# Academic Year 2024-2025 **Electrical Engineering, Mathematics & Computer Science** Exchange courses

# **Course selection guidelines**

The table below shows how the academic year is divided and what is expected of you from each semester and/or period. With the details below of how many EC you are expected to obtain, you will be able to make a study plan that will need to be approved by your home university and TU Delft.



#### Things to consider when you choose your courses

- 1. Will you be staying for 1 or 2 semesters? This will affect the number of EC you need to choose.
- 2. You must take a course load equal to 24-30 EC per semester, 12-15 EC per period.
- 3. More detailed information about the courses can be found via the <u>study guide</u>. Guidelines on how to use it can be found <u>here</u>.
- 4. Changes to your course plan after your arrival still need to meet the above requirements.
- 5. Carefully consider your course workload (minimum 24 EC), and the manageability of it. Students are not permitted to re-sit exams after the end of the official exchange period. Alternative course/s will need to be taken at your home university when you return.
- 6. We advise students to take most of the courses at the faculty of EEMCS as it increases the chance of getting accepted and reduces the chance of schedule clashes.
- 7. Maximum 30% of the credits can be taken at other faculties (except at the faculties of Industrial Design and Architecture and the Build environment). There are restrictions for courses from other faculties. Courses from the faculty of Aerospace are mostly not accepted. You can read more information on the <u>website</u>.
- 8. Always check the study guide well in advance for the prerequisites. Changes in courses always need to be requested before the period starts!

## EEMCS

#### BSc courses

This document contains an overview of all English taught BSc courses at EEMCS available to exchange students. **BSc courses not listed on this list are not available!** 

! It is your responsibility to check the pre required knowledge indicated in the Study Guide.

All students who come to TU Delft during their BSc programme or in the first 3 years of their academic career, can only follow BSc courses. You can either choose courses from the regular curriculum or follow a complete minor mentioned below. A minor is a well-rounded package of courses on one main topic. Individual courses from a minor cannot be followed separately unless they are mentioned in the normal subject list. Exchange students can only enrol for one of the minors below through the International Office of EEMCS.

#### **BSc Minors**

Only available in the Fall semester (period 1 and 2) You can only follow the complete minor, courses of the minor are not available separately.

#### **MSc** courses

You can follow MSc courses if you are a MSc student or at least in the 6th or 7th semester of your undergraduate study. We do recommend that you are at least in the 7th semester. Check the restriction information below per MSc programme.

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## Minor Electronics for Robotics

https://www.tudelft.nl/en/eemcs/study/minors/electronics-for-robotics/

### **Minor Finance**

https://www.tudelft.nl/en/eemcs/study/minors/finance/

## Minor Computational Science and Engineering

https://www.tudelft.nl/en/eemcs/study/minors/computational-science-and-engineering/

| BSc Appli        | ed Mathematics   |           |        |                |                    |
|------------------|--|-----------|--------|----------------|--------------------|
| The BSc AM is in | Dutch but courses on this list can be gi   | ven in Er | nglish |                |                    |
| Course Code      | Course Name  | Cat.      | EC     | Period (Q)     | Old Course<br>Code |
|                  | Applied Mathematics: 1 <sup>st</sup> year *  |           |        |                |                    |
| TW1-13           | Introduction to Programming  | BSc       | 5      | 1 (Fall)       | AM1090 (6EC)       |
| TW1-23           | Linear Algebra 1   | BSc       | 5      | 2 (Fall)       | AM1030 (6EC)       |
| TW1-22           | Analysis 1   | BSc       | 5      | 2 (Fall)       | AM1040 (6EC)       |
| TW1-21           | Modelling 1  | BSc       | 5      | 2 (Fall)       | AM1050-A<br>(3EC)  |
| TW1-32           | Analysis 2   | BSc       | 5      | 3 (Spring)     | AM1070 (6EC)       |
| TW1-41           | Modelling 2  | BSc       | 5      | 4 (Spring)     | AM1050-B<br>(3EC)  |
| TW1-43           | Introduction to Probability Theory   | BSc       | 5      | 4 (Spring)     | AM1080 (6EC)       |
|                  | Applied Mathematics: 2 <sup>nd</sup> year  |           |        |                |                    |
| AM2010           | Linear Algebra 2   | BSc       | 6      | 1 (Fall)       |                    |
| AM2080           | Introduction to Statistics   | BSc       | 6      | 1 (Fall)       |                    |
| AM2020           | Optimization   | BSc       | 6      | 2 (Fall)       |                    |
| AM2030           | Ordinary Differential Equations  | BSc       | 6      | 2 (Fall)       |                    |
| AM2090           | Real Analysis  | BSc       | 6      | 1 & 2 (Fall)   |                    |
| AM2520-P         | Philosophy of Mathematics  | BSc       | 6      | 1 & 2 (Fall)   |                    |
| AM2050-A         | Modelling 2A   | BSc       | 3      | 3 (Spring)     |                    |
| AM electives     | https://studiegids.tudelft.nl/a101_dis<br>playProgram.do?program_tree_id=3<br>1302 | BSc       | 6      | 3 (Spring)     |                    |
| AM2040           | Complex Function Theory  | BSc       | 6      | 4 (Spring)     |                    |
| AM2050-B         | Modelling 2B   | BSc       | 3      | 4 (Spring)     |                    |
| AM2060           | Numerical Methods 1  | BSc       | 6      | 3 & 4 (Spring) |                    |
| AM2070           | Partial Differential Equations   | BSc       | 6      | 3 & 4 (Spring) |                    |
|                  | Applied Mathematics: 3 <sup>rd</sup> year  |           |        |                |                    |
| AM3500           | Mathematics seminar  | BSc       | 6      | 1 & 2 (Fall)   |                    |
| AM3570           | Fourier Analysis   | BSc       | 6      | 1 & 2 (Fall)   |                    |
| AM3590           | Topology   | BSc       | 6      | 1 & 2 (Fall)   |                    |
| AM3510           | Mathematical Physical Models   | BSc       | 6      | 1 & 2 (Fall)   |                    |
| AM3530           | Numerical Methods 2  | BSc       | 6      | 3 (Spring)     |                    |
| AM3540           | Inverse Problems   | BSc       | 6      | 3 (Spring)     |                    |
| AM3550           | Graph Theory   | BSc       | 6      | 3 (Spring)     |                    |
| AM3560           | Advanced Probability   | BSc       | 6      | 3 (Spring)     |                    |

