BSc in Biomedical Engineering

Officiel title

Bachelor of Science in Engineering in Medicine and Technology

About the curriculum

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 curriculum comprises the following parts:

- Official title
- About the curriculum
- Duration
- General admission requirements
- Study programme admission requirements
- Objectives and general learning outcomes for the BSc programme
- Programme Specific Competence profile
- Structure
- Curriculum
- Curriculum, previous admission years
- Bachelor Project
- Head of Studies
- Study activity requirements and programme deadlines
- Rules for teaching
- Exam rules
Credit transfers and exemptions

The curricula have been laid down by the University, see Ministerial Order no. 261 of 18 March 2015 on Bachelor and Master’s Programmes at Universities, Ministerial Order no. 247 of 13 March 2015 on the International Education Activities of Universities, and Ministerial Order no. 114 of 3 February 2015 on the Grading Scale and Other Forms of Assessment of University Education. According to section 11(8) of DTU’s statutes, the curriculum is approved by the Dean of the programme, following delegation by the President.

Duration

The BSc in Engineering programme is a three-year, full-time programme corresponding to 180 ECTS credits (European Credit Transfer System).

Admission requirements

Students holding a Danish qualifying exam are required to have passed:

Mathematics A
Danish A
English B
Physics B/Geoscience A
Chemistry C/Biotechnology A

Admission requirements for the BSc in Engineering

Applicants are admitted to a BSc programme which constitutes a separate admission area and provides access to one or several MSc programmes at DTU.

Based on the Admissions Order, the Danish Agency for Higher Education determines which high school exams qualify the holder for admission.

A foreign exam which, according to DTU’s assessment, corresponds to a Danish qualifying exam together with the Study Test in Danish as a Second Language also qualifies the holder for admission (however, there is no requirement for proficiency in Danish for people from other Nordic countries.)

DTU may admit applicants on a case by case basis, provided the applicant has the academic qualifications equivalent to those documented by a qualifying exam.

Objectives and general learning outcomes for the BSc programme

The BSc in Engineering programme is a research-based basic engineering programme qualifying the student for an MSc programme. The BSc graduate must have a solid basic academic foundation in the fields of technical science, IT, and natural science and be able to understand and apply mathematical and physical principles and methods.
The BSc graduate must have an understanding of the theoretical basis, concepts, and models of a specific technological area, and be able to work with abstract formulations and problems as well as view a complex context from different angles. The BSc graduate must have thorough knowledge of basic standard methods to solve idealized problems within mathematics and natural sciences and be able to use this to solve subproblems in an engineering context.

The BSc graduate must be able to combine research-based and practical knowledge to find suitable technological solutions, propose ways of implementing them, and make an overall assessment of their usability with due consideration for ethical, economic, social, and environmental conditions. The BSc graduate must have insight into the types of knowledge and competences on which the engineering subjects are based and be able to view technological solutions in a broad social perspective.

The programme also helps develop social and communicative competences, so that the graduate is able to use the professional knowledge in collaboration with others.

The primary aim of the BSc programme is to qualify the student to complete an MSc programme either at DTU or at another Danish or international university.

**Competence profile for the BSc programme**

The competence profile comprises the shared general goals for learning outcome of the entire BSc programme and field-specific goals for learning outcome.

**Shared academic goals for learning outcome (BSc Eng)**

A Bachelor of Science in Engineering from DTU

- can combine research-based and practical knowledge to find suitable technological solutions, and see these in a social context
- has a thorough knowledge of basic mathematical and scientific methods which can be used to assess and solve idealized technical issues
- has knowledge of basic concepts of programming languages and can solve and document minor programming tasks
- has a basic understanding of engineering science theory and identifies issues of modern engineering
- has knowledge of the information structures of the subject and information sources relevant to the field of study, and can carry out relevant and critical information searches
- is able to communicate technical information, theories, and results both graphically, in writing, and orally, and is able to present this to different groups of stakeholders
- is able to independently acquire new knowledge and adopt a critical approach to the acquired knowledge
- can—on the basis of an independent professional approach—contribute to technical problem-solving through project work, independently as well as in collaboration with others.

**Programme Specific Competence profile**

The BSc graduate in Medicine and Technology
• possesses basic knowledge about the anatomy, physiology and biochemistry of the human organism

• possesses basic knowledge about the function of the healthy human body, and is aware of the most significant illnesses affecting Danish society, including their incidence, aetiology, pathogenesis and symptoms

• possesses fundamental knowledge about concepts, theories and methods in cellular and biophysics, as well as a basic understanding of the fundamental role these play in human biology concept and theory formation

• possesses fundamental knowledge about metals, ceramics and polymers, as well as a basic understanding of their mechanical properties, their potential medicotechnical applications and their limitations

• possesses fundamental knowledge about—and practical experience with—the structure and application of analogue electrical circuits and amplifiers

• possessed fundamental knowledge about—and practical experience with—concepts, theories, methods and tools for the analysis of signals and linear systems, as well as a basic understanding of their areas of application and limitations

• possesses fundamental knowledge about the concepts, theories and methods of classic mechanics, and has practical experience with the utilization of same in the analysis of the locomotive apparatus and the mechanical function of other organs

• possesses fundamental knowledge about concepts and theories regarding the transportation of liquid and solid matter, as well as practical experience with the use of same in describing and analysing the function and performance of organs and technical organ support systems

• possesses fundamental knowledge about statistical concepts, theories and methods, as well as practical experience with computer-based tools for statistical analysis

• possesses fundamental knowledge about mathematical-physical concepts and theories in the field of electrophysiology, as well as practical experience with models and tools for simulating the function of the nerves, brain, muscles and heart

• possesses fundamental knowledge about measuring instrumentation, including practical experience with the operation and areas of application of the most common transducers, signal amplification and digitalization, and the processing, storage and display of analogue signals on computers

• possesses fundamental knowledge about the concepts, theories and methods of image creation technologies, including x-ray, CT, MRI and ultrasound, as well as practical experience with the areas of application and limitations of same

• possesses fundamental knowledge of and specific experience with the organization, staff composition and infrastructure, ethics, behaviour and hygiene of the hospital sector, and, on the basis of this knowledge, can participate in the work of a hospital department

• has the opportunity to supplement his/her basic knowledge with topics in the fields of finance and management, or to add to his/her fundamental technical knowledge by taking
supplementary courses in one or more areas of specialization, including numerical methods, stochastic signals, image analysis, C++ programming, organic and physical chemistry, solid state mechanics, and mathematical modelling of chemical systems

