificial Intelligence               | 6       | G2X   | 3                | C   |
| TDDD91          | Professionalism for Engineers, part 5 | 1*      | G1X   | -                | C   |
| TDDD92          | Artificial Intelligence - Project     | 5*      | G2X   | 4                | C   |
| TGTU63          | Visits to Industry                    | 1*      | G1X   | -                | V   |
| <b>Period 2</b> |                                       |         |       |                  |     |
| TDDD37          | Database Technology                   | 6       | G2X   | 1                | C   |
| TDDD91          | Professionalism for Engineers, part 5 | 1*      | G1X   | -                | C   |
| TDDD92          | Artificial Intelligence - Project     | 5*      | G2X   | 4                | C   |
| TGTU63          | Visits to Industry                    | 1*      | G1X   | -                | V   |

## Semester 6 (Spring 2019)

| Course code     | Course name                             | Credits | Level | Timetable module | ECV |
|-----------------|---|---------|-------|------------------|-----|
| <b>Period 1</b> |   |         |       |                  |     |
| TDDD79          | Professionalism for Engineers, part 2   | 1*      | G1X   | -                | C   |
| TDDD94          | Professionalism for Engineers, part 4   | 1*      | G1X   | -                | C   |
| TDDD96          | Software Engineering - Bachelor Project | 15*     | G2X   | 2/3              | C   |
| TDDD98          | Professionalism for Engineers, part 6   | 1*      | G1X   | -                | C   |
| TSKS21          | Signals, Information and Images         | 8       | G2X   | 1                | C   |
| TSRT04          | Introduction in Matlab                  | 2       | G1X   | 2                | E   |
| <b>Period 2</b> |   |         |       |                  |     |
| TDDD79          | Professionalism for Engineers, part 2   | 1*      | G1X   | -                | C   |
| TDDD94          | Professionalism for Engineers, part 4   | 1*      | G1X   | -                | C   |
| TDDD96          | Software Engineering - Bachelor Project | 15*     | G2X   | 2/4              | C   |
| TDDD98          | Professionalism for Engineers, part 6   | 1*      | G1X   | -                | C   |
| TSRT19          | Automatic Control                       | 6       | G2X   | 1                | C   |

## Semester 7 (Autumn 2019)

| Course code     | Course name  | Credits | Level | Timetable module | ECV |
|-----------------|--|---------|-------|------------------|-----|
| <b>Period 1</b> |  |         |       |                  |     |
| TAOP33          | Combinatorial Optimization, Introductory Course            | 4       | G2X   | 2                | C/E |
| TANA21          | Scientific Computing                                       | 6       | G1X   | 3                | E   |
| TATA55          | Abstract Algebra   | 6*      | G2X   | 3                | E   |
| TBME04          | Anatomy and Physiology                                     | 6       | G2X   | 3                | E   |
| TBMI19          | Medical Information Systems                                | 6*      | A1X   | 2                | E   |
| TDDC34          | Technical, Economic and Societal Evaluation of IT-products | 6       | A1X   | 3                | E   |
| TDDD04          | Software Testing   | 6       | A1X   | 2                | E   |
| TDDD08          | Logic Programming  | 6       | A1X   | 4                | E   |
| TDDD23          | Design and Programming of Computer Games                   | 6       | A1X   | 2                | E   |
| TDDD38          | Advanced Programming in C++                                | 6*      | A1X   | 2                | E   |
| TDDD43          | Advanced Data Models and Databases                         | 6*      | A1X   | 2                | E   |
| TDDD53          | Advanced Interaction Design                                | 6       | A1X   | 1                | E   |
| TDDE45          | Software Design and Construction                           | 6       | A1X   | 4                | E   |
| TEIO32          | Project Management and Organization                        | 6*      | G2X   | 3                | E   |
| TGTU91          | Oral and Written Communication                             | 6       | G1X   | 2                | E   |
| TSBB06          | Multidimensional Signal Analysis                           | 6*      | A1X   | 2                | E   |
| TSBB08          | Digital Image Processing                                   | 6       | A1X   | 4                | E   |
| TSDT14          | Signal Theory  | 6       | A1X   | 1                | E   |
| TSIT03          | Cryptography   | 6       | A1X   | 2                | E   |
| TSRT62          | Modelling and Simulation                                   | 6       | A1X   | 3                | E   |
| <b>Period 2</b> |  |         |       |                  |     |
| TAMS22          | Probability Theory and Bayesian Networks                   | 6       | A1X   | 1                | E   |
| TANA09          | Numerical Algorithms in Computer Science                   | 4       | G2X   | 1                | E   |
| TATA55          | Abstract Algebra   | 6*      | G2X   | 3                | E   |
| TBMI19          | Medical Information Systems                                | 6*      | A1X   | 3                | E   |
| TDDC73          | Interaction Programming                                    | 6       | G2X   | 1                | E   |
| TDDD07          | Real Time Systems  | 6       | A1X   | 4                | E   |
| TDDD38          | Advanced Programming in C++                                | 6*      | A1X   | -                | E   |
| TDDD43          | Advanced Data Models and Databases                         | 6*      | A1X   | 2                | E   |
| TDDD49          | Programming in C# and .NET Framework                       | 4       | G2X   | 3                | E   |