BSc

6

3 (Spring)

AM3580

Differential Geometry

| BSc Computer Science |  |        |         |                |
|----------------------|--|--------|---------|----------------|
| Only availabl        | e to BSc Computer Science Students enrolled in Exchange Co   | mputer | Science | at our faculty |
| Course<br>Code       | Course Name  | Cat    | EC      | Period (Q)     |
|                      | Computer science: 1st year   |        |         |                |
| CSE1100              | Object Oriented Programming  | BSc    | 5       | 1 (Fall)       |
| CSE1300              | Reasoning & Logic  | BSc    | 5       | 1 (Fall)       |
| CSE1400              | Computer Organisation  | BSc    | 5       | 1 (Fall)       |
| CSE1200*             | Calculus   | BSc    | 5       | 2 (Fall)       |
| CSE1500              | Web and Database Technology  | BSc    | 5       | 2 (Fall)       |
| CSE1205*             | Linear Algebra   | BSc    | 5       | 3 (Spring)     |
| CSE1305              | Algorithm and Data Structures  | BSc    | 5       | 3 (Spring)     |
| CSE1505              | Information Data Management (pre requisite Web and Database Technology)  | BSc    | 5       | 3 (Spring)     |
| CSE1110              | Software Quality & Testing   | BSc    | 5       | 4 (Spring)     |
| CSE1210*             | Probability Theory and Statistics  | BSc    | 5       | 4 (Spring)     |
| CSE1405              | Computer Networks  | BSc    | 5       | 4 (Spring)     |
|                      | Computer science: 2nd year   |        |         |                |
| CSE2115              | Software Engineering Methods   | BSc    | 5       | 1 (Fall)       |
| CSE2220**            | Signal Processing  | BSc    | 5       | 1 (Fall)       |
| CSE2420              | Digital Systems (limited capacity)   | BSc    | 5       | 1 (Fall)       |
| CSE2510              | Machine Learning   | BSc    | 5       | 1 (Fall)       |
| CSE2520              | Big Data Processing  | BSc    | 5       | 1 (Fall)       |
| CSE2215              | Computer Graphics  | BSc    | 5       | 2 (Fall)       |
| CSE2225**            | Image Processing   | BSc    | 5       | 2 (Fall)       |
| CSE2310              | Algorithm Design   | BSc    | 5       | 2 (Fall)       |
| CSE2425              | Embedded Software (limited capacity)   | BSc    | 5       | 2 (Fall)       |
| CSE2525              | Data Mining  | BSc    | 5       | 2 (Fall)       |
| CSE2120              | Concepts of Programming Languages  | BSc    | 5       | 3 (Spring)     |
| CSE2230**            | Multimedia Analysis  | BSc    | 5       | 3 (Spring)     |
| CSE2315              | Automata, Languages and Computability  | BSc    | 5       | 3 (Spring)     |
| CSE2430              | Operating systems (limited capacity)   | BSc    | 5       | 3 (Spring)     |
| CSE2530              | Computational Intelligence   | BSc    | 5       | 3 (Spring)     |
|                      | Computer science: 3rd year   |        | -       | 3 (Spring)     |
| CSE3xxx              | Electives of the third year, several. As they are subject to change, please check the available 5 EC courses in the study guide (link below). The research project is not available. | BSc    | 5       | 3 (Spring)     |
| CSE3xxx              | https://studiegids.tudelft.nl/a101_displayProgram.do?progra<br>m_tree_id=31175   |        |         |                |
|                      | You need to register for the elective courses before the<br>deadline!  |        |         |                |

