
MSc in Physics and Nanotechnology

Official title

Civilingeniør, cand. polyt. (Fysik og Nanoteknologi)
Master of Science in Engineering (Physics and Nanotechnology)

About the Programme Specification

This programme specification revised by 1 September 2017 applies for all students enrolled in the programme.

Students enrolled from 1 September 2017 will find their curriculum in the paragraph "Curriculum".

Students enrolled prior to 1 September 2017 may find additional information to the curriculum in the paragraph "Curriculum, previous admission years".

The programme specification also includes the course descriptions in DTU's course database, which states rules pertaining to both the programme specific and eligible courses in the programme.

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The programme specifications are laid down by DTU in accordance with Ministerial Order on Bachelor and Master's (Candidatus) Programmes at Universities No. 1520 of December 16th 2013, with subsequent amendments, Ministerial Order on the International Education Activities of Universities No. 247 of March 13th 2015 and Ministerial Order on the Grading Scale and Other Forms of Assessment of Study Programmes Offered under the Ministry of Higher Education and Science (the Grading Scale Order) No. 114 of February 3rd 2015. In accordance with DTU's regulations section 11.8 the curricula have been approved by the Dean of Graduate Studies, authorized by the President.

Duration

The Master of Science in Engineering programme is a 2-year programme equivalent to 120 ECTS point (European Credit Transfer System) .

General admission requirements

Only applicants holding either a Bachelor of Science in Engineering, a Bachelor in Engineering or a Bachelor of Natural Science degree can be admitted to a Master of Science in Engineering programme. The bachelor degree must be less than 10 years old.

The individual MSc Eng programme states in detail which bachelor programmes qualify and whether applicants have to complete supplementary educational activities.

Requirements for supplementary educational activities can equate to up to 30 ECTS credits and are specified in the form of a list of courses under the individual MSc Eng programmes.

The specific requirements must be met before graduating from the bachelor programme or in connection with conditional admission to a particular MSc Eng programme. The courses must be passed prior to the commencement of studies within one year from the conditional admission.

Supplementary educational activities in connection with conditional admission to an MSc Eng programme do not form part of the MSc Eng programme, and partial tuition fees are charged. If the supplementary courses have not been passed within the deadlines specified, the conditional admission to the programme is withdrawn.

The Master of Science in Engineering programmes are offered in English. Therefore applicants must demonstrate proficiency in English (B-level, IELTS, TOEFL- or Pearson test).

DTU offers Honours Programme as part of all MSc Eng. programmes. The admission requirements are described at <http://www.dtu.dk/english/education/msc/honours-programmes>

Academic requirements for this programme

Bachelors of science in engineering from DTU

Students from the following BSc Eng Programme at DTU are entitled to admission to the MSc Eng programme in Physics and Nanotechnology?

- Physics and Nanotechnology

In order to get the optimal benefit of the Master program, it is recommended that the elective parts of the bachelor program are used to build up the right prerequisites for the desired study plan.

Students from the following BSc Eng programmes at DTU:

- General Engineering

have access to be admitted subject to having completed the following as part of their bachelor programme:

10104	Quantum Mechanics; General Engineering	5	point	
10303	Condensed Matter Physics and Nanoscale Materials Physics	10	point	E4 (Tues 13-17, Fri 8-12), F4 (Tues 13-17, Fri 8-12)

In addition, it is recommended that one of the following courses has been passed:

33323	Nano-1: Introduction to nanotechnology	5	point	F1B (Thurs 13-17)
or				
33255	Fabrication of Micro- and Nano Structures	5	point	E3A (Tues 8-12)

Other BSc Eng students e.g. from the programme in "Mathematics and Technology" or "Geophysics and space technology" have access to be admitted if the right prerequisites are obtained through the elective courses on the bachelor education. BSc Engs from other programmes than Physics and Nanotechnology should as a minimum have taken the following courses

01035	Advanced Engineering Mathematics 2	5	point	E2B (Thurs 8-12), F2B (Thurs 8-12)
10044	Physics 2	5	point	E4A (Tues 13-17)
10102	Quantum Mechanics	10	point	F4 (Tues 13-17, Fri 8-12)

where the course *10044 Physics 2* can be replaced with *10036 Electromagnetism for physicists* or *31400 Electromagnetics*.

In addition, it is strongly recommended to have completed the course

10303	Condensed Matter Physics and Nanoscale Materials Physics	10	point	E4 (Tues 13-17, Fri 8-12), F4 (Tues 13-17, Fri 8-12)
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The following central courses on the bachelor are prerequisites for central courses on the master program. It is therefore recommended that students make sure that they have acquired the necessary prerequisites for the study line they intend to follow by following at least 10 ECTS (preferably more) among the following courses

10347	Introduction to Biophysics	5	point	E5B (Wed 13-17)
33255	Fabrication of Micro- and Nano Structures	5	point	E3A (Tues 8-12)
33257	Visualisation of Micro and Nano Structures	5	point	F5A (Wed 8-12)
34020	Optics and Photonics	5	point	F1B (Thurs 13-17)

It is expected, that students themselves can acquire any prerequisites within fundamental physics that they may be missing due to an atypical background.

Bachelor of Science in Engineering and Bachelor of Natural Science from other universities

Student from the following educations are entitled to admission to the MSc Eng programme in Physics and Nanotechnology:

- BSc. Eng in Nanotechnology, with specialization in Nanophysics, at Aalborg University
- BSc in Physics at Copenhagen University
- BSc in Nanoscience at Copenhagen University
- BSc in Physics at Aarhus University
- BSc in Nanoscience from Aarhus University

Students with similar qualifications can be admitted after individual evaluation.

Bachelors of Engineering (diplomingeniører)

The B Eng (diplomingeniør) education does not normally give access to the MSc programme in Physics and Nanotechnology. However, students can in some cases be admitted after individual evaluation. Students who are interested in this option should contact the head of studies of the MSc programme as soon as possible during their study in order to acquire the necessary prerequisites during the elective part of their study.

International students

Applicants for admission to the MSc Eng programme in Physics and Nanotechnology should hold a bachelor of science degree in physics, physics engineering, nanotechnology, or similar.

A strong, working knowledge of mathematics and physics is a prerequisite. A year's full time study at DTU amounts to 60 ECTS points. The MSc program builds on a bachelor curriculum with at least the following content of mathematics and natural sciences:

- Mathematics: 25-30 ECTS.
- Classical mechanics, electromagnetism, statistical physics and thermodynamics: 25 ECTS
- Quantum mechanics, solid state physics: 20 ECTS
- Nanotechnology, optics and photonics, biophysics: 20-30 ECTS

A working knowledge at bachelor level of at least four of the following five subjects is prerequisite for the central courses of the MSc-program:

- Quantum mechanics
- Solid state physics
- Optics and photonics
- Biophysics
- Fabrication and visualisation of micro- and nanostructures

The required level may be gauged by comparison with the contents of the corresponding DTU-courses, although of course the exact contents will vary. The applicant should have passed the necessary prerequisites with good results.

Admission will be decided on the basis of the relevance and quality of the applicant's educational background. The applicant's grade point average or equivalent, as well as individual grades for relevant courses will be taken into account.

International students normally have a background that differ from the typical student at the MSc program, and should be willing to acquire any prerequisites that they may be missing by themselves.

All steps in the admission procedure are handled through DTU's Office of International Affairs, whereto inquiries about formalities should be directed. Questions about academic qualifications and program content should be directed to the program coordinator.

Objectives

The Master of Science in Engineering programme has two central objectives:

- Academic cutting-edge competencies which are the result of a clear study progression and which are unique to the graduate. The academic competencies contain elements of actual research and are manifested in the final master thesis
- Polytechnic holistic competencies that, in addition to an identity-creating professionalism, also include being able to gain an overview of a complex technical problem and being able to think in technical terms in commercial and societal contexts

A MSc in Engineering programme from DTU is a research-based education at the highest technological level, which qualifies the holder to take on knowledge-intensive positions in the business community and society that are distinguished by a high level of scientific development.

Moreover, the MSc in Engineering qualification allows the holder to continue his/her education in the field of research (research-based programmes, PhD).

The holder of an MSc in Engineering has the competencies required to analyse, synthesize and evaluate theory and experiments relating to complex and complicated engineering systems, issues and solutions for the benefit of society.

Shared academic goals for learning outcome

Knowledge and understanding

A graduate of the MSc Eng. programme from DTU

- has a solid understanding of and a firm base of knowledge in natural sciences and technological principles, possesses comprehensive knowledge within a given subject area, and is familiar with the current development trends and opportunities within the academic area
- can identify and reflect on technical scientific issues and understand the interaction between the various components of an issue
- can, based on a clear academic profile, apply elements of current research at international level to develop ideas and solve problems
- has insight into and understanding of the internal interaction between the various engineering domains and other competencies in connection with solving specific engineering problems
- possesses knowledge about sustainability, innovation and entrepreneurship

Skills

A graduate of the MSc Eng. programme from DTU

- masters technical scientific methodologies, theories and tools, and has the capacity to take a holistic view of and delimit a complex, open issue, put it into a broader academic and societal perspective and, on this basis, propose a variety of possible actions
- can, via analysis and modelling, develop relevant models, systems and processes for solving technological problems
- can communicate and mediate research-based knowledge both orally and in writing
- can discuss technological issues with various types of stakeholder
- is familiar with and can seek out leading international research within his/her specialist area

Competencies

A graduate of the MSc Eng. programme from DTU

- masters technical problem-solving at a high level through project work, and has the capacity to work with and manage all phases of a project – including preparation of timetables, design, solution and documentation
- can work independently and reflect on own learning, academic development and specialization
- can independently combine his/her technological knowledge with knowledge about business, management, organization and project work

The MSc Eng. programme qualifies the graduate to hold positions in the private and public sectors, the consulting industry or to apply for research training with a view to earning a PhD.

Programme specific competence profile

A Master of Science in Engineering (Physics and Nanotechnology)

- can - in connection with a research and/or development project at international level - independently complete a project within his/her area of specialization
- can contribute actively to solving assignments in an interdisciplinary team - even in areas located outside his/her own area of specialization
- is familiar with the laws of physics and a wide range of methods for solving problems in the fields of physics and nanotechnology, and can select them to solve technological problems
- can explain, analyse and critically assess the relationship between a mathematical model and the experimental data it is to describe
- can develop new models, processes or methods in the fields of physics and nanotechnology
- can apply, assess and adapt IT-based solutions for data collection, data analysis, calculations and simulations
- has experience with technical physics at a high academic level within one or more of the following areas: nanoscale material physics, nanosystems engineering, optics and photonics, biophysics and complex systems, quantum engineering or sustainability and energy
- has experience with nanotechnology at a high academic level within one or more of the following areas: nanoscale material physics, nanosystems engineering, optics and photonics, biophysics and complex systems, quantum engineering or sustainability and energy

Structure

The MSc Eng programme is a research-based technological programme at elite level aimed at qualifying the graduate for a knowledge-intensive position in industry and the business sector and in society in general. Graduates obtain the title Master of Science in Engineering in the given engineering field

The MSc Eng is a two-year programme with a workload of 120 ECTS credit points. The programmes comprise four categories of courses: General competences, Technology specialization, Electives and Thesis. If students choose more than the required credits in the groups with mandatory courses, the credits count as elective courses.

General Competence Courses

The General Competence Courses have a broader scope than the specialist competencies. The primary purpose is to ensure that a series of competences – in association with the individual specialization – are obtained by all candidates. The following three considerations must be emphasized:

- A generalist point of view, where technology is combined with economics, management, organization and project work, and where the key is to have a technical approach in a commercial and societal perspective
- A synthesis point of view concentrating on working with an open problem where teamwork and cooperation, especially interdisciplinary work, are a key element
- Normative technical skills that formulate a common academic identity for the degree program and/or indicate the academic point of departure and level of the program

The polytechnic holistic competencies that are cited as one of the two central objectives for the MSc program can be obtained in many ways, but the contents of the study program's General Competencies outlined here ensure that the central aspects of these competencies are part of the course of study, depending on how the Technological Specialization and MSc thesis are undertaken.

Technological Specialiation Courses

The Technological Specialization and MSc Thesis together represent the basic foundation for achieving the academic cutting-edge competencies. The specific courses offered within the Technological Specialization are dynamic and will constantly reflect (potential) technological developments.