• has a basic understanding of the discipline from a larger, more general perspective, with the emphasis on the causes and consequences of scientific and technical development, the positioning of the subject in a broader cultural and social context, and the cognitive basis issues with which one is confronted in the field of modern medicotechnical engineering

• can formulate simple electrical, mechanical and chemical models of linear and non-linear organ system and assess their suitability and limitations

• can use computer-based tools to program and simulate simple linear and non-linear physiological systems

• can apply statistics and dynamics to perform simple quantitative analyses of the function of the locomotive apparatus

• can use video technology and write software for the performance of the most common motion analyses, with regard to biomechanical analyses of the function of the locomotive apparatus

• can use commercial, computer-based simulation tools to analyse the transportation of solid and liquid matter in the body’s organs and in medicotechnical equipment

• can design and construct simple amplifiers and filters using integrated analogue circuits

• can compile and program a computer-controlled data collection system for medicotechnical measurements

• can select the most suitable image generation technology—from CT, MRI and ultrasound—for a given purpose

• can implement the most common methods for processing and analysing signals and images in computer programs, and in this way contribute to the identification and extraction of diagnostic information in scanned images and measured physiological signals

• can prepare and perform medicotechnical experiments and validate and communicate the results within the framework of given ethical norms

• can enter into commercial, clinical or research development environments and—as part of an interdisciplinary partnership—contribute to the analysis and resolution of a given healthcare issue

• can, on the basis of detailed knowledge of the shape, function, performance, illnesses and tolerance of organs and tissue, contribute to the development of gentle but efficient products, methods and materials for diagnosis and/or treatment

• can, on the basis of his/her interdisciplinary knowledge, contribute to the formulation of mathematical-physical models for the analysis and computer simulation of the function of organs and tissue, and use same to contribute to identifying measurable features with the potential to generate new information for the elucidation and treatment of illnesses
can, for the most common patient analyses, independently select and compile components in a
diagnosis system, and validate the accuracy and reproducibility of the measured data

- can, for the most common technology-base treatment methods, contribute to the development,
utilization and maintenance of system components and validation of the efficiency of treatment
methods

**Structure**

A BSc in Engineering programme consists of four blocks. Each of the four blocks constitutes an
equal share of the programme’s 180 ECTS credits. If students choose more than the required credits
in the groups with mandatory courses, the credits count as elective courses.

The order and scheduling of the mandatory courses, academic content, teaching and working
methods, as well as any programme prerequisites are described in a study plan for each BSc
programme. See curriculum below. Teaching and working methods as well as any prerequisites for
the individual courses are set out in course descriptions available on DTU’s website.

**Basic natural science courses**
Through courses in mathematics, physics, and chemistry as well as similar courses, this block
provides a natural science basis for working with technology. The basic natural science subjects
comprise three mandatory courses in mathematics, physics, and chemistry: In addition, the student
must obtain at least 10 ECTS credits, which vary from programme to programme.

**Technology core courses**
The technology core courses constitute the engineering foundation for the individual BSc
programmes, providing the basis for admission to an MSc programme. In this block, students
choose a specified number of courses from a range on offer.

**Projects and general subjects, including BSc project**
This block contains general ancillary courses in the field of work of engineers. The block includes a
course in Philosophy of Science, and two projects in which students are trained in preparing a
project and participating in teamwork. The block also contains the Engineering course on which
students from the first semester acquire insight into the work tasks of engineers. The elements in
this block are mandatory, but the programme content varies.

**Electives**
In this block, you can choose freely from among the engineering courses on offer at DTU and
similar courses at other universities. Students can choose to take the courses that fall within the
scope of the recommended courses of study on the individual BSc programmes. Students can also
choose to follow courses in advanced mathematics, physics, and chemistry, or choose more general
courses in, for example, management and finance. Finally, students can use the electives to change
educational focus, so that they qualify for MSc programmes for which the selected BSc programme
does not immediately provide access.

**Completion Guidelines for Late Students**
If students exceed the prescribed period of study by more than six months, they will be offered
special guidance in the form of an information meeting and a possible personal interview. If
students are 12 months late, they will be called in for a personal interview.
Curriculum

Basic Natural Science Courses

The mandatory basic natural science courses in this programme are:

<table>
<thead>
<tr>
<th>Code</th>
<th>Course</th>
<th>Points</th>
<th>Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>01005</td>
<td>Advanced Engineering Mathematics 1</td>
<td>20</td>
<td>Autumn and Spring</td>
</tr>
<tr>
<td>01034</td>
<td>Advanced Engineering Mathematics 2</td>
<td>5</td>
<td>Autumn E1A (Mon 8-12)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Autumn E2B (Thurs 8-12), Spring F2B (Thurs 8-12)</td>
</tr>
<tr>
<td>01035</td>
<td>Advanced Engineering Mathematics 2</td>
<td>5</td>
<td>Autumn E1B (Thurs 13-17) and Spring F1B (Thurs 13-17)</td>
</tr>
<tr>
<td>02402</td>
<td>Introduction to Statistics</td>
<td>5</td>
<td>Autumn E3A (Tues 8-12), Spring F4A (Tues 13-17)</td>
</tr>
<tr>
<td>10020</td>
<td>Physics 1</td>
<td>10</td>
<td>Autumn E2A (Mon 13-17)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>E3 (Tues 8-12, Fri 13-17) and E4 (Tues 13-17, Fri 8-12)</td>
</tr>
<tr>
<td>26028</td>
<td>Fundamental Chemistry in English</td>
<td>5</td>
<td>Autumn E1B (Thurs 13-17) and Spring F1B (Thurs 13-17)</td>
</tr>
<tr>
<td>KU002</td>
<td>Human Biology</td>
<td>10</td>
<td>E5B (wed 13-17) and January</td>
</tr>
<tr>
<td>KU003</td>
<td>Human Diseases for Non-Clinicians</td>
<td>10</td>
<td>E5B (wed 13-17) and January</td>
</tr>
<tr>
<td>KU011</td>
<td>Cell and Tissue Biology</td>
<td>10</td>
<td>E5B (wed 13-17) and January</td>
</tr>
<tr>
<td>26000</td>
<td>General Chemistry</td>
<td>5</td>
<td>Autumn E4B (Fri 8-12) and Spring F5B (Wed 13-17)</td>
</tr>
</tbody>
</table>

The course 26028 Fundamental Chemistry can be replaced by the course 26000 General Chemistry. This is especially recommended for students who have had chemistry at the A-level. It is only possible to choose one version of Advanced Engineering Mathematics 2.

Technology Core Courses

The technology core courses in this programme can be split into three groups: 1. Mandatory programme courses at DTU 2. Elective programme courses at DTU and 3. Electives programme courses at KU.