\* Courses with \* are basic mathematic courses
 \*\* Courses with \*\* are related to each other; knowledge of the first course is necessary to follow the second course and to follow the third you need to have pre requisites of the previous two courses.

| BSc Electrical Engineering |  |      |    |               |                    |
|----------------------------|--|------|----|---------------|--------------------|
| Course Code                | Course Name                              | Cat. | EC | Period<br>(Q) | Old Course<br>Code |
|                            | Electrical Engineering: 1st year         |      |    |               |                    |
| EE1P1                      | Electricity & Magnetism                  | BSc  | 5  | 3 (Spring)    |                    |
| EE1E1                      | Electrical Energy Fundamentals           | BSc  | 5  | 4 (Spring)    |                    |
|                            | Electrical Engineering: 2nd year         |      |    |               |                    |
| EE2M1                      | Probability and Statistics               | BSc  | 5  | 1 (Fall)      |                    |
| EE2C1                      | Transistor Circuits                      | BSc  | 5  | 1 (Fall)      |                    |
| EE2S1                      | Signals and Systems                      | BSc  | 5  | 1 (Fall)      | EE2S11             |
| EE2P1                      | Electromagnetics                         | BSc  | 5  | 2 (Fall)      | EE3P11             |
| EE2T1                      | Telecommunication and sensing            | BSc  | 5  | 2 (Fall)      | EE2T21             |
| EE2S2                      | Systems and control                      | BSc  | 5  | 3 (Spring)    | EE2S21             |
| EE2P2                      | Semiconductor Physics and Devices        | BSc  | 5  | 3 (Spring)    |                    |
| EEX01                      | Introduction to Machine Learning         | BSc  | 5  | 3 (Spring)    |                    |
| EEX02                      | Communication Networks and<br>Algorithms | BSc  | 5  | 3 (Spring)    |                    |
| EEX03                      | Microwave Engineering                    | BSc  | 5  | 3 (Spring)    |                    |
| EEX04                      | Technologies for Energy Transition       | BSc  | 5  | 3 (Spring)    |                    |
| EE2C2                      | Mixed-Signal Circuits and Systems        | BSc  | 5  | 4 (Spring)    | EE2C11             |
|                            | Electrical Engineering: 3rd year         |      |    |               |                    |
| EE3P11                     | Electromagnetics                         | BSc  | 5  | 3 (Spring)    |                    |
| EE3D11                     | Computer architecture and organisation   | BSc  | 5  | 3 (Spring)    |                    |
| EE3C11                     | Electronics                              | BSc  | 5  | 3 (Spring)    |                    |