| Course code | Course name                                   | Credits | Level | Timetable module | ECV |
|-------------|---|---------|-------|------------------|-----|
| TDDE01      | Machine Learning                              | 6       | A1X   | 1                | E   |
| TDDE02      | Software Entrepreneurship                     | 6       | A1X   | 2                | E   |
| TEAE01      | Industrial Economics, Basic Course            | 6       | G1X   | 2                | E   |
| TEIM03      | Intercultural Communication                   | 4       | G1X   | 4                | E   |
| TEIO32      | Project Management and Organization           | 6*      | G2X   | 1                | E   |
| TGTU04      | Leadership                                    | 6       | G2X   | 2                | E   |
| TGTU49      | History of Technology                         | 6       | G1X   | 3                | E   |
| TKMJ24      | Environmental Engineering                     | 6       | G1N   | 3                | E   |
| TSBB06      | Multidimensional Signal Analysis              | 6*      | A1X   | 3                | E   |
| TSIT02      | Computer Security                             | 6       | G2X   | 2                | E   |
| TSK511      | Networks: Models, Algorithms and Applications | 6       | G2X   | 3                | E   |
| TSRT78      | Digital Signal Processing                     | 6       | A1X   | 2                | E   |

*Specialisation: AI and Machine Learning*

| Course code     | Course name                      | Credits | Level | Timetable module | ECV |
|-----------------|----------------------------------|---------|-------|------------------|-----|
| <b>Period 1</b> |                                  |         |       |                  |     |
| TDDC17          | Artificial Intelligence          | 6       | G2X   | 3                | C   |
| TBMI19          | Medical Information Systems      | 6*      | A1X   | 2                | E   |
| TDDD08          | Logic Programming                | 6       | A1X   | 4                | E   |
| TSBB06          | Multidimensional Signal Analysis | 6*      | A1X   | 2                | E   |
| TSBB08          | Digital Image Processing         | 6       | A1X   | 4                | E   |
| <b>Period 2</b> |                                  |         |       |                  |     |
| TDDE01          | Machine Learning                 | 6       | A1X   | 1                | C   |
| TBMI19          | Medical Information Systems      | 6*      | A1X   | 3                | E   |
| TSBB06          | Multidimensional Signal Analysis | 6*      | A1X   | 3                | E   |
| TSRT78          | Digital Signal Processing        | 6       | A1X   | 2                | E   |

*Specialisation: Computer Games Programming*

| Course code     | Course name                              | Credits | Level | Timetable module | ECV |
|-----------------|--|---------|-------|------------------|-----|
| <b>Period 1</b> |  |         |       |                  |     |
| TDDD23          | Design and Programming of Computer Games | 6       | A1X   | 2                | C   |
| TDDC17          | Artificial Intelligence                  | 6       | G2X   | 3                | E   |
| TDDD53          | Advanced Interaction Design              | 6       | A1X   | 1                | E   |
| <b>Period 2</b> |  |         |       |                  |     |
| TDDC73          | Interaction Programming                  | 6       | G2X   | 1                | C   |
| TDDE02          | Software Entrepreneurship                | 6       | A1X   | 2                | E   |

*Specialisation: Industrial Economics*

| Course code     | Course name                         | Credits | Level | Timetable module | ECV |
|-----------------|-------------------------------------|---------|-------|------------------|-----|
| <b>Period 1</b> |                                     |         |       |                  |     |
| TEAE01          | Industrial Economics, Basic Course  | 6       | G1X   | 2                | C   |
| TEIO32          | Project Management and Organization | 6*      | G2X   | 3                | C   |
| <b>Period 2</b> |                                     |         |       |                  |     |
| TDDE02          | Software Entrepreneurship           | 6       | A1X   | 2                | C   |
| TEIO32          | Project Management and Organization | 6*      | G2X   | 1                | C   |

