TU Delft

Delft University of Technology

Disclaimer

This guide has been compiled with the utmost care by the Faculty. There are a number of items about which further information will only become available after this guide has been published. For this reason the information published in this guide can be subject to change. Changes, additional information and more detailed course descriptions are available on Blackboard: blackboard.tudelft.nl and/or on the SIS website www.tudelft.nl/sis.

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Personal details

name

address

postal code / city

telephone

mobile

e-mail

NOTIFY IN CASE OF EMERGENCY:

name

address

postal code / city

country

telephone mobile

MEDICAL INFORMATION:

medications

allergies

passport no

blood group

organ donor: yes / no; card no:

If found, please return this student guide or contact the owner.

Faculty Preface

In 2004 the Materials Science and Engineering department (MSE) joined the Faculty of Mechanical, Maritime and Materials Engineering (3mE), and during the course of 2006 the department physically relocated to the 3mE faculty building at the Mekelweg, Delft. The new faculty and environment offer both students and staff stimulating and well-equipped educational and research facilities.

Materials Science and Engineering has many aspects in common with both Mechanical Engineering and Marine Technology. In addition to the traditional student inflow through the natural sciences, the new position within the Faculty of 3mE offered opportunities to broaden the range of inflow to students with engineering-oriented Bachelors backgrounds. A new Master's programme was designed and implemented in September 2005, with an updated range of subjects introduced in the 2006 programme.

The Master's programme offers a first semester that is tailored to the individual requirements of each student. After a core programme in the second semester, providing essential understanding of material structure and properties, the students have a choice of five Specialisation Courses:

- Metals Science and Technology,
- Advanced Functional Polymers,
- Materials for Art & Archaeology,
- Management of Technology,
- Materials for Energy and Environmental Impact.

Finally, a Master's thesis research project is undertaken in one of the departmental research groups or another group within or outside the university. These projects are often in cooperation with the industry.

The purpose of this guide is to inform students about the Materials Science and Engineering Master's programme and to provide relevant contact details. The printed text presents the information available in June 2006. Additions and corrections may emerge over time, and such information will appear on the educational website (campus.3me.tudelft.nl > MSc programs > Materials Science and Engineering). Students are advised to visit this site for the most recent information.

Dr. Michael Janssen

Academic calendar 2006/2007

Fall semester

4/9/06			15.00 Aula: opening academic year
4/09	-	20/10	scheduled teaching activities
23/10	-	3/11	no scheduled activities/ examinations/ scheduled teaching activities
6/11	-	22/12	scheduled teaching activities
27/12	-	5/1/07	Christmas vacation
8/1/07	-	12/1	no scheduled activities
15/1	-	2/2	examinations

Spring semester

5/2/07	-	23/3	scheduled teaching activities
26/3	-	5/4 (do)	no scheduled activities/ examinations/ scheduled teaching activities
10/4 (Tue)	-	27/4	scheduled teaching activities
6/4			Good Friday
9/4			Easter Monday
30/4	-	4/5	no scheduled activities (May vacation)
7/5	-	8/6	scheduled teaching activities
17/5, 18/5			Ascension day
26/5			no scheduled activities
28/5			Whit Sunday
11/6	-	15/6	no scheduled activities
18/6	-	6/7	examinations
20/8	-	31/8	examinations/repeats

Note: examinations are usually called 'tentamens' in Dutch. Formally an 'examen' in Dutch is the degree audit taking place at the end of a programme phase such as a Propaedeuse (end of first year), a Bachelor or a Master phase. These 'examens' are formalities in the Dutch university system. There are no end-of-year examinations!