| MSc Applied Mathematics (AM) |   |     |    |                |
|------------------------------|---|-----|----|----------------|
| Course<br>Code               | Course Name   | Cat | EC | Period (Q)     |
| WI4019-SP                    | Nonlinear Differential Equations  | MSc | 6  | 1 & 2 (Fall)   |
| WI4049TU                     | Introduction to High Performance Computing                              | MSc | 6  | 1 & 2 (Fall)   |
| WI4052                       | Risk Analysis   | MSc | 6  | 1 & 2 (Fall)   |
| WI4156(TU)                   | Game theory   | MSc | 6  | 1 & 2 (Fall)   |
| WI4201                       | Scientific Computing  | MSc | 6  | 1 & 2 (Fall)   |
| WI4203                       | Applied Functional Analysis   | MSc | 6  | 1 & 2 (Fall)   |
| WI4227-14                    | Discrete Optimisation   | MSc | 6  | 1 & 2 (Fall)   |
| WI4430                       | Martingales, Brownian Motion  | MSc | 6  | 1 & 2 (Fall)   |
| WI4455                       | Statistical Inference   | MSc | 6  | 1 & 2 (Fall)   |
| WI4465                       | Advanced Topics in Probability  | MSc | 6  | 1 & 2 (Fall)   |
| WI4515                       | Relaxations and heuristics  | MSc | 6  | 1 & 2 (Fall)   |
| WI4635                       | Linear Algebra and Optimization for Machine Learning                    | MSc | 6  | 1 & 2 (Fall)   |
| WI4645                       | Introduction to Quantum Information and Computing                       | MSc | 6  | 1 & 2 (Fall)   |
| WI4655                       | Perturbation and Variational Methods for Partial Differential Equations | MSc | 6  | 1 & 2 (Fall)   |
| WI4670                       | Extremal Combinatorics  | MSc | 6  | 1 & 2 (Fall)   |
| WI4675                       | Introduction to Financial Mathematics                                   | MSc | 6  | 1 & 2 (Fall)   |
| WI4771TU                     | Object Oriented Scientific Programming with C++                         | MSc | 3  | 2 (Fall)       |
| WI4260TU                     | Scientific Programming for Engineers                                    | MSc | 3  | 3 (Spring)     |
| WI4006                       | Special Functions and Representation Theory                             | MSc | 6  | 3 & 4 (Spring) |
| WI4011-17                    | Computational Fluid Dynamics  | MSc | 6  | 3 & 4 (Spring) |
| WI4050                       | Uncertainty and Sensitivity Analysis                                    | MSc | 6  | 3 & 4 (Spring) |
| WI4079                       | Financial Mathematics   | MSc | 6  | 3 & 4 (Spring) |
| WI4138                       | Decision Theory/Expert Judgment   | MSc | 6  | 3 & 4 (Spring) |
| WI4154                       | Computational Finance   | MSc | 6  | 3 & 4 (Spring) |
| WI4204                       | Advanced Modelling  | MSc | 6  | 3 & 4 (Spring) |
| WI4205                       | Applied Finite Elements   | MSc | 6  | 3 & 4 (Spring) |
| WI4212                       | Advanced Numerical Methods  | MSc | 6  | 3 & 4 (Spring) |
| WI4221                       | Control of Discrete-Time Stochastic Systems                             | MSc | 6  | 3 & 4 (Spring) |
| WI4224                       | Special Topics in Financial Engineering                                 | MSc | 6  | 3 & 4 (Spring) |
| WI4230                       | Time series and Extreme Value Theory                                    | MSc | 6  | 3 & 4 (Spring) |
| WI4410                       | Advanced Discrete Optimization  | MSc | 6  | 3 & 4 (Spring) |
| WI4425                       | Financial Markets Theory  | MSc | 6  | 3 & 4 (Spring) |
| WI4450                       | Special Topics in Computational Science and Engineering                 | MSc | 6  | 3 & 4 (Spring) |
| WI4475                       | Data Assimilation   | MSc | 6  | 3 & 4 (Spring) |
| WI4485                       | Harmonic Analysis   | MSc | 6  | 3 & 4 (Spring) |
| WI4614                       | Stochastic Simulation   | MSc | 6  | 3 & 4 (Spring) |
| WI4620                       | Semidefinite Optimization   | MSc | 6  | 3 & 4 (Spring) |
| WI4630                       | Statistical Learning  | MSc | 6  | 3 & 4 (Spring) |
| WI4640                       | High Dimensional Probability  | MSc | 6  | 3 & 4 (Spring) |

| WI4650 | Applied Quantum Algorithms                            | MSc | 6 | 3 & 4 (Spring) |
|--------|---|-----|---|----------------|
| WI4660 | Dynamical Systems and Chaos                           | MSc | 6 | 3 & 4 (Spring) |
| WI4665 | Advanced Topics in Statistics                         | MSc | 6 | 3 & 4 (Spring) |
| WI4680 | Applications in Partial Differential Equations        | MSc | 6 | 3 & 4 (Spring) |
| WI4211 | Advanced Topic in Analysis                            | MSc | 6 | 4 (Spring)     |
| WI4505 | Quantitative Risk Management                          | MSc | 6 | 4 (Spring)     |
| WI4046 | Spectral Theory of Linear Operators                   | MSc | 6 | 3 & 4 (Spring) |
| WI4520 | Nonlinear Analysis and Partial Differential Equations | MSc | 6 | 3 & 4 (Spring) |
| WI4615 | Stochastic Calculus                                   | MSc | 6 | 3 & 4 (Spring) |

| Courses which are not available to exchange students |                         |   |  |  |  |
|--|-------------------------|---|--|--|--|
| WI4207   | Continuous Optimization | Not available for exchange students, classes are outside of Delft |  |  |  |
| WI4209   | Systems and Control     | Not available for exchange students, classes are outside of Delft |  |  |  |