Group 1 Mandatory programme courses at DTU
Introduction to medical imaging 5 point  Autumn E1B (Thurs 13-17)
Continuous time signals and linear systems 5 point  Spring F3A (Tues 8-12)
Materials science 5 point  Spring F1B (Thurs 13-17)

Group 2. Elective programme courses at DTU.

The student must choose at least 10 ECTS points from this group.

Eventhough the courses are not mandatory they are important pre-requisites for master courses within the same topics.

Introduction to Medical Image Analysis 5 point Spring F5A (Wed 8-12)
AC circuits with ECG amplifier 10 point F5B (Wed 13-17) and F3B (Fri 13-17)
Physiological fluid mechanics 5 point January
Physiological and pharmacological mass transport 10 point Spring F5B (Wed 13-17) and Spring F3B (Fri 13-17)
Quantitative electrophysiology 5 point E1B (Thurs 13-17)

Group 3. Elective programme courses at KU

The student is allowed to replace one of the courses with a special course at KU, with the same point count. If this option is choosen the student is responsible for finding a topic and a supervisor.

Clinical methods in diagnosis and treatment 5 point F1A (Mon 8-12)
Modelling of physiological systems 5 point F4A (tues 13-17)
Biomechanics of the Locomotor System I 7.5 point E5A (wed 8-12)

Projects and Professional Skill Courses

All the courses in this basic block are mandatory, and include general engineering courses and the projects of the programme.

Biomedical engineering 1 5 point Autumn E5A (Wed 8-12)
Biomedical engineering 2 5 point Spring F5A (Wed 8-12)
Introduction to clinical practise in Hospitals 5 point January
Medical Science and Technology Studies 2.5 point Bachelor project 15-20 point

In the course KU006 Introduction to clinical practice in Hospitals the student is posted in a hospital in the capital region. The study places in this course are therefore limited to students in the 5. Semester enrolled in this bachelor programme.
31501 snd 31502 are engineering work for BSc Eng in Medicine and Technology

**Electives**

In this basic block you rest of the points up to 180 ECTS must be achieved from any courses offered for bachelor students (NOT BEng) or master students. Students can choose courses, which are recommended by the head of study. Students can also use the freedom of choice to achieve knowledge within advanced mathematics, physics, or chemistry. It is also possible to follow more general courses within management and economy. Finally, students can choose courses, which qualify them for a certain master programme.

Students, who wish to do a master within Medicin and Technology and follow the study line **Signal and model based diagnostics**, are recommended to use some elective points to achieve skills within programming, and analog and digital instrumentation:

- **31561** Applied signal processing 10 point Spring F2 (Mon 13-17, Thurs 8-12)
- **36611** Introduction to Bioinformatics 5 point Spring F4A (Tues 13-17)

Students, who wish to do a master within Medicin and Technology and follow the study line **Diagnostic imaging and radiation physics**, are recommended to use some elective points to achieve skills within some of the following courses:

- **02512** Introduction to Medical Image Analysis 5 point Spring F5A (Wed 8-12)
- **31561** Applied signal processing 10 point Spring F2 (Mon 13-17, Thurs 8-12)

Students, who wish to do a master within Medicin and Technology and follow the study line **Biomechanics and Biomaterials**, are recommended to use some elective points to achieve skills within some of the following courses:

- **26400** Organic Chemistry 1 5 point Spring F5A (Wed 8-12)
- **41501** Strength of materials 1 5 point Spring F2A (Mon 13-17)
- **41618** CAD for design engineers 5 point Autumn E5B (Wed 13-17)
- **KU010** Biomechanics of the Locomotor System I 7.5 point E5A (wed 8-12)

Students, who wish to do a master within Medicin and Technology and follow the study line **Physiological and pharmacological material transport**, are recommended to use some elective points to achieve skills within some of the following courses:

- **26202** Physical Chemistry for the Biological Sciences 5 point Spring F4B (Fri 8-12)
- **26400** Organic Chemistry 1 5 point Spring F5A (Wed 8-12)
27022 Biochemistry 5 point Spring F4B (Fri 8-12)
31520 Physiological fluid mechanics 5 point January
31522 Physiological and pharmacological mass transport 10 point Spring F5B (Wed 13-17) and Spring F3B (Fri 13-17)
31533 Quantitative electrophysiology 5 point E1B (Thurs 13-17)
41501 Strength of materials 1 5 point Spring F2A (Mon 13-17)
KU005 Modelling of physiological systems 5 point F4A (tues 13-17)

Blocked courses

Some of the mandatory courses from Copenhagen University have a content which overlap with some of the courses at DTU. Therefore, students in this programme cannot take the following courses:

02631 Introduction to programming and data processing 5 point Autumn E1B (Thurs 13-17), Spring F2B (Thurs 8-12)
02632 Introduction to programming and data processing 5 point August
02633 Introduction to programming and data processing 5 point January, June
24001 Human Physiology 5 point Autumn E2B (Thurs 8-12)
27002 Life Science 5 point Autumn E1B (Thurs 13-17)
27230 Prokaryotic cell biology 5 point Autumn E1A (Mon 8-12)
42610 Philosophy of science in engineering 5 point Autumn E3B (Fri 13-17), Spring F3A (Tues 8-12)

Curriculum, previous admission years

Please see the Danish version

Bachelor Project

The BSc project is the final project on the BSc programme. The purpose of the BSc project is to give the student the opportunity to competently formulate, analyse, and process issues within a limited subject area that reflects the emphasis of the programme.

The BSc project must demonstrate the student’s ability to solve a relevant engineering task in which the acquired knowledge and competences are applied in an independent way in a major project. The
student must demonstrate, at the appropriate level, the ability to assess options, results, and argue for the results obtained in a logical and coherent manner in a report.

The BSc project must include a summary. The summary must be in English—unless another foreign language has been agreed with the supervisor—and is included in the overall assessment. If—following agreement with the supervisor—the BSc project is written in a foreign language, the summary may be written in the same foreign language.

The BSc project may be prepared either individually or as a group project with a maximum of four students.

The BSc project must be approved by the head of studies to ensure that it falls within the programme focus area. The student normally carries out the project in a department relevant to his or her BSc programme. However, subject to agreement with the head of studies, the student may carry out the project in other departments. The student can also do the BSc project in collaboration with a company or another university.

**Prerequisites for starting the BSc project**
The student can only start the BSc project when they have achieved 120 ECTS credits in the programme and have passed the course project. The basic natural science courses and technology core courses are recommended academic prerequisites for starting the BSc project.