Class hours for Delft University of Technology

Period	Time
1.	08.45 – 09.30
2.	09.45 – 10.30
3.	10.45 – 11.30
4.	11.45 – 12.30
5.	13.45 – 14.30
6.	14.45 – 15.30
7.	15.45 – 16.30
8.	16.45 – 17.30

TU Delft – University Facts and Mission

Founded in 1862, Delft University of Technology is the oldest, largest, and most comprehensive university of technology in the Netherlands. With over 13.000 students and 2100 scientists (including 200 professors), it is an establishment of both national importance and significant international standing. Renowned for its high standard of education and research, the University collaborates with other educational establishments and research institutes, both in the Netherlands and overseas. It also enjoys partnerships with governments, branch organisations, numerous consultancies, the industry, and companies from the small and medium business sectors. Delft University of Technology has eight faculties offering a host of engineering programmes, many of them unique in the Netherlands.
Working together with other educational establishments, various research institutes, international business partners and the industry, TU Delft aims to provide students with all the necessary tools for a successful career: an excellent education, relevant, practical experience, and the broadest possible knowledge base. Detailed information can be obtained from the website www.tudelft.nl

International Office

This office will be your first point of contact at the University. The International Office staff handles the application procedure, financial and housing matters, and the distribution of student ID cards. The International Office comprises the central TU Delft Student Registration Office, which registers you as a student when you are admitted to TU Delft.

The Student Facility Centre publishes a Guide to Services, which is available from Julianalaan 134 or can be obtained by phoning +31 (0)15 27 88012 or emailing sfc@tudelft.nl

TU Delft International Office
PO Box 5
2600 AA Delft

The Netherlands
Tel: +31 (0) 15 27 88012
Fax: +31 (0) 15 27 85690
E-mail: admission@tudelft.nl
Website: www.studyat.tudelft.nl

Visiting address:
Julianalaan 134
2628 BL Delft
The Netherlands

Around October 2006 the International Office and the Student Facility Centre will move to a new location at the Mekelweg.
Postal address:
Jaffalaan 9A
2628 BX Delft
Visitors' entrance at the Mekelweg

Service desk

The Service Desk provides you with your transcripts, timetables and exam dates, and it posts the exam results. Here you submit forms, you inform them of recently acquired marks, and a change of address. The Service Desk tracks student progress, i.e. the number of credits and marks you obtain and any group work done in a semester and/or academic year.
More information is available on servicepunt.tudelft.nl
The Service Desk is open Monday to Friday, from 5.00 to 17.00 hours.

Blackboard

Blackboard provides you with the most recent information about your courses. It is a commercial E-learning medium that serves as a virtual notice board for announcements, timetables, presentation of programme materials, practice materials, exercises and solutions as well as interesting links. You can enter the system using the 'Preview' button in the login screen, but to access all information, you need a personal login ID.
Website: blackboard.tudelft.nl
Request assistance through Blackboard-support@tudelft.nl

Schedules

For up-to-date schedules, go to blackboard.tudelft.nl or the campus website of your faculty.

TU Delft Library

The TU Delft Library consists of a central branch located behind the Aula and seven faculty branches in a number of locations. The collection, the excellent study facilities, the modern PCs and the package of services in each library are designed to provide you with optimal access to relevant science and technology literature. On the Library's website, www.library.tudelft.nl, you can find all information you need if you want to visit a library or use one of the services of the TU Delft Library.

Customer Services TU Delft Library:
Tel: +31 (0)15 27 85678
Fax: +31 (0)15 27 85706
E-mail: library@tudelft.nl
Website: www.library.tudelft.nl

Opening times central branch:

	Tuition period	Examination period	Summer holiday
Monday - Thursday	9.00 - 22.00	9.00 - 24.00	9.00 - 17.00
Friday	9.00 - 18.00	9.00 - 22.00	9.00 - 17.00
Saturday - Sunday	10.00 - 18.00	10.00 - 22.00	closed

The opening times of the faculty libraries can be found at www.library.tudelft.nl under 'locations'.