| MSc Computer Science<br>Only available to MSc CS exchange students enrolled to our faculty |  |                       |            |            |            |
|--|--|-----------------------|------------|------------|------------|
| Course<br>Code   | Course Name  | Ca                    | t E        | EC         | Period (Q) |
| CS4410   | Category Theory for Programmers  | MS                    | c 5        |            | 1 (Fall)   |
| CS4505   | Software Architecture  | MS                    | c 5        |            | 1 (Fall)   |
| CS4510   | Formal Reasoning about Software  | MS                    | c 5        |            | 1 (Fall)   |
| CS4515   | 3D Computer Graphics and Animation   | MS                    | c 5        |            | 1 (Fall)   |
| IFEEMCS<br>4070  | Multivariate Data Analysis   | MS                    | c 5        |            | 1 (Fall)   |
| IN4310   | Seminar Computer Graphics  | MS                    | c 5        |            | 1 (Fall)   |
| CS4145   | Crowd Computing  | MS                    | c 5        |            | 2 (Fall)   |
| CS4150   | Systems Security   | MS                    | c 5        |            | 2 (Fall)   |
| CS4520   | Security and Cryptography  | MS                    | c 5        |            | 2 (Fall)   |
| CS4525   | Web-Scale Data Management  | MS                    | c 5        |            | 2 (Fall)   |
| CS4530   | Modelling and Problem Solving  | MS                    | c 5        |            | 2 (Fall)   |
| CS4545   | Distributed Algorithms   | MS                    | c 5        |            | 2 (Fall)   |
| CS4555   | Compiler Construction  | MS                    | c 5        |            | 2 (Fall)   |
| CS4570   | Machine Learning for Software Engineering  | MS                    | c 5        |            | 2 (Fall)   |
| IN4302TU   | Building Serious Games   | MS                    | c 5        |            | 2 (Fall)   |
| IN4341   | Performance Analysis   | MS                    | c 5        |            | 2 (Fall)   |
| CS4090   | Quantum Communication and Cryptography   | MS                    | c 5        |            | 3 (Spring) |
| CS4195   | Modeling and Data Analysis in Complex Networ                                       | ks MS                 | c 5        |            | 3 (Spring) |
| CS4225   | Educational Technologies   |                       | c 5        |            | 3 (Spring) |
| CS4235   | Socio-Cognitive Engineering  |                       | c 5        |            | 3 (Spring) |
| CS4345   | Seminar Formal Methods for Learned Systems   | MS                    | c 5        |            | 3 (Spring) |
| CS4380   | Privacy Enhancing Technologies   | MS                    | c 5        |            | 3 (Spring) |
| CS4535   | Constraint Solving   | MS                    | c 5        |            | 3 (Spring) |
| CS4560   | Parallel and Concurrent Programming  | MS                    | c 5        |            | 3 (Spring) |
| CS4575   | Sustainable Software Engineering   | MS                    | c 5        |            | 3 (Spring) |
| CS4160   | Blockchain Engineering   | MS                    | c 5        |            | 4 (Spring) |
| CS4205   | Evolutionary Algorithms  | MS                    | c 5        |            | 4 (Spring) |
| CS4295   | Release Engineering for Machine Learning Appl                                      | ications MS           | c 5        |            | 4 (Spring) |
| CS4350   | Machine Learning for Graph Data  | MS                    | c 5        |            | 4 (Spring) |
| CS4430   | Network Security   | MS                    | c 5        |            | 4 (Spring) |
| CS4540   | Geometric Data Processing  |                       | c 5        |            | 4 (Spring) |
| CS4565   | Advanced Functional Programming MSc  |                       |            |            | 4 (Spring) |
| CS4580   | Automated Software Testing and Reverse Engineering      MSc      5      4 (Spring) |                       |            | 4 (Spring) |            |
| CS4710   | Research in Cyber Security – Hacking Lab   |                       | c 5        |            | 4 (Spring) |
| CS4715   | Programming Languages Research Seminar   |                       | c 5        |            | 4 (Spring) |
| CS4725   | Research Seminar on Scalable Learning Systems MSc 5 4 (Spr                         |                       | 4 (Spring) |            |            |
| Courses which are not available to exchange students                                       |  |                       |            |            |            |
| CS4700   | Literature Survey      Not available for exchange students                         |                       |            | nts        |            |
| CS4720   | Research in Program Analysis   | Not available for exc | hange      | e stude    | nts        |
| Courses with a DSAIT course code Not available for exchange students                       |  |                       |            |            |            |

# MSc Computer and Embedded Systems Engineering (CESE)

| · · · · · · · · · · · · · · · · · · · |                                       |     |    |              |
|---------------------------------------|---------------------------------------|-----|----|--------------|
| Course<br>Code                        | Course Name                           | Cat | EC | Period (Q)   |
| CESE4000                              | Software Fundamentals                 | MSc | 5  | 1 (Fall)     |
| CESE4005                              | Hardware Fundamentals                 | MSc | 5  | 1 (Fall)     |
| CESE4010                              | Advanced Computing Systems            | MSc | 5  | 1 (Fall)     |
| CESE4055                              | Ad hoc and Sensor Networks            | MSc | 5  | 1 (Fall)     |
| CESE4075                              | Supercomputing for Big Data           | MSc | 5  | 1 (Fall)     |
| CESE4130                              | Computer Engineering                  | MSc | 5  | 1 (Fall)     |
| CESE4015                              | Software Systems                      | MSc | 5  | 2 (Fall)     |
| CESE4025                              | Real-time Systems                     | MSc | 5  | 2 (Fall)     |
| CESE4045                              | High-performance data networking      | MSc | 5  | 2 (Fall)     |
| CESE4090                              | Reconfigurable Computing Design       | MSc | 5  | 2 (Fall)     |
| CESE4050                              | Measuring and Simulating the Internet | MSc | 5  | 3 (Spring)   |
| CESE4060                              | Wireless IoT and Local Area Networks  | MSc | 5  | 3 (Spring)   |
| CESE4085                              | Modern Computer Architectures         | MSc | 5  | 3 (Spring)   |
| CESE4020                              | Effective and Responsible Engineering | MSc | 5  | 4 (Spring)   |
| CESE4120                              | Smart Phone Sensing                   | MSc | 5  | 4 (Spring)   |
| CESE4065                              | Advanced Practical I.o.T. and Seminar |     | 5  | 1 (Fall) & 4 |
|                                       |                                       |     |    | (Spring)     |