*Specialisation: International Software Engineering*

| Course code     | Course name                        | Credits | Level | Timetable module | ECV |
|-----------------|------------------------------------|---------|-------|------------------|-----|
| <b>Period 1</b> |                                    |         |       |                  |     |
| TDDD04          | Software Testing                   | 6       | A1X   | 2                | E   |
| TDDD38          | Advanced Programming in C++        | 6*      | A1X   | 2                | E   |
| TDDE45          | Software Design and Construction   | 6       | A1X   | 4                | E   |
| <b>Period 2</b> |                                    |         |       |                  |     |
| TEAE01          | Industrial Economics, Basic Course | 6       | G1X   | 2                | C   |
| TDDD38          | Advanced Programming in C++        | 6*      | A1X   | -                | E   |
| TDDE02          | Software Entrepreneurship          | 6       | A1X   | 2                | E   |
| TDEI19          | Management Control                 | 6       | A1X   | 2                | E   |
| TEIM03          | Intercultural Communication        | 4       | G1X   | 4                | E   |
| TSIT02          | Computer Security                  | 6       | G2X   | 2                | E   |



*Specialisation: Large Scale Software Engineering*

| Course code     | Course name  | Credits | Level | Timetable module | ECV |
|-----------------|--|---------|-------|------------------|-----|
| <b>Period 1</b> |  |         |       |                  |     |
| TDDC34          | Technical, Economic and Societal Evaluation of IT-products | 6       | A1X   | 3                | E   |
| TDDD04          | Software Testing   | 6       | A1X   | 2                | E   |
| TDDE45          | Software Design and Construction                           | 6       | A1X   | 4                | E   |
| <b>Period 2</b> |  |         |       |                  |     |
| TDDD37          | Database Technology  | 6       | G2X   | 1                | E   |
| TDDE02          | Software Entrepreneurship                                  | 6       | A1X   | 2                | E   |

*Specialisation: Programming and Algorithms Specialization*

| Course code     | Course name                                   | Credits | Level | Timetable module | ECV |
|-----------------|---|---------|-------|------------------|-----|
| <b>Period 1</b> |   |         |       |                  |     |
| TDDC17          | Artificial Intelligence                       | 6       | G2X   | 3                | E   |
| TDDD04          | Software Testing                              | 6       | A1X   | 2                | E   |
| TDDD08          | Logic Programming                             | 6       | A1X   | 4                | E   |
| TDDD38          | Advanced Programming in C++                   | 6*      | A1X   | 2                | E   |
| TDDE45          | Software Design and Construction              | 6       | A1X   | 4                | E   |
| <b>Period 2</b> |   |         |       |                  |     |
| TDDC90          | Software Security                             | 6       | A1X   | 1                | E   |
| TDDD37          | Database Technology                           | 6       | G2X   | 1                | E   |
| TDDD38          | Advanced Programming in C++                   | 6*      | A1X   | -                | E   |
| TSIT02          | Computer Security                             | 6       | G2X   | 2                | E   |
| TSKS11          | Networks: Models, Algorithms and Applications | 6       | G2X   | 3                | E   |

*Specialisation: Secure Systems*

| Course code     | Course name                      | Credits | Level | Timetable module | ECV |
|-----------------|----------------------------------|---------|-------|------------------|-----|
| <b>Period 1</b> |                                  |         |       |                  |     |
| TDDE45          | Software Design and Construction | 6       | A1X   | 4                | C   |
| TDDD38          | Advanced Programming in C++      | 6*      | A1X   | 2                | E   |
| TDS06           | Computer Networks                | 6       | G2X   | 1                | E   |
| TSIT03          | Cryptography                     | 6       | A1X   | 2                | E   |
| <b>Period 2</b> |                                  |         |       |                  |     |
| TDDC90          | Software Security                | 6       | A1X   | 1                | C   |
| TSIT02          | Computer Security                | 6       | G2X   | 2                | C   |
| TDDD37          | Database Technology              | 6       | G2X   | 1                | E   |
| TDDD38          | Advanced Programming in C++      | 6*      | A1X   | -                | E   |