Opening times central information desk:

Monday - Thursday	9.00 - 19.00
Friday	9.00 - 17.00
Saturday	10.00 - 13.00
Sunday	closed

Every first Monday of the month: 11.00 - 19.00

Regulations

There are a number of formal regulations for the faculty organization, the programmes and their execution. These are:

- The Faculty Regulations
- The Course and Examination Regulations ('Onderwijs- en Examenreglement').
- (Per programme) The Execution Regulations of the Education and Examination Regulations ('Uitvoeringsregeling').
- The Rules and Guidelines of the Board of Examiners ('Regels en Richtlijnen van de Examen Commissie').
- The Student Charter ('Studentenstatuut')

These regulations are published yearly on the web, see the Blackboard community of the programme involved. In case of doubt, your Director of Education or your Study Adviser will be glad to inform and advise you.

EUROPEAN STUDENT UNION (AEGEE)
AEGEE is the European students' association, represented in 271 cities in 40 countries. Over 17,000 member students are actively involved in travelling, participating in fun and pleasure events and conferences on topics that concern you. There are a lot of possibilities to travel to other places in Europe, meet new people and make friends everywhere! In every city there is an independent local association such as AEGEE-Delft.
Check out the website: www.aegee-delft.nl

TU DELFT'S STUDENT UNION (VSSD)
The purpose of the VSSD is to safeguard the interests of all students studying at Delft University of Technology. The Union mainly focuses on areas such as education, income, legal status and housing. The VSSD is a member of the National Student Union (LSVB) and of the ISO (a national student body). As well as representing the collective interest of students, the VSSD also provides support and services to individual students by helping them with financial, housing, study and other problems, and through the publication and sale of reasonably priced textbooks.

Office:
Leeghwaterstraat 42 (building 45 on map)
Tel: +31 (0)15 27 82050
Fax: +31 (0)15 27 87585
E-mail: balie@vssd.nl
Website: www.vssd.nl
Opening hours: Monday to Thursday 08.30-17.00, Friday 08.30-13.00

Shop:
Leeghwaterstraat 42
Tel: +31 (0)15 27 84125
Fax: +31 (0)15 27 81421
E-mail: winkel@vssd.nl
Opening hours: Monday to Friday between 10.30-14.00 and 15.00-17.00

USEFUL WEB ADDRESSES:
www.tudelft.nl (general information about Delft University, history, programmes, research, etc.)

www.studyat.tudelft.nl (information about all BSc and MSc programmes offered by Delft University of Technology, information about the requirements, how to apply, costs, funding, insurance, housing, medical and pastoral care, facilities for special needs students etc.)

www.ideeenlijnOS.tudelft.nl (You can post your suggestions and comments with a view to improving the services provided by O&S on this website. You can also use this address for complaints, of course.)

www.snc.tudelft.nl (TU Delft Sports & Cultural Centre)

www.dsdelft.nl/centrum (information about Delft)

www.denhaag.org (for activities in the nearby city of Den Haag)

www.uitaandemaas.nl (activities in Rotterdam)

www.amsterdam.nl (activities, news, public transport in and around Amsterdam)

ADDRESSES:
Delft University of Technology (TU Delft)
Visiting address:
Julianalaan 134
2628 BL Delft
The Netherlands

Postal address:
PO Box 5
2600 AA Delft
The Netherlands

Tel: +31 (0)15 27 89111
Fax: +31 (0)15 27 86522
E-mail (for questions): voorlichting@tudelft.nl
(For information about the city of Delft, please see www.delft.nl)

Education and Student Affairs
Tel: +31 (0)15 27 84670
E-mail: OS@tudelft.nl
Website: www.OS.tudelft.nl

- Central Student Administration (CSA)
PO Box 5
2600 AA Delft
Tel: +31 (0)15 27 84249
E-mail: msc2@tudelft.nl
Website: www.csa.tudelft.nl/
Office hours: 8.30-17.00

- International Office
Julianalaan 134
2628 BL Delft
Tel: +31 (0)15 27 88012
E-mail: msc2@tudelft.nl
Website: www.studyat.tudelft.nl