| Courses which are not available to exchange students |  |   |  |  |  |  |
|--|--|---|--|--|--|--|
| CESE4030   | Embedded Systems Laboratory  | Not available for exchange students                           |  |  |  |  |
| CESE4035   | Computer Arithmetic  | Not available for exchange students                           |  |  |  |  |
| CESE4040   | Processor Design Project   | Not available for exchange students                           |  |  |  |  |
| CESE4050   | Measuring and Simulating the Internet                                | No longer given in 2024-2025                                  |  |  |  |  |
| CESE4115   | Embedded Computer Architecture 2                                     | Course given in Twente not available for<br>exchange students |  |  |  |  |
| Courses with   | a DSAIT course code  | Not available for exchange students                           |  |  |  |  |
| Course with a  | Course with a CS course code Only available for CS exchange students |   |  |  |  |  |

## MSc Electrical Engineering (EE)

|                |   | 1   |    |            |
|----------------|---|-----|----|------------|
| Course<br>Code | Course Name   | Cat | EC | Period (Q) |
| EE4670         | PV materials processing & characterization                            | MSc | 4  | 1 (Fall)   |
| EE4680         | Photovoltaic Modelling  | MSc | 4  | 1 (Fall)   |
| EE4700         | Modeling, Algorithms and Data Structures                              | MSc | 5  | 1 (Fall)   |
| EE4750         | Tensor Networks for Green AI and Signal Processing                    | MSc | 4  | 1 (Fall)   |
| EE4C03         | Statistical Digital Signal Processing and Modeling                    | MSc | 5  | 1 (Fall)   |
| EE4C04         | Control System Design   | MSc | 5  | 1 (Fall)   |
| EE4C05         | Electromagnetics  | MSc | 5  | 1 (Fall)   |
| EE4C06         | Networking  | MSc | 5  | 1 (Fall)   |
| EE4C08         | Measurement and Instrumentation                                       | MSc | 5  | 1 (Fall)   |
| EE4C10         | Analog Circuit Design Fundamentals                                    | MSc | 5  | 1 (Fall)   |
| EE4C11         | Systems Engineering   | MSc | 5  | 1 (Fall)   |
| EE4C12         | Machine Learning for Electrical Engineering Applications              | MSc | 5  | 1 (Fall)   |
| EE4C13         | Wireless Systems for Electrical Engineering Applications              | MSc | 5  | 1 (Fall)   |
| ET4175         | Radar II: Theory and System Design                                    | MSc | 4  | 1 (Fall)   |
| ET4379         | Photovoltaic Lab Course   | MSc | 4  | 1 (Fall)   |
| EE4109         | Structured Electronic Design  | MSc | 5  | 2 (Fall)   |
| EE4510         | Advanced Electromagnetics   | MSc | 5  | 2 (Fall)   |
| EE4520         | Analog CMOS design I  | MSc | 3  | 2 (Fall)   |
| EE4530         | Applied Convex Optimization   | MSc | 5  | 2 (Fall)   |
| EE4565         | Propagation and Scattering of EM waves                                | MSc | 5  | 2 (Fall)   |
| EE4585         | Semiconductor Device Physics  | MSc | 5  | 2 (Fall)   |
| EE4605         | Integrated Circuits for RF/Wireless Applications                      | MSc | 5  | 2 (Fall)   |
| EE4610         | Digital IC Design I   | MSc | 3  | 2 (Fall)   |
| ET4103         | High Voltage Technology   | MSc | 4  | 2 (Fall)   |
| ET4107         | Power Systems Analysis II   | MSc | 4  | 2 (Fall)   |
| ET4117         | Electrical Machines and Drives  | MSc | 4  | 2 (Fall)   |
| ET4119         | Electronic Power Conversion   | MSc | 4  | 2 (Fall)   |
| ET4257         | Sensors and Actuators   | MSc | 4  | 2 (Fall)   |
| ET4376         | Photovoltaic Basics   | MSc | 4  | 2 (Fall)   |
| ET4386         | Estimation and Detection  | MSc | 5  | 2 (Fall)   |
| EE4016         | Antenna Systems   | MSc | 5  | 3 (Spring) |
| EE4375         | Finite Element Modeling for Electrical Energy Applications            | MSc | 4  | 3 (Spring) |
| EE4625         | High Voltage Cable System   | MSc | 3  | 3 (Spring) |
| EE4630         | Telecommunication Network Architectures                               | MSc | 3  | 3 (Spring) |
| EE4665         | Uncertainty modelling and risk assessment in electrical power systems | MSc | 4  | 3 (Spring) |
| EE4685         | Machine Learning, a Bayesian Perspective                              | MSc | 5  | 3 (Spring) |
| EE4695         | Hardware Dependability  | MSc | 5  | 3 (Spring) |
| EE4705         | Solid State Physics   | MSc | 3  | 3 (Spring) |
| EE4710         | Solid State Physics with Quantum and Nano Electronics                 | MSc | 5  | 3 (Spring) |
| EE4725         | Quasi Optical Systems   | MSc | 5  | 3 (Spring) |
| EE4740         | Data Compression: Entropy and Sparsity                                | MSc | 5  | 3 (Spring) |
| EE4760         | Probablistic Sensor Fusion  | MSc | 3  | 3 (Spring) |
| EE5020         | Sensor Signal and Data Processing                                     | MSc | 4  | 3 (Spring) |
|                |   |     |    |            |