**Project agreement, scope, and project period**
The student must enter into an agreement with a supervisor regarding the BSc project.

The supervisor must be a permanent academic staff member (not PhD students) approved by the head of department with research obligations.

The student must enter into an agreement with the supervisor in due time before project start. The work must not be started before the student receives an email with the approved project agreement from the Office for Study Programmes and Student Affairs. This also applies if the BSc project is carried out, entirely or partly, outside DTU. The BSc project agreement is binding and counts as an exam attempt from the moment the BSc project is initiated as agreed. The agreement can be cancelled up until the BSc project start date and will then not count as an exam attempt.

The duration of a BSc project is 9 weeks full time study (including annual leave and public holidays) for a project of 15 ECTS credits.

The project period can be extended with up to 9 weeks, as the project period is extended with 3 weeks for every 5 ECTS-points the student takes simultaneously being courses or projects.

The project period can also be extended with up to 6 weeks due to documented 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 agreed project period must be observed. 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 project.

Under special circumstances the Board of Studies may grant extensions of the project period of up to three weeks. Application must be submitted to the relevant Board of Studies. An overview of the
study board chairmen can be found at DTU Inside under 'Academic offers and guidance' under 'Study board chairmen'.

Applications for extensions beyond three weeks should be addressed to the Exemption Committee for the MSc Programmes in Engineering. Application is submitted through www.dispensation.dtu.dk. The application should be submitted well in advance of the deadline for the project 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'.

The Board of Studies/the Exemption Committee will in its decision place emphasis on whether the application for extension is based on unforeseen delays.

**BSc project content and learning outcomes**

The content of the BSc project is to be agreed with the supervisor. The project can include a combination of experimental work, field work, theoretical studies, synthesis, modelling, and analysis.

The BSc graduate

- can work independently and is able to structure a major project, including meeting deadlines and organizing and planning the project work
- can summarize and interpret technical information and is fully familiar with technical problem solving through project work
- is able to work with all project phases, including the preparation of proposals, solutions, and documentation
- is able to independently acquire new knowledge and adopt a critical approach to the acquired knowledge and carry out relevant and critical information searches, and on this basis find the right methods to shed light on the problem in question
- is able to communicate technical information, theory, and results in written, visual/graphic, and oral form.

During the first month, the student is to submit a project plan outlining the objective of the BSc project to the supervisor. Submission is made through a link sent to the student via his/her student email. In the project plan, the student is also to take into account the overarching learning outcomes listed above. When submitting the BSc project, 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 self-evaluation of the project process.

**Assessment**

The BSc project is assessed according to the 7-point grading scale by an external examiner on the basis of a report and an oral defence. The evaluation of the report and the oral defense are based on an overall assessment. When assessing a BSc project, the main focus is on academic content. The students’ ability to express themselves accounts for a small, but nonetheless significant percentage of the assessment, while spelling ability carries little weight.

If the project is prepared by more than one student, each student is to be examined individually. The assessment of group projects, however, may also include a group exam with the participation of the entire group. Then the individual oral exam is carried out, which, besides the examinee, only group members who have already been examined are allowed to attend. A group member always has the right to deselect a group exam. If this is the case the duration of the individual exam must be adjusted.
The oral defence of projects carried out in a company may be held behind closed doors following agreement with the supervisor.

In consultation with the student, the supervisor determine the time and date of the oral defence. The defence must take place no later than 10 working days after submission of the written report. In exceptional circumstances, the head of department can approve a later exam date.

**Head of study**

Helge Bjarup Dissing Sørensen  
**DTU Electrical Engineering**  
Building:349 Room:008  
Phone:45 25 52 44  
Email:hbs@elektro.dtu.dk

**Study activity requirements and programme deadlines**

Students must meet the study activity requirements and deadlines set out below. If students do not meet the requirements, they can only continue on the study programme if granted an exemption.

**Commencement of Studies Exam**  
In the beginning of the study programme, BSc Eng students must pass a commencement of studies exam in order to continue on the programme. The purpose of the commencement of studies exam is to ascertain whether students have actually commenced their studies. The exam is assessed by internal examiners and is assessed as 'Approved' or 'Not approved'. Students have two attempts to pass the commencement of studies exam.

The commencement of studies exam consists of two parts:

1. The student must actively indicate their acceptance of DTU’s Code of Honour for students. The code summarizes the principles of good scientific and ethical conduct/practice at DTU. Find more information on DTU Inside under ‘DTU's Code of Honour’ under 'Structure and rules'.
2. The student must complete and submit an individual study plan which meets the criteria in the curriculum.

Information about the commencement of studies exam is sent to the students’ student email address six weeks after study start and must be confirmed no later than seven weeks after the commencement of studies. The second exam attempt takes place immediately thereafter.

**First-year Exam**  
Before the end of the first year of study after study start, students must have obtained 30 ECTS credits (first-year exam) in order to retain the right to continue their study programme. The first-year exam is passed when students have obtained 30 ECTS credits within the mandatory course blocks ‘basic natural science courses’, ‘technology core courses’, and ‘projects and professional skills courses’. It is of no importance in this context how many exam attempts the student has used.

If students are admitted before September 2015 another first-year exam applies. In this case, the first-year exam is passed when the students, before the end of the second year of study after study start, have obtained 60 ECTS credits within the three mandatory course blocks: natural science
courses, technology core courses, and projects and professional skill courses. It is of no importance in this context how many exam attempts the student has used.

**Study Activity Requirement**
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.

BSc 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. However, in practice the 30 ECTS credit study activity requirement is replaced with the first-year exam. Find information on the first-year exam above. The study activity requirement will be checked regularly.

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

<table>
<thead>
<tr>
<th>Periode</th>
<th>Akkumuleret studieaktivitetskrav</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. studieår</td>
<td>30 ECTS-point (erstattes af førsteårsprøven)</td>
</tr>
<tr>
<td>2. studieår</td>
<td>75 ECTS-point</td>
</tr>
<tr>
<td>3. studieår</td>
<td>120 ECTS-point</td>
</tr>
<tr>
<td>4. studieår</td>
<td>165 ECTS-point</td>
</tr>
</tbody>
</table>

Students must have the option of three exam attempts on courses included in the requirement.

For students enrolled **1 September 2016 or later** this means that the check of the 75 ECTS credit requirement is not made until the end of 5\textsuperscript{th} semester after study start, provided that the student by this time has still not passed 75 ECTS credits. As to the subsequent study activity requirements of 120 and 165 ECTS credits the checks are made by the end of the third and forth year of study after study start, respectively.