Elective Courses

The Elective Courses, which include all MSc courses at DTU, provide an opportunity for the graduate student to either focus even more on his/her chosen area of specialization or to supplement the academic specialization with general disciplines/competencies in mathematics, physics, chemistry, biology, programming, economics, management, etc. or with disciplines from associated specializations. The graduate student may choose as much as 10 credit points among the bachelor courses at DTU and courses at an equivalent level from other higher institutions. (The opportunity of choosing basic courses will be written down to the extent that the possibility of getting a credit transfer for courses which fall outside the academic domain of the student's studies is used.)

Master Thesis

The Master Thesis is the final project of the course of study. In many cases, it will be possible for the Master Thesis to include collaboration with a company. The Master Thesis must as a minimum equal 30 ECTS credit points, but may be 32½ or 35 ECTS credit points. Please read the chapter "Master Thesis" for more information.

Study Lines and Focus areas

Within a MSc programme, there might be one or more study lines. A study line is a suggested combination of courses geared towards a specific aspect of a discipline. The specialization title will - when approved by the head of studies - be added on the diploma.

Focus areas are exclusively descriptive and will not be added on the degree diploma.

Programme provision

In order to obtain the MSc Eng degree in Physics and Nanotechnology the student must fulfil the following requirements:

- Have passed General Competence Courses adding up to at least 30 ECTS points
- Have passed Technological Specialization Courses adding up to at least 30 ECTS points
- Have performed a Master Thesis of at least 30 ECTS points within the field of the general program
- Have passed a sufficient number of Elective Courses to bring the total number of ECTS points of the entire study up to 120

Study lines/focus areas

The program covers several fields of study, represented by six [study lines](#):

[Nano-scale Materials Physics](#) with focus on designing and understanding materials on the basis of a quantum mechanical or mesoscopic description. The field of study covers experimental and theoretical methods to investigate and change the structural, electrical, magnetic, mechanical and chemical properties of materials at the nanometer length scale. The subjects include neutron- and x-ray scattering and experiments at large-scale facilities, advanced 3D imaging technologies, electronic quantum components, molecular electronics, spintronics, surface and nano-particle reactivity, fuel cells and storing of hydrogen, electron structure theory and atomistic simulation methods.

[Nanosystems Engineering](#) with focus on the design and manufacture of nano- and microsystems for use in research and industry. Students will be taught the most modern nano and micro manufacturing technologies, including theory, simulation and manufacture at the DANCHIP clean room facility at DTU. The components manufactured are characterized in the modern laboratory facilities at DTU-Nanotech and DTU-Fotonik. Among the subjects are sensors, actuators, sensor systems and networks, the handling and detection of biological systems in micro scale, fluid dynamics in nano and micro scale, nanophotonics, nanoelectronics, nanomanipulation, and nano/microfabrication.

[Optics and Photonics](#) with focus on understanding the spreading of light and the interplay between light and substance and its use for design and manufacture of photonic components and systems. The applications fall within optical communication, nanophotonic components, sensors and biomedicine. The area includes theory, simulation, manufacture and characterization. Among the subjects are lasers, ultra-fast lasers, micro structured fibers, photonic crystals, metamaterials, quantum photonics, terahertz radiation, non-linear optics, biological sensors, bio-imaging and high-speed data transmission.

[Biophysics, biosensors and fluidics](#) with focus on understanding fluid dynamics or biological functions from molecules to cells, to engineer biomimetic systems or develop new biosensing or bioimaging technologies. Both experimental and theoretical methods are applied and among the subjects are instabilities in fluid flow, fluid dynamics at micro and nano scale, the structure and function of proteins and protein networks, cell mechanics, mechanics of single DNA molecules, and the use of statistical physics to describe single molecule biophysics experiments.

[Physics and Nanotechnology for Sustainability and Energy](#) with focus on the physical and nanotechnological principles behind sustainable energy technology, with the purpose of enabling the student to develop and optimize energy-related components and processes. The subjects include plasma physics and fusion energy; photovoltaics; solid state illumination; fuel cells; hydrogen technology; energy production, conversion and storage; as well as catalysis and photocatalysis. Nanotechnology is used both in the bottom-up approach, where nanostructures are designed and created at the atomic scale, and the top-down approach where e.g. semiconductor technologies are scaled down the the nanometer range, and both experimental, theoretical and numerical methods are part of the education.

[Quantum Engineering](#) with focus on the understanding, control and design of complex quantum systems for applications in emerging quantum technologies such as extremely sensitive sensors, quantum communication systems and quantum computers. The methods involved range from quantum mechanical calculations and simulations of e.g. electrontransport in new materials like graphene to the experimental development and investigations of new optical systems, solid-state systems, electronic systems and mechanical systems that are designed to harness the fundamental properties of quantum mechanics - such as quantum superposition and entanglement.

Students are not limited to following courses within one of these disciplines, but may choose and combine subjects from all six areas.

Curriculum

General Competence Courses

The General Competence Courses are split into 3 groups.

A. The *general engineering competences* can be fulfilled in three ways. Choose between:

42490	Technology, economics, management and organisation (TEMO)	10	point	E5 (Wed 8-17), F5 (Wed 8-17)
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or

41633	Innovation and Product Development	10	point	F3 (Tues 8-12, Fri 13-17)
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or both these courses:

42430	Project Management	5	point	January
42435	Knowledge-based Entrepreneurship	5	point	E2A (Mon 13-17)

Students choosing the latter option should be aware that the course 42430 is taught in Danish only, and that the course 42435 has a limited number of places available. Please plan to take it early in your study so you can fulfill the requirements even if you are rejected from the course.

B. 5 ECTS points have to be obtained by an open-ended experimental project through the *project-course*:

33525	Experimental project in Physics and Nanotechnology	5	point	Spring and Fall
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This course is also offered during the three week periods with alternative course numbers:

33526	Experimental project in Physics and Nanotechnology	5	point	June
33527	Experimental project in Physics and Nanotechnology	5	point	July
33528	Experimental project in Physics and Nanotechnology	5	point	August
33529	Experimental project in Physics and Nanotechnology	5	point	January

The project-course focus on open-ended issues some of which have an interdisciplinary character. The projects available will vary from year to year.

C. 15 ECTS points must be obtained from this list of *basic courses* :

10112	Advanced Quantum Mechanics	10	point	E2 (Mon 13-17, Thurs 8-12)
10122	Statistical Physics	5	point	E3A (Tues 8-12)
10304	Experimental Surface Physics	10	point	F3 (Tues 8-12, Fri 13-17)
10346	Continuum Physics	5	point	F2A (Mon 13-17)
10380	Quantum Optics	10	point	E4 (Tues 13-17, Fri 8-12)
33321	Nano-2: Nanosystems Engineering	10	point	E1 (Mon 8-12, Thurs 13-17)
33336	LabChip-2: Physics of Lab-on-chip systems	5	point	E4B (Fri 8-12)
33422	Nanolithography	5	point	January, June
34032	Optical Properties of Solids	5	point	E1B (Thurs 13-17)
34051	Nanophotonics	10	point	F1 (Mon 8-12, Thurs 13-17)

Courses that also appear on the list of Technological Specialization courses can either count as General Competence Courses (Basic courses) or as Technological Specialization Courses. A 10-point course can be split between the two categories.

Technological Specialization Courses

The following list defines the Technological Specialization Courses:

10112	Advanced Quantum Mechanics	10	point	E2 (Mon 13-17, Thurs 8-12)
10122	Statistical Physics	5	point	E3A (Tues 8-12)
10200	The structure and dynamics of materials studied with X-rays and neutrons	5	point	E1B (Thurs 13-17)
10220	Physics of soft materials	5	point	F1B (Thurs 13-17)
10302	Electronic Structure Methods in Material Physics, Chemistry and Biology	10	point	F5 (Wed 8-17)
10304	Experimental Surface Physics	10	point	F3 (Tues 8-12, Fri 13-17)
10305	Advanced Solid State Physics	5	point	E2B (Thurs 8-12)
10314	Magnetism and Magnetic Materials	5	point	F5A (Wed 8-12)
10315	Magnetism and Magnetic Materials - with project	10	point	F5A (Wed 8-12)
10333	Physics of Sustainable Energy	5	point	E5B (Wed 13-17)
10337	Theoretical microfluidics	5	point	E4A (Tues 13-17)
10346	Continuum Physics	5	point	F2A (Mon 13-17)
10380	Quantum Optics	10	point	E4 (Tues 13-17, Fri 8-12)
10384	Quantum information	5	point	F3A (Tues 8-12)
10386	Experimental Techniques in Quantum Technology	5	point	January

10400	Plasma Physics	5	point	E5A (Wed 8-12)
10401	Fusion energy and fusion plasma physics	5	point	January
33206	Transport in Nanostructures	10	point	E3 (Tues 8-12, Fri 13-17)
33250	Semiconductor Technology	5	point	F3B (Fri 13-17)
33321	Nano-2: Nanosystems Engineering	10	point	E1 (Mon 8-12, Thurs 13-17)
33336	LabChip-2: Physics of Lab-on-chip systems	5	point	E4B (Fri 8-12)
33355	MicroElectroMechanical Systems (MEMS)	10	point	E2 (Mon 13-17, Thurs 8-12)
33422	Nanolithography	5	point	January, June
33442	Quantum mechanical modelling of nanoelectronics	5	point	January
33621	Nano 3 - Topics in Graphene and other two-dimensional materials	10	point	F2A (Mon 13-17) and F2B (Thurs 8-12)
33647	Computer-based Introduction to Data Analysis for Physics and Nanotechnology	5	point	E1B (Thurs 13-17)
33692	PolyNano Summer School	5	point	August. Observe special admission procedure
34032	Optical Properties of Solids	5	point	E1B (Thurs 13-17)
34034	Applied photonics	5	point	E1A (Mon 8-12)
34051	Nanophotonics	10	point	F1 (Mon 8-12, Thurs 13-17)
34052	Nonlinear Optics	10	point	E3 (Tues 8-12, Fri 13-17)
34053	Numerical Methods in Photonics	5	point	F2A (Mon 13-17)
34540	Light emitting diodes and photovoltaics for energy applications	5	point	E2A (Mon 13-17)
34550	Biomedical optics	5	point	E4A (Tues 13-17)
47309	Materials for Hydrogen Production and Storage	5	point	January
47319	Functional Materials	5	point	F1A (Mon 8-12)
47325	Large-scale Superconductor Technologies	5	point	F1A (Mon 8-12)
47409	Materials for Hydrogen Production and Storage	5	point	June

Courses that also appear on the list of Basic courses can either count as General Competence Courses or as Technological Specialization Courses. A 10-point course can be split between the two categories.

Elective Courses

Any course classified as MSc course in DTU's course base may be taken for credit as an elective course. This includes general competence and technological specialization courses in excess of the minimal requirements. Master students are allowed to take Bachelor DTU courses with the objective to obtaining basic skills not originally obtained in the qualifying bachelor degree (maximum 10 ECTS)

Curriculum, previous admission years

The courses listed below also count as Technological Specialization for students accepted at DTU prior to September 2016:

10308	Superconductivity: Physics and Applications	10	point	F2 (Mon 13-17, Thurs 8-12)
10313	Magnetism and Magnetic Materials	10	point	F4 (Tues 13-17, Fri 8-12)
10351	Cellular biophysics	5	point	F2B (Thurs 8-12)

The courses listed below also count as Technological Specialization for students accepted at DTU prior to September 2015:

10355	Molecular Biophysics: Protein, Structure and Dynamics	5	point	F1B (thurs 13-17)
10356	Single Molecule- and Nanoscale-Spectroscopy	5	point	F4B (fri 8-12)

The following course counts as General Competence Courses for students accepted at DTU prior to 2014:

10311	Project in atomic-scale physics	5	point	Fall and January, Spring and June
10353	Project in biophysics and complex systems	5	point	Fall and January and Spring, June
33523	Project in Nanosystems Engineering	5	point	Fall and January, Spring and June
34047	Project in Optics and Photonics	5	point	January, June, Fall, Spring

The courses listed below also count as Technological Specialization for students accepted at DTU prior to September 2014:

10307	Quantum electronics: Physics and devices	10	point	F2 (mon/thurs)
10355	Molecular Biophysics: Protein, Structure and Dynamics	5	point	F1B (thurs 13-17)
10356	Single Molecule- and Nanoscale-Spectroscopy	5	point	F4B (fri 8-12)
10357	Topics in Biophysics and Complex Systems	5	point	E4B (fri 8-12)

10378	Quantum Optics	5	point	E4B (fri 8-12)
34057	Fabrication of Nanophotonic Devices	7.5	point	E5 (Wed 8-17)

The courses listed below also count as Technological Specialization for students accepted at DTU prior to September 2013:

33241	Theoretical microfluidics and lab-on-a-chip systems	5	point	E4A (tues 13-17)
33322	Nano-3 - Advanced NEMS	5	point	

Master's thesis

The master's thesis is the final assignment of the programme. The objective of the master's thesis is to give students the opportunity to apply the knowledge they have acquired in an independent way on a larger project that concludes with a written report. The thesis must document skills in applying scientific theories and methodologies to a clearly defined academic topic.