**Semester 8 (Spring 2020)**

| Course code     | Course name  | Credits | Level | Timetable module | ECV |
|-----------------|--|---------|-------|------------------|-----|
| <b>Period 1</b> |  |         |       |                  |     |
| TAOP07          | Introduction to Optimization   | 6       | G1X   | 3                | C/E |
| TANA15          | Numerical Linear Algebra   | 6       | A1X   | 1                | E   |
| TATA53          | Linear Algebra, Honours Course   | 6*      | G2X   | -                | E   |
| TATA54          | Number Theory  | 6*      | G2X   | 3                | E   |
| TATA64          | Graph Theory   | 6*      | A1X   | 2                | E   |
| TBMI26          | Neural Networks and Learning Systems                                       | 6       | A1X   | 2                | E   |
| TDDA69          | Data and Program Structures  | 6*      | G2X   | 3                | E   |
| TDDD17          | Information Security, Second Course  | 6*      | A1X   | 4                | E   |
| TDDD20          | Design and Analysis of Algorithms  | 6       | A1X   | 3                | E   |
| TDDD25          | Distributed 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   |
| TDDD57          | Physical Interaction and Game Programming                                  | 6       | A1X   | 1                | E   |
| TDDD75          | Effect-Driven Development and Human-Centered Design of Interactive Systems | 6       | G2X   | 3                | E   |
| TDDD95          | Algorithmic Problem Solving  | 6*      | A1X   | 1                | E   |

| Course code     | Course name   | Credits | Level | Timetable module | ECV |
|-----------------|---|---------|-------|------------------|-----|
| TDDD97          | Web Programming   | 6       | G2X   | 3                | E   |
| TDDE05          | AI Robotics   | 6*      | A1X   | 4                | E   |
| TDDE06          | Large-Scale Software Development - Structures and Processes | 6*      | A1X   | 4                | E   |
| TDDE09          | Natural Language Processing                                 | 6       | A1X   | 2                | E   |
| TDDE46          | Software Quality  | 6*      | A1X   | 2                | E   |
| TDS07           | System Design and Methodology                               | 6       | A1X   | 1                | E   |
| TDS21           | Advanced Networking   | 6*      | A1X   | 1                | E   |
| TEIE88          | Computer Law  | 4       | G1X   | 1                | E   |
| TEIO13          | Leadership and Organizational Change                        | 6       | A1X   | 4                | E   |
| TEIO94          | Entrepreneurship and Idea Development                       | 6*      | G2X   | 4                | E   |
| TGTU94          | Technology and Ethics                                       | 6       | G1X   | 1                | E   |
| TKMJ15          | Environmental Management Strategies                         | 6       | G1F   | 3                | E   |
| TNM048          | Information Visualisation                                   | 6       | A1X   | 3                | E   |
| TSBK07          | Computer Graphics   | 6*      | A1X   | 4                | E   |
| TSBK08          | Data Compression  | 6       | A1X   | 2                | E   |
| TSRT07          | Industrial Control Systems                                  | 6       | A1X   | 2                | E   |
| <b>Period 2</b> |   |         |       |                  |     |
| TATA53          | Linear Algebra, Honours Course                              | 6*      | G2X   | -                | E   |
| TATA54          | Number Theory   | 6*      | G2X   | 1                | E   |
| TATA64          | Graph Theory  | 6*      | A1X   | 2                | E   |
| TDDA69          | Data and Program Structures                                 | 6*      | G2X   | 1                | E   |
| TDDC78          | Programming of Parallel Computers - Methods and Tools       | 6       | A1X   | 3                | E   |
| TDDD17          | Information Security, Second Course                         | 6*      | A1X   | 4                | E   |
| TDDD27          | Advanced Web Programming                                    | 6       | A1X   | 3                | E   |
| TDDD38          | Advanced Programming in C++                                 | 6*      | A1X   | -                | E   |
| TDDD48          | Automated Planning  | 6       | A1X   | 1                | E   |
| TDDD95          | Algorithmic Problem Solving                                 | 6*      | A1X   | 4                | E   |
| TDDE05          | AI Robotics   | 6*      | A1X   | 4                | E   |
| TDDE06          | Large-Scale Software Development - Structures and Processes | 6*      | A1X   | 4                | E   |
| TDDE07          | Bayesian Learning   | 6       | A1X   | 2                | E   |