For students enrolled **before 1 September 2016** this means that it may take up to an extra semester from the time the student fails to comply with the study activity requirement until the student can be withdrawn on account of it, provided that the student by this time has still not passed the required amount of ECTS credits.

**Students enrolled at August 2015 or earlier**
Other students enrolled at August 2015 or earlier must at least pass 45 ECTS-credits per study year.

<table>
<thead>
<tr>
<th>Period</th>
<th>Accumulated study activity requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Sep 2016 – 31 Aug 2017</td>
<td>45 ECTS-point</td>
</tr>
<tr>
<td>1 Sep 2017 – 31 Aug 2018</td>
<td>90 ECTS-point</td>
</tr>
<tr>
<td>1 Sep 2018 – 31 Aug 2019</td>
<td>135 ECTS-point ect.</td>
</tr>
</tbody>
</table>

**Study Activity Requirement of 5 ECTS Credit Points**
Students admitted to the BSc Eng programme must pass courses corresponding to at least 5 ECTS credits per year of study to comply with DTU’s study activity requirements. It is of no importance in this context how many exam attempts the student has used.

**Maximum Period of Study**
The BSc in Engineering programme is a three-year programme. The entire BSc course of study must be completed no later than 4 years after admission.
For students enrolled before September 2015 other rules applies, and the BSc Eng course of study must be completed according to this schema.

**BSC Eng**

<table>
<thead>
<tr>
<th>Start Date</th>
<th>End Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>01 September 2014</td>
<td>31 January 2019</td>
</tr>
<tr>
<td>01 September 2013</td>
<td>31 January 2018</td>
</tr>
<tr>
<td>01 September 2012</td>
<td>31 August 2017</td>
</tr>
<tr>
<td>01 September 2011</td>
<td>31 August 2017</td>
</tr>
<tr>
<td>01 September 2010 and earlier</td>
<td>The prescribed period of study plus 3 years</td>
</tr>
</tbody>
</table>

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

**Requirements for completing the BSc programme**

Students must meet the following requirements in order to complete the programme:

- Students must pass courses corresponding to 45 ECTS credits within the basic natural science courses.
- Students must pass courses corresponding to 45 ECTS credits within the technology core courses.
- Students must pass courses and projects corresponding to 45 ECTS credits within projects and professional skills courses, including a BSc project of 15, 17.5, or 20 ECTS credits.
- Students must also pass additional courses and/or projects to obtain a total of 180 ECTS credits.

**Course registration**

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.).

**Course registration in the first semester**

BEng and BSc students are automatically registered for courses in the first teaching period (13-week period) in the first semester of their study programme. Students must themselves register for all other courses through the Study Planner.

Newly admitted MSc students and visiting students must actively confirm that they accept DTU’s code of honour to be able to register for courses via the Study Planner. See also at DTU Inside under ‘Cheating at exams and other forms of assessment’ under ‘Exams’.

**Course registration in other semesters**

Registration for and withdrawal from courses are made via the Study Planner.

Students are responsible for ensuring that their course registrations have been registered correctly in their study plan, and that registration for the courses has been made within the applicable registration and withdrawal deadlines.
In the supplementary course registration period a decision on limited admission to a course can be made on the grounds of the capacity of facilities or academic reasons. See DTU Inside under ‘Participation in limited admission courses’, under ‘Teaching’.

Students can see the registration and withdrawal deadlines for courses at DTU Inside under ‘Registration deadlines for courses and examinations’.

**Rules for choice of courses**
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 for a course which does not form part of their curriculum unless they have obtained prior approval of the course from the head of studies, who has sent this approval to the Office for Study Programmes and Student Affairs, the Study Administration.

Students must not register for courses in excess of the prescribed total ECTS credits for the study programme. However, in the event of odd ECTS credits—typically as a result of credit transfer—a student may register for a final course of up to 5 ECTS credits, even if this means that the student will exceed the prescribed total ECTS credits for the study programme (see ‘Credit transfer during the study programme’ under ‘Credit transfer’).

**Cancellation of courses**
A non-mandatory course may be cancelled if less than ten students have registered for it. Other rules for minimum participation may be specified in the course description. Mandatory courses and courses from the mandatory groups cannot be cancelled.

**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. Find more information on DTU Inside under ‘Disciplinary Measures’ under 'Disciplinary measures towards students'.

**Mandatory prerequisites**
Mandatory prerequisite courses are only used if an introductory course must have been passed - for security reasons or similar weighty reasons - before participation in a subsequent 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, if the students presence is of inconvenience to the general teaching.
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. However, in the supplementary course registration period a decision on limited admission to a course can be made on the grounds of the capacity of facilities or academic reasons.

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 and get approval from 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.

**Mandatory participation in class and mandatory assignments**

*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.

*Mandatory assignments etc.*
A course coordinator may decide that the submission and approval of written assignments, oral presentations, etc. during the course are a prerequisite for the students being allowed to take the course exam. In such case, this must be stated in the course description.

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.

Mandatory assignments are not included in the assessment, but are to be regarded as a course element.

Mandatory assignments in relation to re-exams are described in further detail at DTU Inside under ‘Courses with mandatory assignments as a prerequisite for exam participation’ under ‘Re-exams’.

*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 must be able to document the reason for being absent if requested from the lecturer.

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.

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.
**Project courses**

The content of a project course is agreed between the student(s) and a DTU supervisor. As for BSc and MSc students, supervisor on a project course must be a member of the scientific staff with research obligations and holding a permanent position at DTU. An exemption from this rule may be granted by the relevant BSc or MSc Head of Studies.

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.

**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.

It is recommended that students carry out projects in cooperation with companies in the final part of the study programme.

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 'Forsknings Samarbejde, 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’).

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 feedback 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. For oral exams no later than two weeks after the oral exam. 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 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.

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.
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.

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.

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.

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.

Rules and regulations chapter 2

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, form, 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 approved and passed mandatory assignments and 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 ‘Registration deadlines for 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 student must 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.

If a course no longer is provided, two additional re-exams will be offered in the course. Location of dates regarding the re-exam will follow the rules on ‘Re-exams’ under ‘Exams’.

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. A fourth exam attempt or additional exam attempts must take place at the next (re-)exam of the course.

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.

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, unless the student provides medical documentation stating illness. Read more on rules on ‘Illness in connection with exams’ under ‘Exams’. 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. These rules are accessible 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.

### Assessment forms

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 examiner 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 subsequent appeal.

At least 1/3 of the total ECTS credits on the study programme must have been completed with external co-examination. This does not apply to exams for which credits have been transferred from other universities.

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.