The master's thesis must be prepared individually or in groups of up to four students.

The master's thesis must be written in English and it must include an abstract. As an exemption the supervisor of the master's thesis can assess that the thesis may be written in Danish. This decision can only be made due to professional, academic reasons. The Head of studies for the study programme must accept this exemption.

The Head of Studies of the study programme must approve that the master's thesis falls within the programme's technical and scientific field. The Head of Studies automatically receives this information once the thesis is reported and the student will be directly notified if the topic cannot be approved. The master's thesis may be undertaken in collaboration with a company.

Project agreement, volume, and project period

The thesis can only be commenced when the student lacks no more than 15 ECTS credits besides the thesis.

The start time of the thesis is just after the last study activity. The project period has a duration of one semester and therefore the following start dates apply:

Spring term

At the latest - the first working day in January

Autumn term

At the latest - the first working day in August

In the academic year 2017/2018 the following start dates apply:

- August 1st 2017, at the latest
- January 2nd 2018, at the latest

Alternate start dates may apply for academic reasons (for example if the student attends a course in August or January) and if approved by the supervisor. The justification must be reported in the project registration system.

The supervisor for an master's thesis must be a member of the scientific staff with research obligations holding a permanent position at DTU (not a PhD student) and must be approved by the Head of Department. The supervisor is required to confirm that the student has the requisite academic qualifications for undertaking the master's thesis. The student is required to document his/her qualifications and level in the form of a list of courses he/she has completed. The supervisor must regularly follow the progress of the thesis and ensure that the master's thesis falls within the academic focus area of the MSc Eng programme.

A master's thesis agreement is to be concluded between the student and a supervisor and it must be done well in advance of the starting day of the thesis. The supervisor is responsible for reporting the thesis to the project registration system.

The work must not begin until the final approval of the agreement has been given by the Office for Study Programmes and Student Affairs and the Head of Studies has approved the project. The master's thesis agreement is binding and counts as an examination attempt from the time work on the master's thesis has begun. The master's thesis agreement may be cancelled up to the start date of the master's thesis, in which case it will not count as an examination attempt.

The master's thesis must have a scope equivalent to 30, 32½ or 35 ECTS credits. In connection with the formulation of a project agreement, the project period should be specified. A master's thesis must be undertaken as a full-time course of study and the stipulated time is:

- 30 ECTS credits = 5 months
- 32½ ECTS credits = 5½ months
- 35 ECTS credits = 6 months

As a general rule no parallel activities are conducted in this period. Nevertheless in order not to prolong the total time of the study programme the period may be extended with 3 weeks study for every 5 additional ECTS credits from course activity. The project period can also be extended due to documented permanent impairment. The Office for Study Programmes and Student Affairs (AUS-sps@adm.dtu.dk) can assist the supervisor in making this assessment as required. The extension must be reported to the project registration system prior to the start date of the master's thesis.

The content and learning objectives of the thesis

The content of the thesis is to be agreed with the programme supervisor. The thesis may contain a combination of experimental work, fieldwork, theoretical studies, synthesis, modelling and analysis. All theses must include elements of literature studies and criticism. In addition, the thesis contains the following overarching learning objectives:

A graduate of the MSc Eng programme from DTU:

- can identify and reflect on technical scientific issues and understand the interaction between the various components that make up an issue

- can, on the basis of a clear academic profile, apply elements of current research at international level to develop ideas and solve problems
- masters technical scientific methodologies, theories and tools, and has the capacity to take a holistic view of and delimit a complex, open issue, see it in a broader academic and societal perspective and, on this basis, propose a variety of possible actions
- can, via analysis and modelling, develop relevant models, systems and processes for solving technological problems
- can communicate and mediate research-based knowledge both orally and in writing
- is familiar with and can seek out leading international research within his/her specialist area.
- can work independently and reflect on own learning, academic development and specialization
- masters technical problem-solving at a high level through project work, and has the capacity to work with and manage all phases of a project – including preparation of timetables, design, solution and documentation

During the first month, the student is to submit a project plan outlining the objective of the thesis and justification for same to his/her supervisor. In the project plan, the student is also to take into account the overarching learning objectives listed above. When submitting the thesis, the student is to enclose a separate document presenting the original project plan and a revision of same, where appropriate. In addition, the document is to include a brief auto-evaluation of the project process.

Deadline

The agreed project period must be observed.

Under special circumstances the Board of Studies may grant extensions of up to three weeks. Application must be submitted to the relevant Board of Studies.

Applications for extensions beyond three weeks should be addressed to the Exemption Committee for the MSc Programmes in Engineering (CMDU). Application is submitted through www.dispensation.dtu.dk. The application should be submitted well in advance of the deadline for the thesis in order for the Exemption Committee to be able to handle the application in time. Information regarding exemptions can be found at DTU Inside under "[Exemption](#)".

Exemptions may be granted for an extension owing to unforeseen delays during the project period.

If the student wish to abandon his/her thesis and start over within a different field of study with a new deadline, this must be approved by (the new) supervisor as well as the relevant Board of Studies. However, if the student wish to abandon his/her thesis within a month after the start of the thesis, approval from the Board of Studies is not necessary. The supervisor must inform the Office for Study Programmes and Student Affairs, including the approval from the Board of Studies, whereafter a new project agreement must be made within the new field of study and with a new ordinary deadline (5, 5½ or 6 months). However, the student will have used one examination attempt on the abandoned project.

Failure to observe the deadline means that the student will have used one examination attempt. The student and the supervisor must then make a new project agreement for the thesis but with a modified problem formulation within the same field. The new thesis must be submitted within 3 months of approval of the project. This procedure also applies if the student fail his/her exam.

Assessment

Learning objectives are an integrated part of the supervision.

In assessment of a master's thesis, the quality of the academic contents will carry the most weight. The student's writing abilities will also count, though this will be weighted slightly less, while spelling will carry little weight.

The master's thesis is evaluated according to the Danish the 7-point grading scale on the basis of a report and an oral defense. The report and the oral defense will be evaluated as a whole. The master's thesis will be evaluated in conjunction with one or more external examiners. The department, supervisor and examiner will, in consultation with the student, set a date for the oral presentation and defense.

The oral defense must be held no later than 10 work days after submission of the written report. In exceptional circumstances, the head of department can approve a later exam date.

If the thesis is written by more than one student, each student is to be examined individually. However, the assessment of group projects may also include a group exam with the participation of the entire group. In this case, the individual oral exams are carried out after completion of the group exam. Beside the examinee, only group members who have already been examined are allowed to attend this part of the examination.

The oral defense of a project undertaken entirely or in part at a private company may, due to company secrets referred to in the project, be held behind closed doors subject to agreement with the supervisor. The rules are stated in *Rules and Regulations*, section 3.2 Assessment methods and grading.

Master thesis, specific rules

There are no programme specific requirements for the master thesis. Please observe the general DTU rules regarding starting date and duration of the master thesis work.

Study Activity Requirements and Deadlines

Study Activity Requirement of 30/45 ECTS Credit Points

The study activity requirements mentioned below are applicable from 1 September 2016. Courses passed before this date does not count in the statement of the study activity requirement.

Students must pass at least 30 ECTS credits in the first year of study on their programme and 45 ECTS credits in each of the following years of study. The student will be allowed three examination attempts in courses where the accumulated 'study activity requirement' applies. This means that students has had the opportunity to register for three exams in the course in accordance with their prescribed study plan pertaining to their education.

The study activity requirement is accumulated, so the students must fulfill the study activity requirements below:

Period	Accumulated study activity requirement
1. year of study	30 ECTS credits
2. year of study	75 ECTS credits
3. year of study	120 ECTS credit

Students enrolled at February 2016

Students enrolled at February 2016 must at least pass 15 ECTS credits in the autumn semester 2016 and 45 ECTS credits the following study years.

Period	Accumulated study activity requirement
1 Sep 2016 – 31 Jan 2017	15 ECTS-credits
1 Feb 2017 – 31 Jan 2018	60 ECTS-credits
1 Feb 2018 – 31 Jan 2019	105 ECTS-credits ect.

Students enrolled at September (Year 2015 or earlier)

Students enrolled at September (2015 or earlier) must at least pass 45 ECTS credits per study year.

Period	Accumulated study activity requirement
1 Sep 2016 – 31 Aug 2017	45 ECTS credits
1 Sep 2017 – 31 Aug 2018	90 ECTS credits etc.

Students enrolled at February (Year 2015 or earlier)

Students enrolled at February (2015 or earlier) must at least pass 22.5 ECTS credits in the autumn semester 2016 and 45 ECTS credits the following study years.

Period	Accumulated study activity requirement
1 Sep 2016 – 31 Jan 2017	22,5 ECTS credits
1 Feb 2017 – 31 Jan 2018	67,5 ECTS credits

Study Activity Requirement of 5 ECTS Credit Points

In order to comply with DTU's study activity requirement students must pass a minimum of 5 ECTS credit points each academic year. This requirement applies regardless of the number of examination attempts in courses attended in the relevant academic year.

Maximum Duration of Study

The MSc Eng programme is a 2-year programme. The entire MSc Eng course of study must be completed within three years.

For students enrolled before September 2015 other rules applies, and the MSc Eng course of study must be completed according to this table.

MSc Eng	Enrollment	Maximum end of study
Winter admittance	1 February 2015	31 January 2018
Summer admittance	1 September 2014	31 August 2017
Winter admittance	1 February 2014	31 August 2017
Summer admittance	1 September 2013	31 August 2017

For all students enrolled before September 2013 the MSc Eng course of study must be completed within four years

Completion Requirements

To earn a MSc degree, you must earn 120 credit points under one of DTU's MSc Eng programmes and the mandatory courses must have been passed.

Apart from the programme provisions regarding credit points the following rules must be complied with:

- Grades according to the 7-point grading scale must be obtained in at least 2/3 of the credit points earned. "The assessment 'Pass' or 'Fail' can only be used for tests/exams accounting for up to one third of the study programme's ECTS credits. This does not apply to exams for which credits have been transferred from other universities."
- At least 1/3 of the course of study must be evaluated by external examiners

Paragraphs from Rules and Regulations

The following paragraphs are part of this programme specification but taken from the collected Rules and Regulation. The numbering of the paragraphs correspond to the numbering in the Rules and Regulations.

Rules and regulations chapter 2

2.2 Course registration

Course registration and withdrawal of course registration takes place via [the Studyplanner](#).

Newly admitted MSc students and guest students must actively declare that they accept DTU's honor code to be able to register for courses.

Students must be registered for a course to attend classes—including laboratory exercises—to participate in group work, and to obtain course information via DTU Inside as well as teaching material (notes etc.).

Students are responsible for ensuring that they are registered for the right courses in their study plan.

Students may take the same course twice if they did not fulfill the mandatory prerequisite to qualify for taking the exam in the first place.

Students cannot register for a course they have already passed. A course has been passed if the grade 02 or the assessment 'Pass' has been awarded. Reregistrations for passed courses will be rejected.

Students cannot register more courses than the prescribed ECTS credit total of the programme in question. Students can, however, if their passed number of ECTS credits hinder them from reaching the prescribed number of ECTS credits, typically entailing credit transfer, register for a final course of up to 5 ECTS credits, even if they hereby exceed the prescribed ECTS credit total of the study programme in question (see ['Credit transfer during the study programme' under 'Credit transfer'](#)).

A non-mandatory course may be cancelled if less than ten students are registered. Other rules regarding minimum participation are stated in the course description. Mandatory courses and courses from the mandatory course groups cannot be cancelled.

Registrations for courses which do not form part of the student's study programme will be rejected, unless the course has been pre-approved by the Head of Studies who has notified the Office for Study Programmes and Student Affairs, the Study Administration of this.

BEng and BSc students are automatically registered for courses in the first teaching period (13-week period) in the first semester of their programme. Students must register for all other courses via [the Studyplanner](#).

All approved course registrations are automatically transferred to exam registrations after the supplementary registration period has passed.

Deadlines etc. can be found on [DTU Inside under 'Registration deadlines for courses and examinations'](#).