| ET4108   | Transients in Power Systems                                 | MSc | 4 | 3 (Spring)               |
|----------|---|-----|---|--------------------------|
| ET4116   | Power Electronics   | MSc | 4 | 3 (Spring)               |
| ET4121   | A.C. Machines   | MSc | 4 | 3 (Spring)               |
| ET4127   | Themes in Biomedical Electronics                            | MSc | 4 | 3 (Spring)               |
| ET4130   | Bioelectricity  | MSc | 3 | 3 (Spring)               |
| ET4169   | Radar I: From Basic Principles to Applications              | MSc | 5 | 3 (Spring)               |
| ET4252   | Analog Integrated Circuit Design                            | MSc | 4 | 3 (Spring)               |
| ET4277   | Microelectronics Reliability                                | MSc | 4 | 3 (Spring)               |
| ET4289   | Integrated Circuits and MEMS Technology                     | MSc | 4 | 3 (Spring)               |
| ET4351   | Digital VLSI Systems on Chip                                | MSc | 4 | 3 (Spring)               |
| ET4358   | Fundamentals of Wireless Communications                     | MSc | 5 | 3 (Spring)               |
| ET4369   | Nyquist-Rate Data Converters                                | MSc | 4 | 3 (Spring)               |
| ET4371   | Mixed-mode Wireless transceivers                            | MSc | 4 | 3 (Spring)               |
| ET4377   | Photovoltaic Technologies                                   | MSc | 4 | 3 (Spring)               |
| ET4382   | Power conversion techniques in CMOS technology              | MSc | 3 | 3 (Spring)               |
| ET4391   | Advanced Microelectronics packaging                         | MSc | 3 | 3 (Spring)               |
| ET8011MS | Structured Electronic Design Laboratory                     | MSc | 3 | 2 (Coring)               |
| С        |   |     |   | s (spring)               |
| EE4111   | High-Voltage DC   | MSc | 4 | 4 (Spring)               |
| EE4114   | Power System Protection and Grounding                       | MSc | 4 | 4 (Spring)               |
| EE4396   | Mobile Networks   | MSc | 5 | 4 (Spring)               |
| EE4410   | Cyber Security of Power Grids                               | MSc | 4 | 4 (Spring)               |
| EE4515   | Advanced Power Electronics                                  | MSc | 4 | 4 (Spring)               |
| EE4525   | Analog CMOS design II                                       | MSc | 3 | 4 (Spring)               |
| EE4536   | DC and AC Microgrids  | MSc | 4 | 4 (Spring)               |
| EE4540   | Distributed Signal Processing                               | MSc | 5 | 4 (Spring)               |
| EE4545   | Electrical Power Systems of the Future                      | MSc | 4 | 4 (Spring)               |
| EE4555   | Active Implantable Biomedical Microsystems                  | MSc | 5 | 4 (Spring)               |
| EE4595   | An Introduction to Wavefield and Magnetic Resonance Imaging | MSc | 5 | 4 (Spring)               |
| EE4615   | Digital IC Design II  | MSc | 3 | 4 (Spring)               |
| EE4620   | Spectral Domain Methods in Electromagnetics                 | MSc | 4 | 4 (Spring)               |
| EE4675   | Object classification with radar                            | MSc | 4 | 4 (Spring)               |
| EE4690   | Hardware Architectures for Artificial Intelligence          | MSc | 5 | 4 (Spring)               |
| EE4715   | Array processing  | MSc | 5 | 4 (Spring)               |
| EE4730   | High Frequency Wireless Architectures                       | MSc | 3 | 4 (Spring)               |
| EE4736   | Introduction Imaging Sensors                                | MSc | 4 | 4 (Spring)               |
| EE4745   | Superconducting Astronomical Instrumentation                | MSc | 5 | 4 (Spring)               |
| ET4030   | Error Correcting Codes                                      | MSc | 4 | 4 (Spring)               |
| ET4034   | Telecom Business Architectures and Models                   | MSc | 4 | 4 (Spring)               |
| ET4113   | Power System Dynamics                                       | MSc | 4 | 4 (Spring)               |
| ET4173   | Introduction to UWB technology, systems and applications    | MSc | 4 | 4 (Spring)               |
| ET4260   | Microsystems design and modelling                           | MSc | 4 | 4 (Spring)               |
| ET4278   | Over-Sampled Data Converters                                | MSc | 4 | 4 (Spring)               |
| ET4291   | Control of Electrical Drives                                | MSc | 5 | 4 (Spring)               |
| ET4362   | High Speed Digital Design for Embedded Systems              | MSc | 5 | 4 (Spring)               |
| ET4378   | Photovoltaic Systems  | MSc | 4 | 4 (Spring)               |
| EE4C01   | Profile Orientation and Academic Skills                     | MSc | 3 | 2 (Fall) &<br>3 (Spring) |
| EE4755   | Reliable Power Electronic Components and Systems            | MSc | 5 | 3 & 4 (Spring)           |
| ET8020   | High Voltage Testing and Diagnostics                        | MSc | 4 | 3 & 4 (Spring)           |