In cases where an assessment cannot be made in accordance with the Danish 7-point grading scale or ‘Pass’ or ‘Fail’, the following registration may occur:

- The registration ‘Ill’ (SYG) is used if the student has been registered for the exam without participating—or have had to leave the exam due to illness—and the student can present documentation for this (see ‘Illness in connection with exams’). It is registered that the students has not used an exam attempt.
- The assessment ‘Did not take exam’ (‘Ej mødt’ (EM)) is used if the student has been registered for the exam without taking the exam. It is registered that the student has used an exam attempt.
- The registration ‘Not approved’ (‘Ikke godkendt’ (IG)) is used when the student fails to meet requirements for submission of mandatory assignments as a prerequisite for taking the exam (see ‘Mandatory participation in class and mandatory assignments’ under ‘Teaching’). It is registered that the student has used an exam attempt, unless the student withdraws from the course exam himself/herself.
- The registration ‘Cheating’ (SNYD) is used if the student has had an exam performance/result for a full course cancelled because of violation of the exam rules (exam cheating). It is registered that the student has used an exam attempt.

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.
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). Internet access can only be granted, if the lecturer in writing has informed the students of this.

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 arrangements at written exams’ under ‘Exam’)

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

25
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 students. 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. 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 code of honour 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.

At DTU Inside under ‘DTU’s code of honour’ under ‘Structure and rules’, examples are provided of violations of exam rules as well as guidance on the basic rules for quotes and source references in written assignments.

**Procedure in case of cheating at exams**

In accordance with section 9 of the Examination Order, DTU has laid down rules on disciplinary measures in cases of cheating and disruptive behaviour at exams (see ‘Disciplinary measures’ under ‘Structure and rules’ at DTU Inside). Violation of the exam rules will thus result in disciplinary sanctions against the student.

If there is any suspicion of violation of the exam rules, the lecturer must notify the Office for Study Programmes and Student Affairs via eksamenssnyd@adm.dtu.dk.

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 appeal must be sent to eksamenssnyd@adm.dtu.dk.

The Office for Study Programmes and Student Affairs can 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 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.

Students with permission to use their own computer can make a request to have non-digital exam assignments handed out on a USB key. The deadlines for this request can be found on DTU Inside. If the student wish to hand in his/her exam assignment on a USB key the student must inform the lecturer beforehand.

If the student wants to apply for special arrangements at written exams outside the ordinary exam periods, the student needs 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 SPS-team at 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 choose 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 apply 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 ‘Final projects’ under ‘Structure and rules’.

### 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 upon 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 for the oral exam.

### Re-exams

FStudents may participate in an offered re-exam without having participated in the previous ordinary exam on a course if they meet the requirements for participation in the ordinary exam. See below under ‘Courses with mandatory assignments as a prerequisite for exam participation’.

On courses with part exams, students must be aware that a re-exam is solely a repetition of the final part exam on the course. See below under ‘Courses with part exams’.

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

The time of the re-exam will depend on when the course in question is offered:
• For courses offered in the 13-week autumn period with ordinary exams in December, the re-exam period is in May
• For courses offered in the 13-week spring period with ordinary exams in May, the re-exam period is in August
• For courses offered in the 3-week period in January with ordinary exams in January, the re-exam period is in May
• For courses offered in the 3-week periods June/July with ordinary exams in June/July, the re-exam period is in August
• For courses offered in the 3-week period in August with ordinary exams in August, the re-exam period is in December.

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

If, in exceptional cases, a course is not suitable to be offered for a re-exam based on a security or academic assessment, students who have not passed the course must attend the course again. The relevant Department Board of Studies must approve that the course is not suitable for being offered for a re-exam, and it must also be stated in the course description under ‘Evaluation form’.

An overview of exam dates can be found at DTU Inside (see ‘Dates of exams’ under ‘Exams’).

Registration for and withdrawal from re-exams must be done within the applicable deadlines (see ‘Registration deadlines for courses and examinations’ under ‘Exams’).

The course coordinator may decide that the evaluation form at the re-exam may differ from the evaluation form at the ordinary exam. The course coordinator must notify the students about the evaluation form at the re-exam in August no later than one week after the exam registration deadline. The course coordinator must notify the students about the evaluation form at the re-exam in May and December no later than one week after the exam registration deadline.

For rules on re-exams on special courses, see ‘Project courses’ under ‘Teaching’.

**Courses with mandatory assignments as a prerequisite for exam participation**

A student whose mandatory assignments have not been approved - and who therefore cannot participate in the ordinary exam—cannot participate in the re-exam on the course unless, before then, the course coordinator has given the student a new opportunity to meet the prerequisite. The student is responsible for contacting the course coordinator to clarify this matter. Students who are unable to meet the prerequisites will have to attend the course again.

Students who meet the prerequisite for exam participation on a course—but who do not pass the exam—can take the re-exam on the course in the next re-exam period without having to submit the mandatory assignments, etc. again.

If students choose to postpone their re-exam—or if they do not pass their re-exam in accordance with the above—they are not entitled to be allowed to take (another) re-exam based on previously approved mandatory assignments, etc. Based on an academic assessment, the course coordinator may, however, approve that the student can register for a re-exam without having to submit the assignments again.

Read more at DTU Inside under ‘Mandatory participation in class and mandatory assignments’.

**Courses with part exams**
As regards re-exams in August 2018 the following former rules from the academic year 2017/2018 apply:

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.

From the academic year 2018/2019 the following rules apply:

In a course with part exams, any re-exam is only a repetition of the final part exam on the course. Part exams scheduled in the teaching period will thus not be offered as a re-exam or be assessed in the period between the ordinary exam and re-exam on the course. The course coordinator may deviate from this.

As a general rule, part exams already approved will be included in the next re-exam period. In connection with a re-exam, students are thus not entitled to retake an approved part exam.

However, under special circumstances, students may have to retake a passed part exam in connection with a re-exam. Such a decision is made by the course coordinator 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 retaken in connection with a re-exam, the Department Board of Studies will make the decision.

The course coordinator may approve that passed/approved part exams are included in subsequent re-exams.

Read more about part exams at DTU Inside under ‘Requirements for passing exams and part-exams’ under ‘Exams’

Special circumstances regarding final exams
If a student has been ill at the (re)exam during the 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 (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. If the student meets the requirements for a quick (re)exam, the office for Study Programmes and Student Affairs will inform the student. In consultation with the student, the lecturer determine the time and date of the (re)exam.
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.

A complaint regarding a part-exam/part-grade may only be submitted after the student has been notified of the final grade/assessment of the course.

Complains 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 withdrawn 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.

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

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 ordinary 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.