| Course code | Course name                           | Credits | Level | Timetable module | ECV |
|-------------|---------------------------------------|---------|-------|------------------|-----|
| TDDE31      | Big Data Analytics                    | 6       | A1X   | 3                | E   |
| TDDE34      | Software Verification                 | 6       | A1X   | 1                | E   |
| TDDE41      | Software Architectures                | 6       | A1X   | 1                | E   |
| TDDE46      | Software Quality                      | 6*      | A1X   | 2                | E   |
| TDTS21      | Advanced Networking                   | 6*      | A1X   | 1                | E   |
| TEAE13      | Civil and Commercial Law              | 6       | G1X   | 2                | E   |
| TEIE44      | Intellectual Property Rights          | 4       | G1X   | 1                | E   |
| TEIO06      | Innovative Entrepreneurship           | 6       | A1X   | 2                | E   |
| TEIO94      | Entrepreneurship and Idea Development | 6*      | G2X   | 4                | E   |
| TGTU95      | Philosophy of Science and Technology  | 6       | G1X   | 4                | E   |
| TNM079      | Modelling and Animation               | 6       | A1X   | 2                | E   |
| TSBK07      | Computer Graphics                     | 6*      | A1X   | 1                | E   |
| TSFS06      | Diagnosis and Supervision             | 6       | A1X   | 1                | E   |
| TSRT14      | Sensor Fusion                         | 6       | A1X   | 2                | E   |

*Specialisation: AI and Machine Learning*

| Course code     | Course name                                       | Credits | Level | Timetable module | ECV |
|-----------------|---|---------|-------|------------------|-----|
| <b>Period 1</b> |   |         |       |                  |     |
| TBMI26          | Neural Networks and Learning Systems              | 6       | A1X   | 2                | E   |
| TDDD20          | Design and Analysis of Algorithms                 | 6       | A1X   | 3                | E   |
| TDDD41          | Data Mining - Clustering and Association Analysis | 6       | A1X   | 3                | E   |
| TDDD95          | Algorithmic Problem Solving                       | 6*      | A1X   | 1                | E   |
| TDDE05          | AI Robotics                                       | 6*      | A1X   | 4                | E   |
| TDDE09          | Natural Language Processing                       | 6       | A1X   | 2                | E   |
| TSRT07          | Industrial Control Systems                        | 6       | A1X   | 2                | E   |
| <b>Period 2</b> |   |         |       |                  |     |
| TDDD48          | Automated Planning                                | 6       | A1X   | 1                | E   |
| TDDD95          | Algorithmic Problem Solving                       | 6*      | A1X   | 4                | E   |
| TDDE05          | AI Robotics                                       | 6*      | A1X   | 4                | E   |
| TDDE07          | Bayesian Learning                                 | 6       | A1X   | 2                | E   |
| TDDE31          | Big Data Analytics                                | 6       | A1X   | 3                | E   |
| TSFS06          | Diagnosis and Supervision                         | 6       | A1X   | 1                | E   |
| TSRT14          | Sensor Fusion                                     | 6       | A1X   | 2                | E   |

*Specialisation: Computer Games Programming*

| Course code     | Course name                               | Credits | Level | Timetable module | ECV |
|-----------------|---|---------|-------|------------------|-----|
| <b>Period 1</b> |   |         |       |                  |     |
| TDDD57          | Physical Interaction and Game Programming | 6       | A1X   | 1                | C   |
| TSBK07          | Computer Graphics                         | 6*      | A1X   | 4                | C   |
| TBMI26          | Neural Networks and Learning Systems      | 6       | A1X   | 2                | E   |
| <b>Period 2</b> |   |         |       |                  |     |
| TSBK07          | Computer Graphics                         | 6*      | A1X   | 1                | C   |
| TNM079          | Modelling and Animation                   | 6       | A1X   | 2                | E   |

*Specialisation: Industrial Economics*

| Course code     | Course name                          | Credits | Level | Timetable module | ECV |
|-----------------|--------------------------------------|---------|-------|------------------|-----|
| <b>Period 1</b> |                                      |         |       |                  |     |
| TEIO13          | Leadership and Organizational Change | 6       | A1X   | 4                | C   |
| <b>Period 2</b> |                                      |         |       |                  |     |
| TEIO06          | Innovative Entrepreneurship          | 6       | A1X   | 2                | C   |

*Specialisation: Large Scale Software Engineering*

| Course code     | Course name   | Credits | Level | Timetable module | ECV |
|-----------------|---|---------|-------|------------------|-----|
| <b>Period 1</b> |   |         |       |                  |     |
| TDDE06          | Large-Scale Software Development - Structures and Processes | 6*      | A1X   | 4                | E   |
| TDDE46          | Software Quality  | 6*      | A1X   | 2                | E   |
| <b>Period 2</b> |   |         |       |                  |     |
| TDDE06          | Large-Scale Software Development - Structures and Processes | 6*      | A1X   | 4                | E   |
| TDDE34          | Software Verification                                       | 6       | A1X   | 1                | E   |
| TDDE41          | Software Architectures                                      | 6       | A1X   | 1                | E   |
| TDDE46          | Software Quality  | 6*      | A1X   | 2                | E   |