- Student Facility Centre (SFC)
Study Advisers:
Opening hours: Monday to Friday 09.00-17.00.
Student Psychologists:
Tuesday and Thursday 11.30-12.30
Julianalaan 134
2628 BL Delft
Tel: +31 (0)15 27 88012
E-mail: sfc@tudelft.nl

Around October 2006, Education and Student Affairs (i.e. CSA, International Office, Student Facility Centre) will move to a new location on the Mekelweg.
Postal address:
Jaffalaan 9A
2628 BX Delft
Visitors' entrance at the Mekelweg

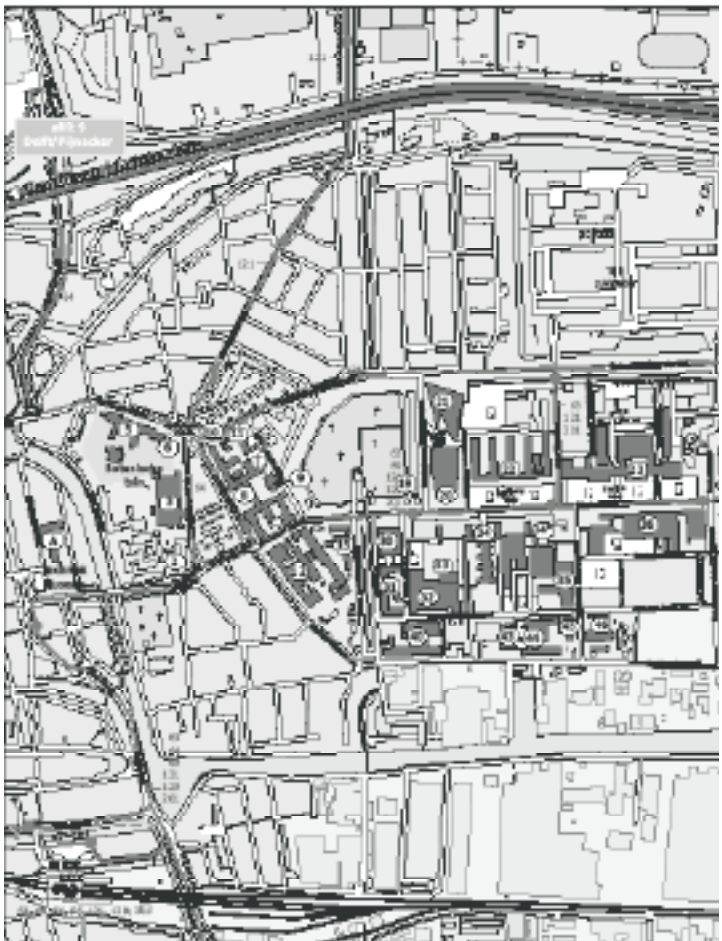
Sports & Cultural Centre
Mekelweg 8-10
2628 CD Delft
Tel: +31 (0)15 27 82443
E-mail: sportcentrum@tudelft.nl
Website: www.snc.tudelft.nl
Monday to Friday: 08.30-23.30; Saturday and Sunday: 08.30-19.00.