2.4 Academic prerequisites for course participation

Prerequisites and rules for course participation are specified in the course description.

Lecturers are responsible for ensuring that exercises and other laboratory and workshop activities take place under safe conditions. They must therefore provide thorough instructions. Students who fail to understand or respect the lecturer's safety instructions may be expelled from the activity.

Mandatory prerequisites

Students are required to pass courses specified as a mandatory prerequisite before participating in the course. Students may only register for the course and, if relevant, take part in a drawing of lots if they have passed or are registered for the exam in the mandatory course.

Recommended academic prerequisites

Recommended academic prerequisite courses form the basis for the teaching, and students are expected to have knowledge of the topics covered by the courses. Students who do not have the necessary prerequisites are not entitled to extra academic counselling and may, if necessary, be expelled from the class.

2.5 Participation in limited admission courses

A number of courses at DTU have limited admissions due to for example laboratory exercises. If there is limited admission to a course, it is specified in the course description.

2.5.1. Guidelines in relation to overbooked courses

No later than one month before the start of the teaching period, a study announcement will be sent out with information about the procedure for the drawing of lots in the event of overbooked courses.

All students who have registered for a course for which participation will be determined by drawing lots will receive an email after the draw with status information. There are three status types:

- Place on the course guaranteed
- On the waiting list
- Lost draw.

Students, who have been granted a place in the course, but who do not attend classes when the course starts and fail to notify the lecturer of subsequent attendance will not be permitted to keep their place in an overbooked course after the dates stated below:

13-week period: after the end of class on the first day of teaching in the course

3-week period: four hours after course commencement

The place will be given to the next student present with the lowest number on the waiting list.

2.5.2 Priority in case of drawing of lots

It may be stated in the course description that students enrolled on certain study programmes have priority in a drawing of lots. Students who have registered for a course within the deadline will be assigned a place or participate in the drawing of lots according to this priority. If nothing is stated in the course description, all full-time students who have registered within the deadline will participate in the draw equally.

- Full-time students who have registered within the deadline and students on the flexible master's programme (part-time programme) have priority over guest students and students on the other part-time programmes in any drawing of lots.
- Students for whom the course is mandatory or forms part of one of the mandatory groups have priority over students for whom the course is not mandatory. If a student for whom a course forms a mandatory part of the programme loses a draw, the student in question will be guaranteed a place next time the course is offered.
- Guest students studying at DTU under an exchange agreement between DTU and an international partner university, and for whom the course constitutes a mandatory programme element, take precedence over full-time students for whom the course is not mandatory as well as over other guest students and part-time students.
- Guest students and students enrolled on part-time programmes for whom a course constitutes a mandatory programme element take precedence over guest students and students on part-time programmes for whom the course is not mandatory.
- Guest students and students on part-time programmes who have registered within the registration deadline will be assigned a place in overbooked courses and have priority over full-time students who register after the deadline.

2.6 Mandatory participation in class and mandatory assignments

2.6.1. Mandatory participation in class

Attending classes is generally not mandatory. However, many courses (practical courses, laboratory courses, etc.) require active participation to pass the course. In connection with projects, giving presentations and acting as a critic in relation to presentations given by other students may be mandatory. If participation is mandatory, this must be specified in the course description.

2.6.2. Mandatory assignments etc.

Submission of assignments and reports may be optional for students, a prerequisite in order to qualify for taking the exam, or the assignments may form part of the exam. Students can only expect to have take-home assignments assessed that have been submitted on time.

If mandatory assignments do not constitute the basis for assessment but are a prerequisite for taking the exam, this must be stated in the course description. The mandatory assignments must meet the

learning objectives for the course in terms of form and content, and it is expected that the course coordinator provides the students with feedback on the assignments.

The individual course coordinators decide on the criteria for approval of mandatory assignments and inform the students.

2.6.3. Illness or other legitimate reasons for absence from mandatory activities

Students who, due to illness or for other legitimate reasons, are prevented from participating in mandatory teaching modules or completing laboratory or workshop activities must notify the lecturer responsible as soon as possible. The student can agree with the lecturer to retake the mandatory activity or have it replaced by a similar activity. If this is not possible, the student is entitled to take the activity again the next time the course is offered. The student must be able to document the reason for being absent.

If the student is unable to participate in the exam in the course due to legitimate absence, the student must submit documentation for the reason for the absence, if the exam is not to count as an exam attempt (see [‘Illness in connection with exams’ under ‘Exams’](#)).

2.7 Deadlines for publication of teaching material and syllabus

Information about material forming part of the exam syllabus must be available on DTU Inside no later than three weeks before the end of the teaching period together with a description of the syllabus or other reading guidelines.

2.8 Project courses

The content of a project course is agreed between the student(s) and a DTU supervisor. Registration for project courses takes place at the relevant department via the project reporting system before the project course starts.

The ECTS credit for a project course ranges from 5 to 30 ECTS credits with intervals of 2.5 credits. 5 ECTS credits correspond to around three weeks of full-time study. In exceptional cases, it is possible to take a project course corresponding to 2.5 ECTS credits, for example if the course constitutes the final element of the programme. In such case, the lecturer must contact the Office for Study Programmes and Student Affairs with a view to registering the course.

The project period for a project course cannot extend six months. The agreement made regarding a project course is binding on both parties, but can be changed according to agreement between the parties. The project course must be documented in a report or similar.

If a student fails a project course a re-exam is possible. The supervisor makes this decision based on academic reasons. The department board of studies make a decision in the event of a disagreement between the student and the supervisor. The student can always plead for the right of three examination attempts in the course.

2.8.1 Projects in cooperation with a company (project-based exams)

A project course can be carried out entirely or partially with a company in Denmark or abroad (a project-based exam). The academic content, learning objectives as well as form of assessment and grading must be agreed with a DTU supervisor. The supervisor is responsible for ensuring that the project has a sufficient academic/theoretical level. The ECTS credit total is based only on the

expected project workload, which means that the duration of the internship with the company is not credit awarding.

The students are responsible for finding a company, but many departments have contact with a number of companies. It is recommended that students carry out projects in cooperation with companies in the final part of the study programme.

Students can also search the DTU Internship and Project Bank where company projects are posted, among other things. DTU's Internship and Project Bank can be found at Projektbank.dtu.dk.

When completing an unpaid project-based exam students may under certain conditions receive a token of appreciation from the company. The token of appreciation may have a worth of up to DKK 3,000 per month and may not be given as a pre-agreed upon income, like a salary.

Project proposals

Students are recommended to draw up a project proposal to be signed jointly by the student, the supervisor, and the company, since all three parties must agree on the project.

The project proposal should contain the most important details related to the project: project title, specific tasks, expected working hours/time of arrival, duration of the internship with the company, etc. If the company makes requirements in relation to confidentiality and rights to use the project, two separate agreements can be made with the student and DTU, respectively.

The project supervisor can refer the student to the person responsible for contracts at the relevant department. The project supervisor can find an overview of persons responsible for contracts on [DTU Inside under 'Forskningsamarbejde, jura og kontraktforhold'](#) (in Danish only).

Insurance

During an internship with a company in connection with a project, the insurance taken out by Polyteknisk Forening (PF student association) does not provide cover (see 'Insurance for students').

2.8.2 Portfolio credit courses

By registering for a portfolio credit course, BSc and MSc students have the opportunity to obtain up to 10 ECTS credits in the elective courses group for competences acquired through work experience, starting their own business, online courses, etc. after admission to their current study programme at DTU. Students generally register for the portfolio credit course after acquiring the relevant competences.

In the portfolio credit course, the students account for the academic/professional competences acquired in a report. The competences must be at the same or at a higher level than the level the students would otherwise achieve on the study programme. A portfolio credit course can be equivalent to 5, 7.5, or 10 ECTS credits. Students must register for a portfolio credit course at a department, and each student must be assigned a DTU supervisor, who determines the evaluation and assessment form.

2.8 Evaluation of teaching

At the end of the semester, the teaching in all courses are evaluated via DTU Inside. The students complete the evaluation forms anonymously. Evaluations are processed by the board of studies at the department.

The evaluation of a course comprises three forms:

Form A: Evaluation of the course in general

Form B: Evaluation of the course coordinator/lecturers

Form C: Free-text proposals (text fields where students can give praise or criticism in their own words)

Form A is available to everyone. A summary of the course evaluations is published on [DTU's homepage](#).

Forms B and C are confidential as they may contain sensitive personal information. The evaluations may, however, be accessed by the following persons:

- The relevant head of department and managers with direct HR responsibility
- All members of the relevant board of studies
- The course coordinator
- When the course comprises a mandatory element of the programme, the relevant head of studies.

2.10 Complaints regarding teaching and supervision

Students who are dissatisfied with the teaching in a given course or with the supervision received in connection with a project must contact the lecturer/supervisor concerned immediately to find a solution to the problem. If this does not solve the problem, the following rules for complaints regarding teaching/supervision have been established:

- Complaints must be justified in writing and submitted to the board of studies at the department offering the course within two weeks of the announcement of the student's grade. A list of study board chairmen at the individual departments can be found on [DTU Inside under 'Study board chairmen'](#).
- The department board of studies informs the head of department about the complaint if the complaint concerns issues relating to personnel, and makes sure that the lecturer/supervisor gets the opportunity to comment on the complaint.
- As soon as possible after the consultation of the lecturer/supervisor, the department board of studies forwards the decision to the student, and a copy is provided for the head of department.
- If the student's complaint is upheld, the head of department, based on the decision of the department board of studies, will decide on any measures that need to be taken with regard to the lecturer/supervisor.
- The decision must contain the grounds for rejection and a procedure for complaints, in case the student's complaint is not fully upheld, see below.

- If the student does not accept the decision of the department board of studies, the student can file a complaint to the dean of the programme in question no later than two weeks after the student has received the decision. The complaint must be justified in writing and submitted via student email to the Office for Study Programmes and Student Affairs to studenterklager@dtu.dk. The complaint must be accompanied by the documents included in the original complaint to the department board of studies.
- The decision of the dean is final unless any procedural errors have been made. If the student believes that there are procedural errors in the dean's decision, the student in question can appeal to the Danish Agency for Science and Higher Education. The appeal must be filed within two weeks of announcement of the dean's decision. It must be justified in writing and submitted to the Office for Study Programmes and Student Affairs (studenterklager@dtu.dk) who forwards the appeal to the Agency.

Rules and regulations chapter 3

2. Study Programme Rules

The study programmes at DTU consist of courses which include lectures, seminars, classes, practical exercises, projects, etc. A course can have a duration of more than one teaching period.

The academic year is divided into six teaching periods. Two 13-week periods in the autumn and spring semesters, respectively, each followed by an exam period of about two weeks, and four 3-week periods followed by exams in January, June, July, and August, respectively.

The order and scheduling of mandatory courses, academic content, teaching and working methods, as well as any prerequisites are specified in the programme specifications for each study programme and the individual course descriptions. Mandatory study elements can generally not be taught in July/August exclusively.

BEng and BSc courses are usually taught in Danish, except for courses on the English-language BSc programme in General Engineering. A limited number of courses can be offered in English on other BSc and BEng programmes.

All MSc courses are taught in English.

Sound- or video recording of teaching sessions at DTU are not allowed unless the teacher has approved this in writing. Recordings are only for personal use unless the teacher has allowed publication of the recording, including what kind of publication.

Lectures at DTU are generally open to the public. A teacher can, however, deny access to the public due to considerations of space or order and can hence reject listeners who are not registered for the course. Only students registered for the course may participate actively in the class.

3. Exam rules

Each course and project concludes with an exam. The objective of the exam is to assess the extent to which the student meets the learning objectives defined for the course or project. The exam must reflect the overall course objectives, learning objectives, and content.

Type of assessment, date of examination etc. can be found in the course descriptions at [DTU Course Base](#).

3.1 Registration and withdrawal

All approved course registrations are automatically transferred to exam registrations at the end of the supplementary registration period. Students are responsible for all other exam registration.

Students' exam registrations can be found at DTU Inside in the tab ['Toolbox' under 'Course registration'](#). Here students can also withdraw exam registrations and register for other exams if he/she wish to participate in the exam in other/more courses than those transferred from the course registrations, for example re-exams.

Registration is binding after the deadline for exam withdrawal, and an exam attempt has been used even if the student does not participate in the exam.

Even if a student has passed one or more part-exams in a course, this does not count as an exam attempt if the student withdraw from the exam within the current deadlines. The student must pay attention to the rules for part-exams in connection with re-exams. These rules can be found at DTU Inside under ['Re-exams', 'Exam'](#).