*Specialisation: Programming and Algorithms Specialization*

| Course code     | Course name   | Credits | Level | Timetable module | ECV |
|-----------------|---|---------|-------|------------------|-----|
| <b>Period 1</b> |   |         |       |                  |     |
| TDDA69          | Data and Program Structures                           | 6*      | G2X   | 3                | E   |
| TDDD20          | Design and Analysis of Algorithms                     | 6       | A1X   | 3                | E   |
| TDDD38          | Advanced Programming in C++                           | 6*      | A1X   | 2                | 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   |
| <b>Period 2</b> |   |         |       |                  |     |
| TDDA69          | Data and Program Structures                           | 6*      | G2X   | 1                | E   |
| TDDC78          | Programming of Parallel Computers - Methods and Tools | 6       | A1X   | 3                | E   |
| TDDD14          | Formal Languages and Automata Theory                  | 6       | G2X   | 2                | E   |
| TDDD38          | Advanced Programming in C++                           | 6*      | A1X   | -                | E   |
| TDDD95          | Algorithmic Problem Solving                           | 6*      | A1X   | 4                | E   |
| TDDE34          | Software Verification                                 | 6       | A1X   | 1                | E   |
| TDDE41          | Software Architectures                                | 6       | A1X   | 1                | E   |

*Specialisation: Secure Systems*

| Course code     | Course name                         | Credits | Level | Timetable module | ECV |
|-----------------|-------------------------------------|---------|-------|------------------|-----|
| <b>Period 1</b> |                                     |         |       |                  |     |
| TDDD17          | Information Security, Second Course | 6*      | A1X   | 4                | C   |
| TDDD38          | Advanced Programming in C++         | 6*      | A1X   | 2                | E   |
| TDDD97          | Web Programming                     | 6       | G2X   | 3                | E   |
| TDDE46          | Software Quality                    | 6*      | A1X   | 2                | E   |
| TDTS21          | Advanced Networking                 | 6*      | A1X   | 1                | E   |
| <b>Period 2</b> |                                     |         |       |                  |     |
| TDDD17          | Information Security, Second Course | 6*      | A1X   | 4                | C   |
| TDDD27          | Advanced Web Programming            | 6       | A1X   | 3                | E   |
| TDDD38          | Advanced Programming in C++         | 6*      | A1X   | -                | E   |
| TDDE46          | Software Quality                    | 6*      | A1X   | 2                | E   |
| TDTS21          | Advanced Networking                 | 6*      | A1X   | 1                | E   |

## Semester 9 (Autumn 2020)

| Course code     | Course name   | Credits | Level | Timetable module | ECV |
|-----------------|---|---------|-------|------------------|-----|
| <b>Period 1</b> |   |         |       |                  |     |
| TDDD53          | Advanced Interaction Design   | 6       | A1X   | 1                | E   |
| TDDE14          | Large-Scale Software Development: Contributions and Evolution         | 6*      | A1X   | 4                | E   |
| TDDE15          | Advanced Machine Learning   | 6       | A1X   | 1                | E   |
| TDDE19          | Advanced Project Course - AI and Machine Learning                     | 6*      | A1X   | 4                | E   |
| TDDE20          | Advanced Project Course - Game, App and Web Development               | 6*      | A1X   | 4                | E   |
| TDDE21          | Advanced Project Course: Secure Distributed and Embedded Systems      | 6*      | A1X   | 4                | E   |
| TDEI13          | Enterprise Resource Planning Systems: Process and Implementation      | 6       | A1X   | 2                | E   |
| TDEI72          | Strategy and Digitisation - Technology, Standards and Network Effects | 6       | A1X   | 4                | E   |
| TEIM11          | Industrial Marketing  | 6       | G2X   | 3                | E   |
| TEIO90          | Innovation Management   | 6       | A1X   | 2                | E   |
| TNCG15          | Advanced Global Illumination and Rendering                            | 6       | A1X   | 4                | E   |
| TNM067          | Scientific Visualization  | 6       | A1X   | 3                | E   |
| TNM095          | Artificial Intelligence for Interactive Media                         | 6       | A1X   | 2                | E   |
| TSBB17          | Visual Object Recognition and Detection                               | 6       | A1X   | 2                | E   |
| TSBK03          | Advanced Game Programming   | 6*      | A1X   | 1                | E   |
| TSFS12          | Autonomous Vehicles - Planning, Control, and Learning Systems         | 6       | A1X   | 1                | E   |
| TSIN01          | Information Networks  | 6       | A1X   | 3                | E   |
| TSKS12          | Modern Channel Coding, Inference and Learning                         | 6       | A1X   | 1                | E   |
| TSRT92          | Modelling and Learning for Dynamical Systems                          | 6       | A1X   | 3                | E   |
| <b>Period 2</b> |   |         |       |                  |     |
| TDDD89          | Scientific Method   | 6       | A1X   | 3                | C   |
| TAOP61          | Optimization of Realistic Complex Systems                             | 6       | A1X   | 3                | E   |
| TBMI02          | Medical Image Analysis  | 6       | A1X   | 1                | E   |
| Tddb44          | Compiler Construction   | 6       | A1X   | 1                | E   |