#### Courses with different course codes

Courses with a course code which does not start with EE or ET might be available for exchange students. Please check the study guide for restrictions and prerequisite knowledge.

| MSc Sustainable Energy Technology (SET) |   |     |    |            |  |  |  |
|---|---|-----|----|------------|--|--|--|
| Course<br>Code                          | Course Name   | Cat | EC | Period (Q) |  |  |  |
| SET3014                                 | Renewable Energy  | MSc | 5  | 1 (Fall)   |  |  |  |
| SET3055                                 | Economics and Regulation of Sustainable Energy Systems                    | MSc | 4  | 1 (Fall)   |  |  |  |
| SET3061                                 | Energy System Modelling   | MSc | 4  | 1 (Fall)   |  |  |  |
| SET3090                                 | Fossil-Free Fuel and Feedstock  | MSc | 4  | 1 (Fall)   |  |  |  |
| SET3815-M                               | Matlab Fundamentals   | MSc | 2  | 1 (Fall)   |  |  |  |
| SET3070                                 | Thermochemistry of Biomass Conversion                                     | MSc | 4  | 2 (Fall)   |  |  |  |
| SET3080                                 | The Necessity of Storage Technology                                       | MSc | 4  | 2 (Fall)   |  |  |  |
| SET3095                                 | Electronic Power Conversion   | MSc | 4  | 2 (Fall)   |  |  |  |
| SET3125                                 | Machine Learning Workflows for Digital Energy Systems                     | MSc | 4  | 2 (Fall)   |  |  |  |
| SET3205                                 | Heat Storage  | MSc | 4  | 2 (Fall)   |  |  |  |
| SET3215                                 | Heating and Cooling Sources   | MSc | 4  | 2 (Fall)   |  |  |  |
| SET3065                                 | Intelligent Electrical Power Grids  | MSc | 4  | 3 (Spring) |  |  |  |
| SET3100                                 | Electric Vehicle & Charging Technology                                    | MSc | 4  | 3 (Spring) |  |  |  |
| SET3110                                 | Energy Storage in Batteries   | MSc | 4  | 3 (Spring) |  |  |  |
| SET3120                                 | Energy Systems Simulation and Digital Twins                               | MSc | 4  | 3 (Spring) |  |  |  |
| SET3135                                 | Fuel Cell Systems   | MSc | 4  | 3 (Spring) |  |  |  |
| SET3200                                 | Heating and Cooling Technologies from Near-Ambient<br>Temperature Sources | MSc | 4  | 3 (Spring) |  |  |  |
| ET4291SET                               | Digital modelling of electric powertrain                                  | MSc | 4  | 4 (Spring) |  |  |  |
| SET3085                                 | Hydrogen Technology   | MSc | 4  | 4 (Spring) |  |  |  |
| SET3210                                 | Heating and Cooling Grids   | MSc | 4  | 4 (Spring) |  |  |  |
| SET3220                                 | Heat Distribution in Buildings  | MSc | 4  | 4 (Spring) |  |  |  |
| SET3995                                 | Direct Use of Geothermal Energy   | MSc | 4  | 4 (Spring) |  |  |  |

#### Courses with different course codes

Courses with a course code which does not start with SET might be available for exchange students. Please check the study guide for restrictions and prerequisite knowledge.