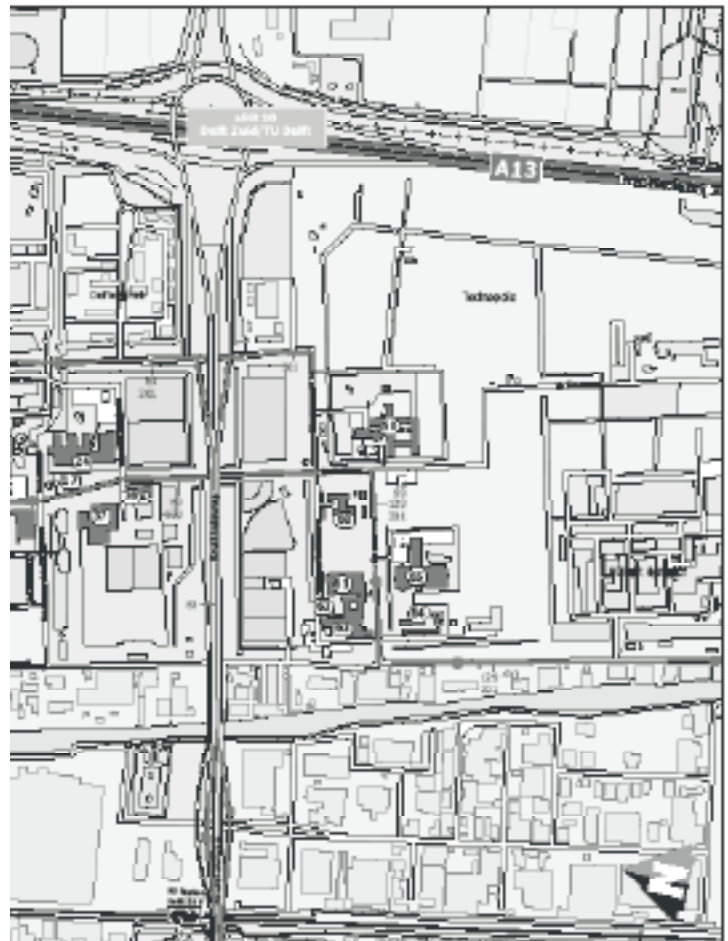
Student Health Care: SGZ
Surinamestraat 4
2612 EA Delft
To make an appointment, call +31 (0)15 212 1507
Monday to Friday 8.30-12.15

Stichting DUWO
(Delft Housing Agency)
Marlotlaan 5
2614 GV Delft
Tel: +31 (0)15 219 2200
E-mail: info@duwo.nl
Website: www.duwo.nl
Office hours: Monday to Friday 08.30-17.00.

Student Restaurants in Delft
- University main cafeteria, Aula, Mekelweg 5
- SnC Café, Mekelweg 8
- Sint Jansbrug, Oude Delft 50-52
- Koornbeurs, Voldersgracht 1
- Alcuin, Oude Delft 123
- CSR, Oude Delft 9
- De Bolk, Buitenwatersloot 1-3
- Novum, Verwersdijk 102-104

Map of TU Delft





A	Ezelsveldlaan 61	Delft Technology Museum
2	Mijnbouwplein 11	Used by various external parties
3	Mijnbouwstraat 120	Applied Earth Sciences
5	Julianalaan 67	Biotechnology (Kluyver Lab)
6	Poortlandplein 6	Botanic Gardens
8	Julianalaan 132-134	TU Delft Student Facility Centre
9	Zuidplantsoen 2	MultiMedia Services (MMS)
10	Zuidplantsoen 6	Student Council
11	Zuidplantsoen 8	Real Estate and Facility Management
12	Julianalaan 136	Delft ChemTech
15	Prins Bernhardlaan 6	Kramers Laboratorium voor Fysische Technologie
17	i-WEB:	Vehicle for Research, Education and Design
19	Mekelweg 3	Stud: student employment agency
20	Mekelweg 5	Aula Congress Centre
21	Prometheusplein 1	TU Delft Central Library
22	Lorentzweg 1	Faculty of Applied Sciences
23	Stevinweg 1	Faculty of Civil Engineering and Geosciences
24	Berlageweg 1	Faculty of Architecture, Urbanism and Building Sciences
30	Jaffalaan 9	OTB Research Institute
31	Jaffalaan 5	Faculty of Technology, Policy and Management
32	Landbergstraat 15	Faculty of Industrial Design Engineering
33	Landberghstraat 19	Composites Laboratory INHOLLAND/TU Delft
34	Mekelweg 2	Faculty of Mechanical, Maritime and Materials Engineering
34a	Cornelis Drebbelweg 9	Executive Board
35	Cornelis Drebbelweg 5	Examination rooms
36	Mekelweg 4 + 6	Faculty of Electrical Engineering, Mathematics and Computer Science
37	Mekelweg 8	TU Delft Sports Centre
38	Mekelweg 10	TU Delft Cultural Centre
40	Rotterdamseweg 137	Materials Engineering
43	Leeghwaterstraat 36	Cogeneration plant
44	Rotterdamseweg 145	Yes!Delft/Technostarters
45	Leeghwaterstraat 42	VSSD & Low Speed Wind Laboratory
46	Leeghwaterstraat 44	Process and Energy Laboratory (API)
50	Mekelweg 15	Radiation Radionuclides & Reactors (R3) / Reactor Institute Delft (RID)
61	Kluyverweg 3	Faculty of Aerospace Engineering: Vliegtuighal
62	Kluyverweg 1	Faculty of Aerospace Engineering
63	Anthony Fokkerweg 1	Faculty of Aerospace Engineering: SIMONA
64	Kluyverweg 2	High Speed Wind Laboratory
65	Kluyverweg 4 + 6	Delft Transport Centre (DTC)