**Exam attempts**

Students who are admitted to DTU via the coordinated enrolment system (KOT) and who have used exam attempts on failed courses they have previously attended at DTU on another study programme will automatically be assigned three new exam attempts on the relevant courses if these courses may be included in the study programme to which the student is now admitted.

**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.

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 upon application from the student, 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.

**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.

**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’ 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.

**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's thesis’](#).

**Pre-approval of credit transfer**

Before taking a course-going abroad, students are obliged to apply for pre-approval of credit transfer for planned programme elements from another university or another institution of higher education in Denmark or abroad.
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.

By applying, students give their consent to DTU requesting the necessary information regarding the (pre-approved) credit transfer 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.

**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.

**Submission of applications**

Applications for pre-approval of credit transfer and final credit transfer are submitted electronically via [www.merit.dtu.dk](http://www.merit.dtu.dk). Other enquiries regarding credit transfer are sent to [merit@adm.dtu.dk](mailto:merit@adm.dtu.dk) via the student email.

Applications must include the following:

- course description
- documentation of level
- documentation of workload
- an official description of the grading scale, according to which the course is assessed
- as regards final credit transfer, documentation of passed and failed courses.

**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](http://www.merit.dtu.dk).

**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.
Regarding DTU courses:
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.

Non DTU courses:
If it is not possible to choose a different course in line with the above rules or if the course is not from DTU, 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. When in doubt of the programme level of the course or the conversion of the credits from abroad to ECTS credits, the head of studies or the student are welcome to contact merit@adm.dtu.dk

Studying abroad

A thorough description of the possibilities for studying abroad and the application deadlines can be found at DTU Inside under ‘Study Abroad’ or at DTU’s website Studyabroad.dtu.dk and Beyondborders.dtu.dk

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 (approximately 120, minimum 110, 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 must have credit availability for transferring minimum 20 ECTS credits from their stay abroad.

Students are expected to be full-time students and take 30 ECTS credits per semester. As an absolute minimum, the students must pass and transfer at least 20 ECTS credits from their stay abroad, unless the stay is a summer school stay. Students who do not comply with this requirement may be requested to repay any grants received from DTU.

Students must at all times comply with other study activity requirement and deadlines laid down by DTU, the host university, and other relevant bodies. 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.

Students are obliged to apply for pre-approved credit transfer for planned programme elements from another institution of higher education in Denmark or abroad before the course/stay is commenced. See chapter about Credit transfers under the study programme for further information.
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.

If one or more of the desired MSc courses is or are project courses, the students must specify the department with which the special course is being taken in their application for a transfer of courses, and how many ECTS credits the individual special course constitutes.

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 a MSc programme’. The application must be filled in and sent from the student email to kandidatopt@adm.dtu.dk. Decision regarding the application will be sent to the student email.

Deadline for applications:

- 13-week periods: One week after the beginning of the semester at the latest
- 3-week periods June, July and August: 1 May
- 3-week period January: 15 November

Students can only apply for one semester at a time. The semester of autumn runs from September up to and including January. The semester of spring runs from February up to and including August.

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.

SU on completion of BEng/BSc programme
The BEng/BSc programme has been completed when the grade in the last course/project on the study programme has been registered. This also applies even if the final grade is registered in the middle of the semester and even if the courses in the semester that the transfer of courses concerns are not yet concluded.

When the BEng/BSc programme is completed, the student will no longer be entitled to receive SU or a completion loan. This means that when the student completes his BEng/BSc programme, he or she is no longer enrolled on a study programme and is therefore not entitled to SU even though the student in question is still following courses in the semester that the transfer of courses concerns.

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. Applications for exemption regarding illness must always be accompanied by medical documentation. An application must also 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 the birth giving parent. 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 the non birth giving parent. 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 grounds of maternity/paternity leave must be made by sending an email from the student email address accompanied by the required documentation to studieservice@adm.dtu.dk. The application must be submitted by the student no later than a year after the birth of the child.

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 ‘I want to apply for exemption’. Meeting dates for the exemption committees and application deadlines can be found at DTU Inside under ‘Deadlines and meeting dates’ under ‘Exemption’.

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.

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.

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).

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 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’.

**SU (State Educational Grant and Loan Scheme)**

Students should note the differences between DTU’s study-related rules and the legislation governing the State Educational Grant and Loan Scheme. Exemptions from DTU’s study-related rules will therefore not take account of SU issues. Likewise, SU-related decisions will not have an impact on DTU’s study-related rules.

This means that students who are granted an exemption from DTU’s study-related rules do not necessarily comply with the terms of the Danish Act on the State Educational Grant and Loan Scheme for continuing to receive SU. Therefore, students may risk losing their SU in spite of any decisions made by DTU.

Rules on SU can be found on the website of the Danish Agency for Science and Higher Education: [www.su.dk](http://www.su.dk). All rules governing SU can be found in the Danish Act on the State Educational Grant and Loan Scheme (SU-loven) and the Ministerial Order on the Danish State Educational Grant and Loan Scheme (SU-bekendtgørelsen), (see ‘Love og bekendtgørelser’). These rules constitute the basis for decisions made by the SU office at DTU.

Further information about SU can be found at DTU Inside under ‘State Educational Grant and Loan Scheme (SU)’. 
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’. The filled our form must be sent from the DTU student mail to studieservice@adm.dtu.dk.

Please note a withdrawal cannot be cancelled.

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

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 Study Guidance office (Danish students) or International Study Guidance Office (non-Danish students) for guidance on the issue.

Readmission into BSc Eng and BENG programmes

If previously enrolled students want to study at DTU again, they can apply for readmission.

If applicants have themselves withdrawn from their study programme, they may be readmitted to the same study programme within the same type of degree (BSc, BEng or MSc) at the earliest five months after their enrolment was terminated.

Applicants who have been disenrolled from their study programme by DTU for study-related reasons or who are in violation of DTU’s rules at the time of application for readmission will need to apply for an exemption. Such an application is only to be submitted once the applicant has been notified by DTU that he or she must apply for an exemption. An exemption must be applied for regardless of whether the student is applying for a place on a different study programme than the one in which the student was previously enrolled. If the application for an exemption is accepted, it will be assessed whether the applicant can be readmitted. If the application for an exemption cannot be accepted, the student’s application for readmission will be rejected.

If applicants apply for readmission and have already completed a higher education programme, they will be covered by the Danish Act on Barring of Second Degrees (Lov om begrænsning af dobbeltuddannelse).