Students must register for and withdraw from any subsequent second or third exam attempt within the current deadlines. Similarly, students who have withdrawn from their first exam attempt in a course, must register for a new exam in the course unless they register for the course once more.

Students can find the deadlines for exam registrations etc. on [DTU Inside under 'Deadlines for registration for and withdrawal from courses and examinations' under 'Exam'](#).

The students are responsible for ensuring that they are registered for the right exams.

Students cannot register for exams in courses which have already been passed (grade 02 or higher or 'Pass').

If, after the publication of the dates for written exams, it transpires that a student has registered for two exams which overlap, the student is entitled to withdraw from one of the written exams and instead take the exam in question in the next (re-)exam period. The same applies to oral exams if the student is unable to arrange a different time of examination for the oral exam with the examiner. The above also applies if two re-exams overlap. The student shall contact the Office for Study Programmes and Student Affairs through studieservice@adm.dtu.dk.

Exam attempts

Students are entitled to three exam attempts in each course or project.

Even though several versions of the same course with different course numbers may be available, students only have three exam attempts. This also include one or more exam attempts used under vacant place scheme (vacant place on DTU's courses offered to students as a part-time programme). Several versions of the same course both cover courses with different course number and/or title and courses that are not applicable with other courses.

Students who do not pass a third exam attempt are obliged to apply for an exemption to be granted an additional exam attempt immediately after the announcement of the grade for the third exam

attempt. If they fail to do so, they will no longer be entitled to be enrolled in the study programme. The Exemption Committee's granting of a fourth exam attempt must take place at the next (re-)exam of the course. These rules also apply to students who do not pass a fourth exam attempt etc.

All activities that form part of the programme must be assessed. To obtain an assessment, students must be registered for the exam in the activity. Students may not participate in an exam or have, for example, a substitution paper assessed if they are not registered for the exam in the course.

Students should be present at written exams (on-site exams) 15 minutes before the exam starts in order to be ready at the time when the exam starts. Students who show up after the exam has started will not be allowed to participate in the exam.

If students are registered for an exam after the deadline for withdrawal and they do not turn up at the exam, it is regarded as an exam attempt. This is also the case if students fail to submit and/or have not had mandatory assignments approved in order to qualify for exam participation

For guest students and students in part-time programmes, special rules apply for exam registration. Find information on special rules for students in part-time programmes at [DTU's webpage](#).

BEng projects, BSc projects, and MSc theses also conclude with an exam, but registration is made via the project reporting system by the department with which the student is affiliated. (See 'My programme specification')

3.2 Assessment forms and grading

The assessment consists of a grade based on the 7-point grading scale or the assessment 'Pass' or 'Fail'. The assessment 'Pass' or 'Fail' can only be used for tests/exams accounting for up to one third of the study programme's ECTS credits. This does not apply to exams for which credits have been transferred from other universities.

The assessment 'Did not sit exam' (Ej mødt) is used when the student has been registered for the exam without taking part. The assessment 'Not approved' (Ikke godkendt (IG)) is used when a student has failed to submit the mandatory assignments required in order to be able to sit an exam. ([See 'Mandatory participation in class and mandatory assignments' under 'Teaching'](#))

The assessment 'CHEAT' (Snyd) is used if the student has had a course cancelled after violating the exam rules (exam cheating).

Exams may be written, practical, oral, or a combination of these, for instance a series of part-exams during the course.

In connection with the approval of course descriptions, the department board of studies decides on the form of assessment, including part-exams, to be used on the course.

Students must be assessed individually. In connection with both individual exams and group exams, an assessment must be made of the performance of each individual student, and individual grades must be awarded. For group projects, each individual student must be given his or her own grade or assessment; it is thus not possible to give a grade for the group as a whole.

In connection with their assessment, the external and the primary examiner must take notes about the candidate's performance and the grading for use in the event of a future appeal. The notes must be kept for at least a year, and until the conclusion of any appeal procedure.

3.2.1. Requirements for passing exams and part-exams

An exam has been passed when the student has obtained the grade 02 or higher according to the 7-point grading scale or has obtained the assessment 'Pass'.

All mandatory activities in a course (except e.g. laboratory exercises which cannot be assessed and mandatory assignments which are a prerequisite for exam participation) must be included in the assessment.

A course comprising several part-exams can be assessed based on either an overall assessment or a weighted average of the part-grades. In connection with overall assessments, students only obtain one grade for the course. If students obtain part-grades they are informed of the grades regularly, and the final and overall grade is the weighted average of the part-grades, rounded up or down to the nearest grade on the 7-point grading scale.

The requirements for passing exams if part-grades are awarded are that 1) the average grade for part-exams must be at least 02 without rounding up, and that 2) no part-grade must be less than 00.

For some courses, it may be relevant to deviate from the above rule or to establish additional requirements for part-grades. Such deviations must be approved by department board of studies and the dean. The deviations must be stated in the course description.

If the student does not attend a part-exam for which a part-grade is given, the part-grade -3 will be awarded for the part-exam and included in the calculation of the overall grade for the course. The course will thus be assessed as not passed (i.e. -3), see above. This is also the case if a student does not attend an exam which is a prerequisite for making an individual assessment of a performance, such as a group project, as the student's contribution to the group presentation cannot be established.

All part-exams in a course must be taken in the same course module, unless otherwise stated in the course description. Part-exams cannot be retaken if the course has been passed (see 'Requirements for passing exams and part-exams' under 'Assessment form and grading' under 'Exam').

Students can only file complaints regarding part-grades if a change of the part-grade will change the overall grade. A complaint regarding a part-grade can only be filed when the student has been notified of the grade.

3.2.2. Individual assessment of group projects etc.

The exam for a course may consist of written reports, posters, or similar. Such written work can be carried out individually or as group projects.

DTU recommends a maximum of six students for group projects in connection with courses. The individual course coordinator may decide on a maximum number which is lower or higher than six if appropriate from the point of view of the learning objectives.

Special rules apply regarding group size in the case of BEng projects, BSc projects, and MSc theses. (See ['My programme specification'](#))

Group projects can be written in two different ways. The form of assessment depends on whether the project is individualized or not, see below.

For a group project, an independent grade or other assessment can only be awarded if the individual student's contribution to the project can be ascertained (individualization). A group project is not deemed to be individualized if the students merely state, for example, that they have contributed equally to all sections of the report, etc. It must be clearly indicated which sections each student is (primarily) responsible for.

Before the students commence a group project, the course coordinator must inform the students whether or not they are required to individualize the project. If a group project does not comply with the course coordinator's requirements for individualization or other formal requirements, the paper may be rejected and no assessment given.

a. Group projects without individualization

A group project where the students' individual contributions are not indicated must always be followed by an oral exam, as it is not possible to carry out an individual assessment on the basis of the group project alone. The assessment is then based on an overall assessment of the project and the subsequent oral exam. The oral exam can be either an individual exam (i.e. one student at a time) or an oral group exam. ([See 'Oral group exams' under 'Exam forms' under 'Exam'](#))

b. Group projects with individualization

Several students can contribute individual sections to a joint report. Provided that the students' individual contributions are clearly distinguishable in the joint report, a subsequent oral exam is not required. It is accepted that general descriptive sections such as the introduction and the conclusion are prepared jointly. However, the most important sections in a group project must be individualized.

3.3 Use of aids and materials at written exams

Exam assignments must generally be formulated in such a way that prevents them from becoming an aids and materials exam. Emphasis must be placed on testing the students' academic knowledge at the time of the exam.

Students must not gain unauthorized access to information during the exam, including using the Internet. Therefore, students are not allowed to bring mobile phones etc. The exam paper submitted must be prepared during the exam.

Calculators, computers, and other electronic aids must not be set up in a way that enables communication with others inside or outside the exam room.

Aids and materials permitted at exams are specified in the course description. There are three options:

1. No aids and materials permitted (except from standard dictionaries and calculators)
2. Written materials permitted (i.e. books, notes, old take-home assignments, etc. but not technical aids, for instance a laptop)
3. All aids and materials permitted (i.e. a standard laptop, tablet, or similar in addition to written materials).

Students are always allowed to bring standard dictionaries, i.e. spelling dictionaries, contemporary language dictionaries, and other language dictionaries, but not, for example, technical or medical dictionaries. This does, however, not include language exams where dictionaries are not permitted.

Students are always allowed to bring a calculator, unless the department forbids the use of calculators or makes one available at the exam. The department can make computers available at the exam, in which case students are not allowed to bring their own computer.

Students are not allowed to use their own printer at the exam.

Violation of the rules of using of aids and materials at written exams can lead to disciplinary measures towards students according to the rules regarding cheating at exams. Find more information on this at [DTU Inside under 'Cheating at exams and other forms of assessment' under 'Exam'](#).

Students are responsible for any aids and materials they bring to the exam, and DTU generally does not make any type of facilities available for their use. Students are not granted extra time if the aids they have brought to the exam have a malfunction, are out of power etc.

It is possible to apply for special conditions at a written exam and thus obtain permission to use compensating aids (e.g. assistive aids for dyslexics) for written exams, where aids are otherwise not permitted. (See ['Special conditions for written exams' under 'Exam'](#))

3.4 Cheating at exams and other forms of assessment

DTU has established principles for good scientific and ethical conduct/practice at DTU, which, among other things, state that through their projects and conduct during courses, students must show that they have understood the principles of good scientific practice. DTU's principles for good scientific conduct can be found at DTU Inside under ['Research' and 'Principles for good scientific conduct'](#).

As of the academic year 2017/2018, DTU has introduced an Honour Code for exams. At the beginning of their studies, students must actively express their acceptance of the code in order to continue their studies at DTU. Acceptance of the Honour Code is a part of the commencement of studies exam for newly admitted BEng and BSc students. Newly admitted MSc students must express their acceptance of the code in connection with registration for courses in the 1st semester. More information on DTU's Honour Code can be found at DTU Inside under ['Structure and Rules'](#).

Thus DTU requires that students at DTU demonstrate independence in their work, and that the exam always reflects the students' own work.

Cheating at exams and plagiarism

DTU considers it cheating if students at an exam hand in work which they have not independently produced at the exam in question, if students use prohibited aids and materials at an exam, if students gain unauthorized access to information during the exam through other students or by using the Internet, or if students demonstrate academic dishonesty, for example by manipulating or falsifying data. DTU also considers it exam cheating if a student helps another student violate the exam rules.

Written assignments may only be submitted for assessment once. Written assignments previously assessed at DTU or another educational institution may not be reassessed, regardless of the grade earned and whether the assignment is the result of the student's own previously submitted work.

Examples of violation of the exam rules also include plagiarism in the form of copying entire documents or parts of documents from the Internet or copying other people's exam papers. Violation of the exam rules can also be copying own previous exam papers/assignments, communicating on tasks during individual exams with invigilation, or falsifying data from laboratory tests or analyses. Cheating at exams furthermore includes not complying with the rules on correct quotation or referencing.

The general rules regarding quotations and references in connection with written assignments state that direct quotes from other people's work or own work must be indicated with quotation marks at the beginning and end of the quotation, and a precise reference to the source of the quote must be made either in parenthesis or in a note, including the pages on which the quote is found. If the quote is not rendered word by word, but derives from a specific source, the source must also be indicated in parenthesis or in a note with reference to the relevant page numbers. Sources must be listed in the bibliography.

'Stop plagiarism' (www.stopplagiat.nu) is a web tutorial for students on plagiarism. Here you can find further guidelines on quotes and source references.

3.4.1. Procedure in case of cheating at exams

The department must notify the Office for Study Programmes and Student Affairs via eksamenssynd@adm.dtu.dk if there is suspicion of violation of the exam rules. Violation will lead to disciplinary sanctions [\(see 'Disciplinary measures' under 'Structure and rules'\)](#).

Following consultation of the student suspected of violating the rules, the Office for Study Programmes and Student Affairs makes a decision on the matter. If the student maintains that there are legal discrepancies in the decision, the student can appeal to the dean of the relevant programme within two weeks of receiving the decision.

The Office for Study Programmes and Student Affairs can choose to cancel an exam and request the student to resit the exam if there are reasonable grounds for suspicion of irregularities in connection with the student's exam paper which strongly indicate that the student's achievement of the current learning objectives cannot be assessed on the basis of the exam. The exam form in connection with the new exam may differ from the exam form at the ordinary exam. Exams which are cancelled due to suspicion of irregularities are not considered an exam attempt.

If the new exam confirms suspicions of cheating, a decision is taken in accordance with DTU's rules regarding disciplinary measures for students.