| Course code | Course name  | Credits | Level | Timetable module | ECV |
|-------------|--|---------|-------|------------------|-----|
| TDDC90      | Software Security  | 6       | A1X   | 1                | E   |
| TDDD56      | Multicore and GPU Programming                                    | 6       | A1X   | 2                | E   |
| TDDE13      | Multi Agent Systems  | 6       | A1X   | 1                | E   |
| TDDE14      | Large-Scale Software Development: Contributions and Evolution    | 6*      | A1X   | 4                | E   |
| TDDE16      | Text Mining  | 6       | A1X   | 2                | E   |
| TDDE19      | Advanced Project Course - AI and Machine Learning                | 6*      | A1X   | 4                | E   |
| TDDE20      | Advanced Project Course - Game, App and Web Development          | 6*      | A1X   | 4                | E   |
| TDDE21      | Advanced Project Course: Secure Distributed and Embedded Systems | 6*      | A1X   | 4                | E   |
| TNM086      | Virtual Reality Techniques                                       | 6       | A1X   | 2                | E   |
| TSBK03      | Advanced Game Programming  | 6*      | A1X   | -                | E   |
| TSIN02      | Internetworking  | 6       | A1X   | 1                | E   |

*Specialisation: AI and Machine Learning*

| Course code     | Course name   | Credits | Level | Timetable module | ECV |
|-----------------|---|---------|-------|------------------|-----|
| <b>Period 1</b> |   |         |       |                  |     |
| TDDE19          | Advanced Project Course - AI and Machine Learning             | 6*      | A1X   | 4                | C   |
| TDDE15          | Advanced Machine Learning                                     | 6       | A1X   | 1                | E   |
| TSBB17          | Visual Object Recognition and Detection                       | 6       | A1X   | 2                | E   |
| TSFS12          | Autonomous Vehicles - Planning, Control, and Learning Systems | 6       | A1X   | 1                | E   |
| TSRT92          | Modelling and Learning for Dynamical Systems                  | 6       | A1X   | 3                | E   |
| <b>Period 2</b> |   |         |       |                  |     |
| TDDE19          | Advanced Project Course - AI and Machine Learning             | 6*      | A1X   | 4                | C   |
| TDDE13          | Multi Agent Systems   | 6       | A1X   | 1                | E   |
| TDDE16          | Text Mining   | 6       | A1X   | 2                | E   |

*Specialisation: Computer Games Programming*

| Course code     | Course name   | Credits | Level | Timetable module | ECV |
|-----------------|---|---------|-------|------------------|-----|
| <b>Period 1</b> |   |         |       |                  |     |
| TSBK03          | Advanced Game Programming                               | 6*      | A1X   | 1                | C   |
| TDDE20          | Advanced Project Course - Game, App and Web Development | 6*      | A1X   | 4                | E   |
| TNCG15          | Advanced Global Illumination and Rendering              | 6       | A1X   | 4                | E   |
| TSBB11          | Images and Graphics, Project Course CDIO                | 12*     | A1X   | 4                | E   |
| <b>Period 2</b> |   |         |       |                  |     |
| TSBK03          | Advanced Game Programming                               | 6*      | A1X   | -                | C   |
| TDDE20          | Advanced Project Course - Game, App and Web Development | 6*      | A1X   | 4                | E   |
| TSBB11          | Images and Graphics, Project Course CDIO                | 12*     | A1X   | 4                | E   |
| TSIN02          | Internetworking   | 6       | A1X   | 1                | E   |