1.1 OBJECTIVE

The objective of the Master's programme Materials Science and Engineering is to educate graduates in Materials Science and Engineering to undertake careers as scientists or engineers at an advanced professional level. The level corresponds to the scientific and technological borders of a specific discipline. The graduates are capable of:

- identifying, defining and analysing problems, to the solution of which Materials Science and Engineering principles and techniques can contribute
- developing and producing a sound solution to the problem
- presenting these solutions effectively

Materials Science and Engineering is an interdisciplinary field involving the study of physical, chemical and mechanical aspects of material properties as well as production processes and materials selection for a wide range of engineering applications. The Master's programme provides a comprehensive treatment, linking fundamental aspects at the atomic level to production techniques and applications.

The Master's graduate of Materials Science and Engineering meets, to a sufficient level, the following qualifications:

1 Broad and profound knowledge of engineering sciences (mathematics, physics and chemistry) and the capability of applying this knowledge in the Materials Science and Engineering discipline at an advanced level.

2 Broad and profound scientific and technical knowledge of the Materials Science and Engineering discipline and the skills to use this knowledge effectively. The discipline is mastered at different levels of abstraction, including a reflective understanding of its structure and relations to other fields, and reaching the forefront of scientific or industrial research and development on numerous occasions. The knowledge is the basis for innovative contributions to the discipline in the form of new knowledge about materials or development of new materials.

3 Thorough knowledge of paradigms, methods and tools as well as the skills to actively apply this knowledge to analysing, modelling, simulating, designing and performing research with respect to problems related to Materials Science and Engineering.

4 Capability of independently solving technological problems in a systematic way involving problem analysis, formulating sub-problems and providing innovative technical solutions, also in new and unfamiliar situations. This includes a professional attitude towards identifying and acquiring any expertise lacking, monitoring and critically evaluating existing knowledge, planning and executing research, adapting to changing circumstances, and integrating new knowledge with appreciation of its ambiguity, incompleteness and limitations.

5 Capability of working both independently and in multidisciplinary teams, interacting effectively with specialists and taking initiatives where necessary.

6 Capability of effectively communicating (including presenting and reporting as well as contributing significantly to a scientific paper) about one's work such as solutions to problems, conclusions, knowledge and considerations, to both professionals and a non-specialised public in the English language.

7 Capability of evaluating and assessing the technological, ethical and societal impact of one's work, and to take responsibility with regard to sustainability, economy and social welfare.

8 Attitude to independently maintain professional competence through life-long learning.

1.2 EDUCATIONAL CONCEPT AND ASSESSMENT

The Master's programme Materials Science and Engineering covers two years of study, each with a study load of 60 EC (European credits). The total programme involves 120 EC and comprises cursory modules, assignments and a Master's thesis project:

Cursory modules (56 - 76 EC)

These are offered as lectures given simultaneously to all students taking the module. Most cursory modules are assessed by means of a written examination. In some cases however assessment takes place by means of an oral examination.

Assignments (4 - 24 EC)
This form is used for projects, practicals and a possible internship in industry or a research institute. Assignments are offered to individual students or small groups of students and are assessed by a report and / or a presentation.