If the new exam does not confirm the suspicions of cheating, the decision is taken the student cannot be deemed to have violated the exam rules. The student is assessed based on the performance at the new exam.

3.5 Special exam arrangements

3.5.1 Special arrangements at written exams

The Office for Study Programmes and Student Affairs may allow special exam arrangements at written exams within the ordinary exam periods for:

1. Students with physical or mental impairment (e.g. physical disability, dyslexia, etc.). The impairment must have a significant impact on the student's potential exam performance.
2. Students in their first year of study in Denmark whose native language and qualifying exam are not Danish, provided that the exam is in Danish only.
3. Students with similar difficulties, for instance students who are in the last month of pregnancy or who are breastfeeding an infant.

The reason for granting special arrangements must always be documented. Exam stress is not a valid reason for allowing special arrangements.

The following is considered valid documentation: a) dyslexia test, b) a doctor's note from your own GP or a consultant describing the applicant's study/exam-related challenges, c) documentation for a non-Danish qualifying exam (if applying on the basis of first year of study in Denmark), and d) a pregnancy journal (if applying due to pregnancy/birth).

For special exam arrangements to be allowed, the Office for Study Programmes and Student Affairs must deem this to be necessary to ensure that the student is examined on equal terms as the other students. It is a precondition for allowing special exam arrangements that the academic level of the exam is not lowered.

Applications for special exam arrangements must be submitted to aus-sps@adm.dtu.dk by 1 November at the latest for winter exams, by 15 April at the latest for summer exams, and by 15 June at the latest for re-exams in August. The application form can be found [here at DTU Inside](#). In the case of emergencies (e.g. a broken arm), students can apply after the deadline by writing to studieservice@adm.dtu.dk.

If you want to apply for special arrangements at written exams outside the ordinary exam periods, you need to refer to the conditions for oral examinations (see section 3.5.2), because these exams are administratively handled by the departmental course coordinators.

3.5.2 Special arrangements at oral exams

The course coordinators may allow special arrangements at oral exams.

The circumstances which form the basis for allowing such special arrangements must be documented.

Exam stress is not a valid reason for allowing special arrangements.

The following is considered valid documentation: a) dyslexia test, b) a doctor's note from your own GP or a consultant describing the applicant's study/exam-related challenges, c) documentation for a non-Danish qualifying exam (if applying on the basis of first year of study in Denmark), and d) a pregnancy journal (if applying due to pregnancy/birth).

For special exam arrangements to be allowed, the course coordinator must deem that it is necessary to ensure that the student is examined on equal terms with the other students. The Office for Study Programmes and Student Affairs can assist the course coordinators in making this assessment as required. It is a precondition for allowing special exam arrangements that the academic level of the exam is not lowered.

In order to apply, the student must contact the course coordinator no later than one month before the oral exam in order to secure an agreement.

3.6 Illness in connection with exams

Students who are unable to participate in an exam or who have to leave an exam due to illness must, no later than two weeks following the date of the exam, send documentation of the illness to the Office for Study Programmes and Student Affairs through student mail to studieservice@adm.dtu.dk. If this procedure is followed unattended exams during the period of illness will not count as exam attempts. The student in question must bear the expenses for the medical certificate.

Students who become ill during the exam must notify an invigilator or examiner before leaving the exam.

If a student chooses to complete an exam despite not feeling well, it will count as an exam attempt.

Students must contact the doctor on the day of the exam or the proximate weekday at the latest.

It is the students' responsibility to register for a new exam attempt in the same course.

If a student is unable to comply with one of the deadlines specified for the programme due to documented illness, the deadline will be extended until the next (re)-exam is held in the course in question without the student having to submit an application. If the student remains ill at the next exam in the course, the student must submit an application for an exemption to have the deadline extended again. However, the above does not apply if a deadline is granted through exemption. This also applies if an exam attempt has been granted through exemption in order to be used before an exact deadline. In such cases, students must immediately apply for exemption for a renewed postponement of the deadline.

If a student is unable to participate in an exam due to severe illness of a family member or friend, or in case of a serious event that may affect the student's performance at the exam, the student can apply for cancellation of the exam by submitting relevant documentation to the Office for Study Programmes and Student Affairs via student mail to studieservice@adm.dtu.dk. If the student has already completed the exam, it will count as an exam attempt, and the exam cannot be cancelled.

If a student falls ill while completing the final project (BEng project, BSc project and MSc thesis) the rules in the students programme specification apply. See 'My programme specification'.

3.7 External examiners and confidentiality

All external examiners used at DTU must be members of the nationwide engineering examiner corps (www.censornet.dk).

The external examiners' activities are covered by the Public Administration Act, including the provisions on disqualification and secrecy.

The course description specifies whether a course is assessed by an external examiner or as an internal examination. Final projects are always assessed by an external examiner.

Projects which, entirely or partially, are carried out with private companies, may, taking into account any information about trade secrets, know-how etc., be treated as confidential, which means that the oral presentation will not be open to the public. It may be agreed that the report must not be made publicly available.

3.8. Deadlines for grading

Exams in 13-week courses:

No later than 20 work days after the day of the exam.

3-week courses:

No later than 20 work days after the last day of the 3-week period.

Engineering internship:

No later than 20 work days after the submission date of the report.

BEng project/BSc project/MSc thesis

The grade is awarded in connection with the oral exam. The oral exam must be held no later than 10 work days after submission of the written report.

In exceptional circumstances, the head of department can approve a later exam date.

3.9 Re-exams

Students who have not passed a course in the first exam attempt must register for the subsequent exam in the course.

When the re-exam takes place depends on when the course is offered:

- For courses offered in the 13-week period in the autumn with a regular exam in December, there is a re-exam period in May
- For courses offered in the 13-week period in the spring with a regular exam in May, there is a re-exam period in August
- For courses offered in the 3-week period January with a regular exam in January, there is a re-exam period in May
- For courses offered in the 3-week periods June and July with a regular exam in June and July, there is a re-exam period in August
- For courses offered in the 3-week period August with a regular exam in August, there is a re-exam period in December

Courses offered in several of the above teaching periods have correspondingly several re-exam periods.

If a course, exceptionally, from a safety or academic assessment, is not suitable for being offered for re-exam, students who have not passed the course must take the course again. This must be stated in the course description under 'Teaching and learning method'.

A student may participate in an offered re-exam without taking part in the previous ordinary exam in a course if the student meets the requirements for participation in the exam. See below under 'Mandatory assignments, oral presentations etc. as a prerequisite for exam participation'

An overview of exam dates [can be found at DTU Inside \(See 'Dates of exams' under 'Exam'\)](#).

Registration for- and withdrawal from re-exam must be completed within the applicable deadlines (see ['Deadlines for registration for and withdrawal from courses and examinations' under 'Exam'](#)).

The examination form at the re-exam may be different from the ordinary exam. The examination form at the re-exam must be communicated to the students by the course coordinator 14 days before the start of the re-exam period. (However, see ['Exam forms'](#) under 'Exam' regarding written exams (written on-site exams), with fewer than 10 registered students).

For rules regarding re-exam in project courses, see ['Project courses'](#).

3.9.1. Mandatory assignments, oral presentations etc. as a prerequisite for exam participation

A student who, in a course, does not meet the prerequisite for exam participation as stated in the course description, may first register for the re-exam in the course when the course coordinator has given the student the opportunity to fulfill the prerequisite for exam participation, if necessary, by taking the course again. It is the student's responsibility to contact the course coordinator and clarify this question. Prerequisite assignments etc. at the re-exam, may differ from those at the previous examination.

Students who fulfill the prerequisite for taking an exam in a course but do not pass the exam may resit the re-exam in the course in the next re-exam period without having to hand in the mandatory assignments, etc. again.

Students who choose to wait for their re-exam or do not complete their re-exam cf. above, is not entitled to (yet another) re-exam on the basis of previously approved / passed prerequisite assignments etc. However, based on an academic assessment, the course coordinator may approve that the student register for the re-exam without having to resubmit the prerequisite assignment.

Read more at DTU Inside under ['Mandatory participation in class and mandatory assignments'](#).

3.9.2. Part-exams that are included in the assessment of a re-exam

In courses with part-exams, the student sits the re-exam in order to pass the part-exam(s) which have not passed at the previous exam. If part-exams are assessed in a course based on an overall assessment, i.e. without the use of part-grades, the student resits the re-exam in order to complete part-elements of the course, which enables the student to pass the course on an overall reassessment.

As a general rule, already passed/approved part-exams are included in the proximate re-exam period and also in later (re)exams. However, under special circumstances, students must re-sit approved/passed part-exams in connection with re-exams. The course coordinator makes this decision based on an academic assessment.

In the case of disagreement between a student and a course coordinator regarding whether or not a part-exam must be resat in connection with re-exams, the department board of studies decides.

Read more about part-exams at DTU Inside under ['Assessment forms and grading' Under 'Exam'](#).

3.9.3. Special circumstances regarding final exams

If a student has been ill at the (re)exam during exam period, in which the student should have completed his/her education, the student will be able to sit the re-exam in the same exam period or immediately after to the re-exam period. This also applies to a student who does not pass (non-attendance, grade -3 or 00, or not passed) a single (re)exam in the exam period in which the student should have completed his / her education. Students who have been absent from the exam (non-attendance) are not entitled to a quick re-exam.

Students wishing to take a quick re-exam according to the above rules, should contact the Office for Study Programmes and Student Affairs in person no later than 14 days after publication of the grade. The student must contact the relevant institution immediately after approval from the Office for Study Programmes and Student Affairs.

3.10 Exam complaints

Exam complaints must be submitted within two weeks of the announcement of the grade on DTU Inside. For oral examinations, the deadline is two weeks after the examination is held.

If possible, within the time limit students are encouraged to discuss their exam paper/performance with the course coordinator/examiner before submitting an exam complaint. The two-week submission deadline, however, still applies.

Complaints can be submitted regarding:

- 1) Legal issues
 - 2) The basis for examination (questions, assignments etc.)
 - 3) The exam process
 - 4) The assessment
- The complaint must be in writing and justified. Dissatisfaction with the grade without further justification does not suffice and does not qualify as a justified complaint. Complaints without sufficient justification will be rejected without being handled.
 - Complaints must include the student's name, address, student ID number, and course number of the relevant course. The complaint must be submitted using the student email (sxxxxxx@student.dtu.dk) to the Office for Study Programmes and Student Affairs via email to studenterklager@dtu.dk
 - The Office for Study Programmes and Student Affairs forwards the complaint to the examiner and, if relevant, the co-examiner, who submit a statement on the assessment and all of the student's objections.
 - The assessors' statement is then forwarded to the student, who has one week to comment on the statement.
 - A decision on the matter is made by the Office for Study Programmes and Student Affairs on the basis of the assessors' statement and the student's comments, if any, and may be one of the following:
 - 1) Offer of a reassessment (new assessment) by new assessors – however, this type of ruling is not possible in connection with oral exams
 - 2) Offer of a re-exam (new exam) assessed with new assessors
 - 3) The student's complaint is not upheld.

If the student is offered a reassessment or re-exam, the student has two weeks to accept the offer. The student must be aware that a re-exam and a reassessment may result in a lower grade. It is not possible to complain about the assessment of a re-exam or a reassessment unless the complaint concerns legal issues.

If the student's complaint is not upheld, the student has the possibility of appealing against the decision. The appeal must be filed within two weeks of announcement of the decision. It must be justified in writing and submitted to studenterklager@dtu.dk using the student email address. The decision is made by a board of appeals of 4 members appointed specifically to make a decision on the matter, comprising two external examiners, a lecturer, and a student within the relevant subject

area. The decision of the board of appeals may be 1) to offer a reassessment by new assessors (however, not in connection with oral exams), 2) to offer a re-exam with new assessors, or 3) that the student's appeal is not upheld. The board of appeals is in no position to lower or higher the student's grade. The decision of the board of appeals cannot be further appealed with respect to academic issues.

3.11 Exam certificate/diploma

When a student has completed a study programme at DTU, DTU issues an exam certificate/diploma. The exam certificate/diploma lists all the exams which the student has passed within the student's curriculum.

The exam certificate/diploma is dated with the date on which the study programme ended:

- If the final element is a BEng project, a BSc project, or an MSc thesis, the exam certificate/diploma will be dated with the date of the oral presentation.
- If the final element is a course, the exam certificate/diploma will be dated with the date on which the last course was assessed.

The exam certificate/diploma will be sent to the student's registered address no later than two months after the end of the study programme (however, not including July).