If the last passed course on the student’s DTU study programme dates back more than five years prior to readmission, courses on the study programme cannot—as a general rule—be transferred to the new study programme to which the student has been admitted. However, an exemption may be granted from this rule in special cases following an application from the student. The relevant head of studies will assess whether an exemption may be granted from the five-year limitation period.

Application and application deadlines

Readmission with study start on 1 September

Applicants who apply for readmission must comply with the same deadlines as other applicants for DTU’s BSc and BEng programmes. Application deadlines are found at DTU.dk under ‘Admission to BSc and BEng programmes’.

However, it should be noted that applicants who have already passed 60 ECTS credits or more on higher education programmes must apply for readmission no later than on 1 May.
Applications for readmission are submitted via www.optagelse.dk.

Readmission with study start on 1 February
Applicants who apply for readmission must comply with the same deadlines as other applicants for DTU’s BSc and BEng programmes. Application deadlines are found at DTU.dk under ‘Admission to BSc and BEng programmes’.

However, it should be noted that applicants who have already passed 60 ECTS credits or more on higher education programmes must apply for readmission no later than on 1 November.

Readmission is applied for via an application form, which is available during the application period at DTU’s website under ‘Special information about winter admissions’.

Processing of the application
Applicant may be readmitted either outside the ordinary admission or through the ordinary admission.

Applicants will be readmitted outside the ordinary admission (quotas 1 and 2) if all the following conditions are met:

- The applicants meet the applicable admission requirements for the study programme.
- The applicants are granted an exemption following any application for this.
- The applicants have passed courses corresponding to the first academic year of the study programme for which they are applying for readmission.
  - On a BEng programme, the first year of study has been passed if minimum the first and second semesters of the study programme in question have been passed.
  - On a BSc programme, the first year of study has been passed if minimum 60 ECTS credits from the three mandatory blocks of courses (basic natural science courses, technological specialization courses, and projects and professional skills courses) have been passed.
- There are vacant places at the level of study on the study programme for which the applicants are applying. If the number of students applying for readmission exceeds the number of vacant study places, the places will be distributed in a decreasing order of grade point average from the qualifying upper secondary school exam.

Applicants will be readmitted through the ordinary admission (quotas 1 and 2) if:

- The applicants meet the applicable admission requirements for the study programme.
- The applicants are granted an exemption following any application for this.
- The applicants have not passed courses corresponding to the first academic year of the study programme for which they are applying for readmission.
  - On a BEng programme, the first year of study has been passed if minimum the first and second semesters of the study programme in question have been passed.
  - On a BSc programme, the first year of study has been passed if minimum 60 ECTS credits from the three mandatory blocks of courses (basic natural science courses, technological specialization courses, and projects and professional skills courses) have been passed.
- The applicants’ grade point average is high enough for admission through quota 1, or if the applicants are prioritized high enough to be admitted through quota 2.

Deadlines and exam attempts for students who are readmitted to BSc and BEng programmes
Deadlines

The study activity requirement for students readmitted through the ordinary admission is 30 ECTS credits in the first academic year and subsequently 45 ECTS credits per academic year. The academic year is calculated from the date of readmission.

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

The maximum period 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.

Exam attempts

- Readmission to the same study programme
  The students are granted a new exam attempt on courses for which all exam attempts have been used if the course forms part of the study programme.

- Readmission to new study programme
  For students who are readmitted to DTU on a new study programme, the number of used exam attempts on failed courses they have previously attended at DTU is zeroed. The students are allocated three new exam attempts on the courses in question if these courses can be included in the study programme to which the students are now readmitted.

Exam forms

A course exam may be written, practical, oral, or a combination thereof, for example 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 type of part exams, to be used on the course.

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 must contact ‘Student Services’ (studieservice@adm.dtu.dk) to apply for a change in the exam form (e.g. from written to oral exam) on the basis of special circumstances, for example a documented permanent functional impairment. ‘Student Services’ will then contact the Department Board of Studies/course coordinator for an assessment of whether this is academically sound and practically possible. The Special Educational Support (SPS) employees (aus-sps@adm.dtu.dk) in the Office for Study Programmes and Student Affairs can provide assistance for 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’.

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.

**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 documented special educational needs. Students must contact ‘Student Services’ (studieservice@adm.dtu.dk) to apply for this. ‘Student Services’ will then contact the Department Board of Studies/course coordinator for a decision.

However, special rules apply to final projects. Read more at DTU Inside under ‘Final projects’ under ‘Structure and rules’; or in the study programme curriculum.

**Submission of written assignments during the course**

Submission of assignments, reports, posters, etc. may be

- an offer to students
- a prerequisite for being able to take the exam (mandatory assignments - see DTU Inside under ‘Mandatory participation in class and mandatory assignments’ under ‘Teaching’, or
Written assignments can be prepared individually or as group projects.

Students can only expect to have take-home assignments corrected/assessed that have been submitted on time.

**Group projects**

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

Special rules apply to group size for BEng projects, BSc projects and MSc theses (see DTU Inside under ‘Final projects’ under ‘Structure and rules’).

Group projects can be written in two different ways. It is of great importance to the exam form whether the project is individualized; 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). It must be clearly specified for which sections each student has the (main) responsibility and several students may well have the (main) responsibility for the same section. A group project is not deemed to be individualized if the students merely state that they have contributed equally to all sections of the report or the like.

Before the students commence a group project, the course coordinator must inform the students whether 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 for which the students’ individual contributions are not specified must always be followed by an oral exam, as it is not possible to make 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 the above.

**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.

**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 lecturer is responsible
for notifying the students in the event of a change in the assessment form. 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.

Students should arrive at a written exam 15 minutes before the exam begins to prepare themselves 
for the exam start. Students who show up after the exam has started will not be allowed to 
participate in the exam. They will then receive an assessment of ‘Did not take exam’ (‘Ej Mødt’).

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.

Rescheduled exam for a cancelled written exam (on-site exam)
As part of DTU’s exam contingency plan, a permanent scheme has been established with extra days 
in which to hold any rescheduled exams. A rescheduled exam is only to be used as an absolute 
emergency procedure if, in exceptional cases, a written exam (on-site exam) for a course cannot be 
held as planned after all options for holding the exam as planned have been exhausted.

A rescheduled exam is an offer to the students, which lapses if they decide not to take advantage of 
it, and they can only participate in a new exam, at the earliest, the next time a (re)exam is offered. 
Students who do not take advantage of an offer of a rescheduled exam, will not have used an exam 
attempt.

At DTU Inside under ‘Dates of exam’ under ‘Structure and rules’, there is an overview of the 
scheduling of rescheduled exams for two and a half years ahead.

Rules and regulations chapter 4

Rules and regulations chapter 3