*Specialisation: Industrial Economics*

| Course code     | Course name   | Credits | Level | Timetable module | ECV |
|-----------------|---|---------|-------|------------------|-----|
| <b>Period 1</b> |   |         |       |                  |     |
| TEIM11          | Industrial Marketing  | 6       | G2X   | 3                | C   |
| TEIO90          | Innovation Management   | 6       | A1X   | 2                | C   |
| TDEI72          | Strategy and Digitisation - Technology, Standards and Network Effects | 6       | A1X   | 4                | E   |

*Specialisation: International Software Engineering*

| Course code     | Course name  | Credits | Level | Timetable module | ECV |
|-----------------|--|---------|-------|------------------|-----|
| <b>Period 1</b> |  |         |       |                  |     |
| TDDC34          | Technical, Economic and Societal Evaluation of IT-products       | 6       | A1X   | 3                | C   |
| TDDD69          | Software Engineering - Company Project                           | 6*      | A1X   | 1                | C   |
| TDDD04          | Software Testing   | 6       | A1X   | 2                | E   |
| TDDD38          | Advanced Programming in C++                                      | 6*      | A1X   | 2                | E   |
| TDDD43          | Advanced Data Models and Databases                               | 6*      | A1X   | 2                | E   |
| TDDE45          | Software Design and Construction                                 | 6       | A1X   | 4                | E   |
| TDEI13          | Enterprise Resource Planning Systems: Process and Implementation | 6       | A1X   | 2                | E   |
| <b>Period 2</b> |  |         |       |                  |     |
| TDDD69          | Software Engineering - Company Project                           | 6*      | A1X   | 1                | C   |
| TDDC90          | Software Security  | 6       | A1X   | 1                | E   |
| TDDD07          | Real Time Systems  | 6       | A1X   | 4                | E   |
| TDDD38          | Advanced Programming in C++                                      | 6*      | A1X   | -                | E   |
| TDDD43          | Advanced Data Models and Databases                               | 6*      | A1X   | 2                | E   |
| TDEI19          | Management Control   | 6       | A1X   | 2                | E   |
| TEIM03          | Intercultural Communication                                      | 4       | G1X   | 4                | E   |

*Specialisation: Large Scale Software Engineering*

| Course code     | Course name   | Credits | Level | Timetable module | ECV |
|-----------------|---|---------|-------|------------------|-----|
| <b>Period 1</b> |   |         |       |                  |     |
| TDDE14          | Large-Scale Software Development: Contributions and Evolution | 6*      | A1X   | 4                | E   |
| <b>Period 2</b> |   |         |       |                  |     |
| TDDE14          | Large-Scale Software Development: Contributions and Evolution | 6*      | A1X   | 4                | E   |

*Specialisation: Programming and Algorithms Specialization*

| Course code     | Course name                      | Credits | Level | Timetable module | ECV |
|-----------------|----------------------------------|---------|-------|------------------|-----|
| <b>Period 1</b> |                                  |         |       |                  |     |
| TDDD08          | Logic Programming                | 6       | A1X   | 4                | E   |
| TDDE45          | Software Design and Construction | 6       | A1X   | 4                | E   |
| TSIT03          | Cryptology                       | 6       | A1X   | 2                | E   |
| <b>Period 2</b> |                                  |         |       |                  |     |
| Tddb44          | Compiler Construction            | 6       | A1X   | 1                | E   |
| TDDD56          | Multicore and GPU Programming    | 6       | A1X   | 2                | E   |

*Specialisation: Secure Systems*

| Course code     | Course name  | Credits | Level | Timetable module | ECV |
|-----------------|--|---------|-------|------------------|-----|
| <b>Period 1</b> |  |         |       |                  |     |
| TDDD04          | Software Testing   | 6       | A1X   | 2                | C   |
| TDDD38          | Advanced Programming in C++                                      | 6*      | A1X   | 2                | E   |
| TDDE21          | Advanced Project Course: Secure Distributed and Embedded Systems | 6*      | A1X   | 4                | E   |
| TDTS06          | Computer Networks  | 6       | G2X   | 1                | E   |
| TSIT03          | Cryptology   | 6       | A1X   | 2                | E   |
| <b>Period 2</b> |  |         |       |                  |     |
| TDDC90          | Software Security  | 6       | A1X   | 1                | C   |
| TDDD37          | Database Technology  | 6       | G2X   | 1                | E   |
| TDDD38          | Advanced Programming in C++                                      | 6*      | A1X   | -                | E   |
| TDDE21          | Advanced Project Course: Secure Distributed and Embedded Systems | 6*      | A1X   | 4                | E   |

**Semester 10 (Spring 2021)**

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

ECV = Elective / Compulsory / Voluntary

\*The course is divided into several semesters and/or periods