Students who are disenrolled from a study programme at DTU without having completed it will receive documentation for any successfully completed parts of the programme stated in ECTS credits.

Rules and regulations chapter 4

4. Credit Transfer, Studying Abroad, Exemption, Leave, etc.

4.1 Credit transfer from previously non-completed study programmes at the same level (pre-commencement credit transfer)

Upon admission to DTU's BEng, BSc, and MSc programmes, students are obliged to apply for credit transfer for passed programme elements (courses etc.) from all previous *non-completed* study programmes at the same level. This may, for example, be the case if an applicant to a BSc programme has previously been admitted to another BSc programme without having completed the programme.

If it is deemed that credit transfer for programme elements can be granted to the mandatory parts of the programme, students will be granted credit transfer. If it is deemed that credit transfer for programme elements can be granted to the elective parts of the programme, students can decide whether they want credit transfer. A credit transfer cannot be withdrawn once it has been granted. If students do not submit an application for credit transfer for previously passed programme elements at the same level or submit incorrect or incomplete information thereon, DTU may withdraw its offer of a place on the study programme.

In addition it is possible for students who wishes so to apply for credit transfer for programme elements from previous *completed* study programmes at the same level.

For students admitted from the summer 2017 it applies for the BEng and BSc programmes that courses must be at professional bachelor or BEng level as a minimum. For the MSc programmes the courses must be at MSc level as a minimum.

BEng students who have completed a higher education programme in technical sciences prior to admission can apply for credit transfer for parts of the programme, provided that an established credit transfer agreement has been concluded. For information on current established credit transfer agreements, please send an email to merit@adm.dtu.dk.

When granted a pre-commencement credit transfer, students can still obtain a diploma from DTU even though credit transfer has been granted for more than half of the programme.

4.1.1 Non-transferrable programme elements

Students cannot be granted transfer of credits from the qualifying programme/exam.

It is not possible to transfer a master thesis from one MSc programme to another.

Study elements passed as part of an education completed more than five years prior to admission to DTU cannot be credit transferred. If the last element of an unfinished study programme has been passed more than five years before admission to DTU, study elements from the programme cannot be transferred. This includes previous study programmes at DTU as well as other educational institutions. In special cases the relevant Head of Studies can grant an exemption to this rule. The Head of Studies assesses whether or not an exemption can be made when processing the credit transfer application.

4.1.2 Study activity requirements and programme deadlines in relation to pre-commencement credit transfer

Students who have been granted pre-commencement credit transfer must still comply with the study activity requirement (30 ECTS credits in the first year of study and 45 ECTS credits in each of the following years of study). The number of transferred ECTS credits will not be deducted from the study activity requirement.

The maximum duration of study is reduced with one semester for each 30 ECTS credits the student has been granted in pre-commencement credit transfer.

The first-year exam is reduced corresponding to the student's pre-commencement credit transfer.

4.2 Credit transfer during the study programme

Credit transfer means replacing elements forming part of the student's study programme at DTU by courses or exams passed at another Danish or foreign educational institution. DTU may grant credit transfer upon submission of an application.

Courses must be 'passed', 'approved', or awarded at least the grade 02 on the 7-point grading scale in order to be transferred to the programme.

For BEng programmes, transferred courses must be at BEng level as a minimum, i.e. from an engineering college, a university college, or a university.

For BSc programmes, transferred courses must be at university level.

For MSc programmes, transferred courses must be at MSc level. MSc students, however, are entitled to take 10 ECTS credits at BSc level in the course of the MSc programme. BSc level courses always form part of the electives group.

BEng and BSc students must as a minimum pass courses and projects at DTU corresponding to 90 ECTS credits (BEng Arctic Technology: 105 ECTS credits and BEng Global Business Engineering: 120 ECTS credits) to receive a diploma for a full-time study programme at DTU. This rule does not, however, apply to pre-commencement credit transfer.

MSc students must as a minimum pass courses and projects at DTU corresponding to 60 ECTS credits to receive a diploma for a full-time study programme at DTU. This rule does not, however, apply to pre-commencement credit transfer.

As a rule, courses that will make students exceed the prescribed ECTS credit total of the DTU study programme cannot be pre-approved or transferred. In some cases, however, the amount of ECTS credits transferred are not exactly the same as the size of the courses at DTU. In these cases, students may register for a final course of up to 5 ECTS credits – even if this means exceeding the prescribed ECTS credits total of the programme in question.

4.2.1 Choice of courses

As regards credit transfer, a distinction is made between specific engineering courses and general engineering courses. Courses that do not have technical-scientific content, but fall within the learning objectives of the study programme, are categorized as general engineering courses. Students may earn the following number of ECTS credits within the general engineering course category:

- 15 ECTS credits on the BSc programme
- 10 ECTS credits on the MSc programme

Language and culture courses can only be approved in connection with study abroad semesters and may not exceed 5 ECTS credits. Such courses are always transferred as BSc credits and are therefore included in the maximum of 10 ECTS credits at BSc level which MSc students are allowed to take as part of their programme. For BSc and MSc students, they are considered part of the general engineering courses as described above. For BEng students, they are considered part of the elective courses. Only language and culture courses related to the country in which the student is on the exchange can be transferred. English language courses cannot be transferred to the programme. Pre-commencement credit transfer for language and culture courses will not be granted.

A Master thesis cannot be transferred to the MSc programme at DTU, Further rules regarding the Master thesis are stated in the programme specifications for the said MSc programme. Find the generic rules on master thesis at [DTU Inside under 'Master thesis'](#)

4.2.2 Pre-approval of credit transfer

Students must apply for pre-approval of credit transfer for planned programme elements from another university or another institution of higher education in Denmark or abroad. By applying, students give their consent to DTU requesting the necessary information from the host institution if the students are unable to procure the documentation themselves.

The pre-approval of credit transfer is registered as a course registration and ensures that students are registered as studying actively during the semester in which they are not registered for courses at DTU due to study stays etc. elsewhere. If the pre-approved courses, which the student is taking at the host university, change during the semester, the student must submit a new application for a pre-approval of credit transfer. Each application must include a complete list of courses taken at the host university.

4.2.3 Final credit transfer

All passed courses and ECTS credits must subsequently be transferred to the study programme. Therefore, students cannot apply for credit transfer for some of the passed courses or ECTS credits only. A credit transfer cannot be withdrawn once it has been granted.

In connection with credit transfer for completed programme elements from another educational institution, the grade 'Pass' will appear on the student's DTU diploma.

4.2.4 Submission of applications

Applications for pre-approval of credit transfer and final credit transfer are submitted electronically via www.merit.dtu.dk. Other enquiries regarding credit transfer are sent to merit@adm.dtu.dk via the student email.

Applications must include course description, documentation of level, and workload. As regards final credit transfer, applications must also include documentation of passed and failed courses. In addition, an official description of the grading scale, according to which the course is assessed, must be enclosed.

4.2.5 Decision-making authority

The exemption committee for the BSc and MSc programmes (CMDU) and the exemption committee for the BEng programmes (DMDU) have authorized the heads of studies and the Office for Study Programmes and Student Affairs (AUS) to make decisions in cases related to credit transfer.

A decision on credit transfer is not valid until a written decision has been issued to the student by the Office for Study Programmes and Student Affairs (AUS) via www.merit.dtu.dk.

4.2.6 Students who have completed MSc courses on their BSc programme

Students who, as part of their qualifying exam, have passed a course or otherwise acquired academic knowledge and competences corresponding to courses in either the general competence group or the technological specialization group for the MSc programme must take a different course that contributes to the overall learning outcomes of the programme in question.

If the course in question belongs to the general competence group, students must choose a different course from the general competence group or the technological specialization group. In the latter case, students must contact the Student Services at studieservice@adm.dtu.dk.

If the course in question belongs to the technological specialization group, students must choose a different course in the technological specialization group.

If it is not possible to choose a different course in line with the above rules, students must obtain approval from the head of studies to take a different course *that supports the academic profile of the study programme*. The head of studies contacts the Student Services.

4.3 Studying abroad

A thorough description of the possibilities for studying abroad and the application deadlines can be found on [DTU Inside under 'Study Abroad'](#) or on [DTU's website](#).

To be eligible for an exchange place, students must meet the following criteria:

- Students enrolled on a BSc or BEng programme must have completed at least two years of study (120 ECTS credits) prior to commencement of the exchange stay, unless the student is attending a summer school abroad.
- Students must be enrolled on an ordinary full-time DTU programme at the time of application and during the entire exchange stay.

Students are expected to pass and transfer at least 20 ECTS credits per semester (however, not students attending summer school abroad) and comply with other study activity requirements made by DTU, the host university, and other relevant bodies. Students, who do not comply with this requirement, may be requested to repay any grants received from DTU.

4.4 Transferring to an MSc programme

Students lacking 55 ECTS credits or less of their BEng/BSc programme at DTU can apply to take MSc courses worth a total of up to 30 ECTS credits, provided that they wish to apply for admission to an MSc programme at DTU and meet the admission requirements and academic prerequisites for admission into the MSc programme in question. Exemption will not be granted for additional ECTS credits. The using of this rule may not lead to a prolongation of the total time of study of the BEng/BSc programme.

Students must take courses, which are part of their BEng or BSc programme concurrently with the courses forming part of the future MSc programme.

When processing the application, DTU places emphasis on whether the student is deemed to have the academic prerequisites to complete courses on the MSc programme concurrently with completing the BSc/BEng programme.

The student must still apply for admission to the MSc programme before completing the BSc/BEng programme.

An electronic application form can be found at [DTU Inside under 'Transferring to an MSc programme'](#). Students can only apply for one semester at a time. The application must be filled out and sent from the student email to kandidatopt@adm.dtu.dk no later than one week after the beginning of the semester. It is not possible to apply for an extension of the application deadline. Decision regarding the application will be sent to the student email.

In allowing the student to take MSc courses concurrently with completing the BSc/BEng programme, DTU makes no decision on whether the student has exceeded any study activity requirements or deadlines, is in need of extra examination attempts or exemption hereof etc.

Students who have taken MSc courses concurrently with completing their BSc/BEng programme must still comply with the study activity requirement following admission to the MSc programme. The number of transferred ECTS credits will not be deducted from the study activity requirement.

Applicable from the academic year 2018/2019 the maximum duration of study is reduced with one semester if students have passed 30 ECTS credits of MSc courses under the transitional procedure.

MSc courses passed under the transitional procedure

MSc courses passed under the transitional procedure will automatically be transferred from the BEng/BSc programme when the student is admitted to the MSc programme.

If the student chooses a different MSc study programme to that originally planned, only passed MSc courses, which are mandatory for the new study programme will be transferred. However, the student can always ask to have passed electives transferred. The same then applies as when changing study programme.

MSc courses not passed under the transitional procedure

For an MSc course, which the student does not pass under the transitional procedure, the rule on binding course registration applies. If the student wishes to be exempted from the course on the MSc study programme, the student must apply for an exemption to be released from the course.

If the student applies to do a different MSc study programme to that originally planned, his or her binding registration for a failed course will be cancelled unless the course is mandatory on the new study programme.

4.5 Exemption

Students who fail to comply with DTU's rules governing their study programme may only continue their studies if granted an exemption. DTU's exemption committee may grant an exemption from rules contained in curricula, course descriptions, and DTU's rules and regulations, provided that the exemption does not conflict with any acts or ministerial orders in the field of education.

The decision of the exemption committee on an application for exemption is discretionary. The discretionary decision must be made after a detailed individual assessment of the student's reasons for applying for an exemption.

Applications for exemption must be justified and accompanied by the necessary documentation. An application must always be accompanied by a realistic study plan (prepared in the [study planner](#)) as well as a transcript of records including all exam attempts.

Applications for exemptions can be justified by the following:

1. Special circumstances, such as personal illness, serious illness/death of a close relative (parent, grandparent, child as well as spouse/partner), civic duties to serve as a lay judge or juror, compulsory military service, or other unusual, external circumstances in the life of the individual student and for which the student is not usually responsible.
A medical certificate for both physical and mental illness should include the doctor's assessment of how the illness affects the ability of the student to study, including a prognosis of the duration of the disease.
2. Functional impairment, where any special educational support (SPS) does not compensate sufficiently for the impairment. Documentation must be provided for the impairment, including any compensation the student receives in the form of special educational support.

3. The student is an elite athlete. The applicant must attach a statement from the relevant sports association which documents that the student is an elite athlete.
4. The student is an entrepreneur. Students must as a minimum document either that they have their own business which has revenue and income-generating activities (company registration no. (SE no.), annual accounts, and a description of the company should be supplied), or that they are part of an entrepreneurial environment, for example an incubator or entrepreneurial environment at DTU or regional growth environments.
5. The student is chairman of a voluntary organization under the Danish Youth Council (DUF), a member of the board of Polyteknisk Forening (PF student association), or similar organizations, and is able to document that the activities are so time-consuming that being a full-time student is not possible.

Exemption in connection with maternity/paternity leave

Upon submission of an application, the study activity requirement will be reduced by 45 ECTS credits for biological parents. At the same time, the maximum period of study is extended by one year. Any first-year exams will be postponed correspondingly.

Upon submission of an application, the study activity requirement will be reduced by 22.5 ECTS credits for non-biological parents. At the same time, the maximum period of study is extended by six months. Any first-year exams will be postponed correspondingly.

Applications to reduce the study activity requirement on the basis of maternity/paternity leave must be made by sending an email from your student email address accompanied by the required documentation to studieservice@adm.dtu.dk.

Application to be released from a course

An application to be released from a course must be accompanied by a statement from the head of studies if the course is a compulsory course in the student's curriculum. The justification and documentation requirements are stricter if it is not the first time that the student is applying to be released from a course.

Circumstances which do not generally entitle students to exemptions

As a general rule, the exemption committees do not grant exemptions based on the following circumstances:

- Regular or voluntary work
- Participation in committee and board work, including department boards of studies and the advisory committees for the MSc programmes (CUU) and BEng programmes (DUU), respectively
- Lack of knowledge of the rules governing the study programme
- Personal circumstances, such as housing or financial problems, etc.

The application

Applications for exemptions must be submitted electronically via the exemption application system www.dispensation.dtu.dk. You can read more about submitting exemption applications in the Student Counselling Office's guide '[Jeg skal søge dispensation](#)'. Meeting dates for the exemption committees and application deadlines can be found at [DTU Inside under 'Datoer for dispensationsmøder' under 'Dispensation'](#).

Students who are not granted an exemption can appeal against the decision to the Dean of Undergraduate Studies and Student Affairs, who has been authorized by DTU's President to deal with appeals regarding exemption decisions. The deadline for submitting an appeal is two weeks from the day on which the committee's decision is announced to the student. Appeals must be made in writing and reasoned, and must be submitted via the exemption application system www.dispensation.dtu.dk.

4.6 Leave of absence

Students are able to apply for justified leave of absence from their study programme for up to one year. Leave of absence on special grounds may, for example, be due to, adoption, military service, or illness.

Personal illness:

Includes any illness, including mental illness, which leaves the student incapable of active study. A medical certificate is required as documentation, which must state that the student is unable to study as a result of the illness, and the medical certificate must also state how long the student will be or is expected to be ill.

Illness of a close relative:

Leave of absence can be granted to care for a close relative who is seriously ill or dying. Close relatives are parents, grandparents, children, and spouse/cohabiting partner. However, other persons may also be regarded as being close. It must be documented that the person in question is close, and that he or she is seriously ill.

Other special circumstances:

Leave of absence can also be granted due to other special circumstances that may justify this. Special circumstances are factors which make or will make it impossible for the student to engage in active study. In other words, factors which are beyond the control of the student and which must be documented.

Applications for leave of absence as well as documentation must be submitted to the Office for Study Programmes and Student Affairs at studieservice@adm.dtu.dk from the student's student email address no later than three weeks into the required period of leave. The application form can be found at [DTU Inside under 'Leave of Absence'](#).

Students who have failed to comply with DTU's rules regarding study programmes cannot apply for leave of absence until they have been granted an exemption to continue their studies.

All study activity must stop during the period of leave. This includes participation in courses and the submission of projects. However, students may continue to register for and sit exams in the exam period during their leave of absence.

Students will not receive monthly grants (SU) during their leave of absence, and any deadlines relating to the study programme, e.g. the first-year exam and maximum duration of study, will be extended by the period of leave (calculated in entire semesters).

To participate in elections to DTU's governing bodies, students must not be on leave on the first day of the month in which the election is called, and must still be enrolled at the time of the election. Students may only exercise their voting rights and retain their eligibility during a leave of absence period exceeding six months if the period of leave expires at the beginning of the term of office at the latest.

During the period of leave, students must stay up to date on study announcements posted by DTU.

Students who want to return to their studies before the end of their leave of absence must send an email to studieservice@adm.dtu.dk to that effect.

If a student wishes to extend his/her leave of absence in excess of one year, the student must apply for an exemption for extended leave at www.dispensation.dtu.dk. More information can be found at [DTU Inside under 'Exemption'](#).

4.8 Withdrawal from study programmes

Students who wish to withdraw from their study programme at DTU can use the [withdrawal form](#) at DTU Inside under 'Withdrawal from study programmes'.

Please note a withdrawal cannot be cancelled.

There are several things a student has to be aware of when considering withdrawing from the study programme. Therefore it is always recommended to contact the [International Study Guidance Office](#) for guidance on the issue.

Students cannot be enrolled on more than one full-time study programme at the time.

4.9 Readmission

If previously enrolled students wish to study at DTU again, they must apply for readmission.

Applicants who have withdrawn from their study programme themselves can at the earliest be admitted to and enrolled on the programme five months after withdrawal.

Applicants who have been withdrawn from their study programme by DTU for study-related reasons or who have violated DTU's rules at the time of application for readmission need to apply for an exemption. This can only be done after DTU has informed the applicant about the matters for which an application for exemption must be submitted. Applicants must apply for exemption regardless if they are applying for a different study programme than the one they have previously been enrolled in. If the exemption is granted, it will be decided if the applicant can be readmitted. If an exemption cannot be granted, the application for readmission will be rejected.

Applicants for readmission, who have already completed higher education, will be subject to the [rules and regulations regarding the restrictions of a second degree](#).

If the last passed course of the student's former DTU programme has been passed more than five years before the readmission, the courses on the programme cannot be transferred to the student's new enrollment. In special cases, the relevant Head of Studies can grant an exemption to this rule.

4.9.1 Readmission into BSc and BEng programmes through ordinary admission

Applicants for readmission, who have not passed what corresponds to the first academic year on the programme to which they are applying for readmission, must apply for admission through KOT (www.optagelse.dk). The applicant can be readmitted through ordinary admission if:

- The applicant meets the admission requirements for the study programme
- The applicant's GPA is high enough to be admitted through quota 1 or the applicant is accepted through quota 2
- The applicant is granted exemption, if relevant

Application deadlines

Readmission per 1 September:

Since the applicant is applying through ordinary admission, the application deadlines for ordinary admission apply. These are described at [DTU.dk under 'Admission and deadlines'](#).

Applications for readmission are submitted via www.optagelse.dk.

Readmission per 1 February:

Since the applicant is applying through ordinary admission, the application deadlines for ordinary admission apply. These are described at [DTU.dk under 'Optagelse på bachelor- og diplomingenøruddannelsen' \(in Danish only\)](#).

Applications for readmission are submitted via an application form available at DTU.dk during the application period.

Credit transfer:

For applicants who are readmitted, it will be assessed, which courses they can have credit transferred.

4.9.2 Readmission into BSc and BEng programmes outside ordinary admission

Applicants for the BSc and BEng programmes may be readmitted outside ordinary admission if:

- The applicant meets the admission requirements for the study programme
- The applicant has passed what corresponds to the first academic year of the study programme, the applicant is applying for. On the BEng programmes, the first and second semesters of the relevant study programme must be passed as a minimum. On the BSc programmes, 60 ECTS credits in the three mandatory blocks of courses (basic natural science courses, technological specialization courses, and projects and professional skill courses) must be passed as a minimum.

- There are vacant places at the relevant academic year of study on the study programme for which the student is applying.

Application deadlines

Readmission per 1 September:

The application deadline for readmission per 1 September is 1 May. For applicants who wish to be evaluated in quota 2 if they are not readmitted outside ordinary admission, the application deadline is 15 March at 12 noon.

Applications for readmission are submitted via www.optagelse.dk.

Readmission per 1 February:

The application deadline for readmission per 1 February is 1 November. For applicants who wish to be evaluated in quota 2 if they are not readmitted outside ordinary winter admission, the application deadline is 15 October at 12 noon.

Applications for readmission are submitted via an application form available at DTU.dk during the application period.

4.9.3. MSc programmes

Applicants who wish to be readmitted to an MSc programme must apply according to DTU's general rules on admission to MSc programmes and within the applicable deadlines. Regardless of applicable deadlines, however, it is not possible to apply for readmission into the MSc programmes later than 1 May for readmission 1 September and 1 November for readmission 1 February.

Find out more at [DTU.dk under 'Admission and deadlines for MSc students'](#).

4.9.4. Programme deadlines for readmitted students

The study activity requirement for students, who are readmitted through ordinary admission, is 30 ECTS credits the first year of study and 45 ECTS credits in each of the following years of study. The year of study is calculated from the date of readmission.

The study activity requirement for students, who are readmitted outside ordinary admission, is 45 ECTS credits per year of study. The year of study is calculated from the date of readmission.

The maximum duration of study for readmitted students is the prescribed period of study + one year from the readmission date; however, reduced by one semester for every 30 ECTS credits which the student has already passed.

3.2.3. Exam forms

Different rules governing the main forms of assessment are described below. Other forms of assessment can be approved by the relevant department board of studies. Students can apply for a change in the assessment form (e.g. from written to oral exam) on the basis of special circumstances, for example a documented permanent impairment, if the department board of studies/course coordinators assess that it is academically and practically possible. The Office for Study Programmes and Student Affairs can assist the department board of studies/course coordinators in making this assessment as required. A precondition for allowing special exam arrangements is that the academic level of the exam is not lowered.

A list of study board chairmen at the individual departments can be found on [DTU Inside under 'Study board chairmen'](#).

Oral exams

As a general rule, all oral exams are open to the public, but can be held behind closed doors under special circumstances—justified, for instance, on grounds of student needs. Projects which, entirely or partially, are carried out with private companies, may, taking into account any information about trade secrets, know-how etc. in the report, be treated as confidential, be held behind closed doors too.

Oral exams may extend over several days. Any dates in addition to the specified exam dates must be agreed with the students. Students who are unable to attend an examination on these additional days, are entitled to participate in the exam on the exam date in accordance with the timetable or another day subject to agreement with the lecturer.

If an individual oral exam is held as a follow-up to a group project and as a follow-up to an oral group exam, if relevant, the other students in the group may not be present in the exam room before their own individual oral exam.

Oral exams must be taken before the end of the exam period, unless otherwise agreed between the course coordinator and the students.

Oral group exams

An oral exam can take place as a group exam. Group exams are typically held in connection with written assignments prepared by two or more students (group project).

At oral group exams, the students are examined individually in such a way as to ensure that an individual assessment is made of the students' performance. When organizing an oral group exam, the course coordinator must ensure that the time allocated for the exam is adapted to the number of students participating in the exam. All members of the project group are present during the entire exam.

It is important that each assessor notes the level and quality of participation of the individual students. The assessors must also ensure that all students participate in the exam to allow individual assessments to be made.

Students are entitled to be awarded the grade in private.

The possibility of choosing an individual exam instead of a group exam is only available to students with special educational needs. Decisions regarding this are made by the course coordinator.

Practical exams as part of the teaching or as a final test

Courses comprising exercises (laboratory courses, workshop courses etc.) may be subject to continuous assessment or include a practical exam at the end of the course. In connection with continuous assessment, the students must be informed of the criteria for passing the course at the beginning of the course. Each student's contribution must be clearly stated so they can be assessed individually.

Written exams (written on-site exams)

Written exams are always individual. The duration of the exam must be stated in the course description.

If less than ten students register for a written exam, the lecturer is entitled to change the assessment form to an oral exam up until one week after the exam registration deadline. This must be done with due regard for the fact that the students were expecting a written exam. The department is responsible for notifying the students in the event of a change in the assessment form. If the exam form is changed into an oral exam, the lecturer can request that registered students contact the department regarding the exam planning. If the lecturer and all registered students agree, another approved assessment form can be applied.

Exam papers must be prepared in the language of instruction. In connection with courses taught in English based on English teaching material, exam assignments must be prepared in English only. Exam papers must be prepared in the language of instruction. The assessors may allow exam papers to be submitted in other languages. Special rules apply to MSc theses.

Mobile phones, music players, ear protectors or the like must not be brought to the exam. Mobile phones will be collected prior to the exam and stored by the invigilators during the exam. Mobile phones are stored at the owner's risk.

Head of study

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