MSc Thesis Project (40 EC)
Each individual student prepares a thesis as a report of his/her research project. The thesis work is evaluated through an oral presentation by the candidate and an oral examination before an MSc examination committee. This committee is composed of at least three scientific staff members, including the thesis supervisor. The examination committee may also include external examiners from research institutes or from industrial partners.

1.3 STUDY PROGRAMME AND GENERAL STRUCTURE

Materials Science and Engineering offers an MSc course of two years. Each course year is divided into two semesters and each semester consists of two periods. A period includes seven weeks of lectures, followed by two or three examination weeks.

Some examinations will be held orally, most are in the form of a written examination.

The study load of a course is expressed in European Credits. This is a result of the European Credit Transfer System (ECTS), which encourages acknowledgement of study results between higher education institutions within the European Union. The study load for one educational year is 60 EC. These ECs give an indication of the weight of a certain part of the course. One EC involves approximately 28 hours of study. These 28 hours include all time spent on the course: lectures, self-education, internship, practicals, examinations, etc.

1.4 ADMISSION TO THE PROGRAMME

There are several ways to be admitted to the MSc programme Materials Science and Engineering. Usually the MSc programme is a continuation of an academic BSc programme, either in the Netherlands or abroad. However, the Master's programme can also be entered after completing a Bachelor's programme of a Dutch polytechnic institute or the Royal Netherlands Naval College (KIM). Admission to the MSc programme Materials Science and Engineering is described in the following two subsections.

Academic Bachelor's Degree
Applicants (both foreign and Dutch) seeking admission to the MSc programme in Materials Science and Engineering must possess a BSc degree in an appropriate scientific or engineering subject. Upon entry, students are expected to be familiar with the essentials of mathematics, physics, chemistry, thermodynamics and heat and mass transport phenomena. Previous courses in Materials Science are desirable, but not essential, since the first semester is especially designed to offer each student a personalised programme to overcome possible knowledge gaps.

The BSc degrees potentially suitable for direct entry to this MSc programme include:
- Materials Science and Engineering
- (Applied) Physics
- Chemistry and Chemical Engineering
- Civil Engineering
- Mechanical Engineering
- Marine Technology
- Aerospace Engineering

Students holding one of the above degrees issued by a Dutch university or a university of the IDEA League are automatically admitted. All other students are selected on an individual basis by the Board of Examiners. For more information, contact the Master's Coordinator, Dr. M. Janssen (m.janssen@tudelft.nl).

Bachelor's Degree of Dutch Polytechnic Institute (TH)
Students holding an appropriate Bachelor's degree of a Dutch polytechnic institute (TH) can also be admitted. Upon entry, this group of students is expected to possess a basic understanding of mathematics. The Board of

Examiners is responsible for the selection.

A number of additional modules must be taken before entering the actual Master's programme. Students are first admitted to a pre-Master's programme, comprising of modules on mathematics and materials science and a society-related module. Final admission to the Master's programme is then given after completing this pre-Master's programme.

Most modules are taught in Dutch, some in English. A summary of the modules is given in the table below.

Pre-Master's programme

Code	Name	Coordinator	EC	Schedule
WI1152TH	Analyse 1 TH	Tholen	3	4/0/0/0
WI1153TH	Analyse 2 TH	Tholen	3	0/4/0/0
WI1154TH	Analyse 3 TH	Tholen	3	0/0/4/0
WI2256TH d1	Lineaire algebra 1 TH	Van Beek	3	0/4/0/0
WI2256TH d2	DifferentiaalverglijkingenTH	Van Beek	3	0/0/4/0
TM4031TN	Materiaalkunde 2	Sietsma	5	2/6/0/0
TM4111	Fysische transportverschijnselen	Katgerman	2	0/0/0/2
MS4061	Thermodynamics and Kinetics	Sietsma	4	4/0/0/0
MS4081	Properties of Materials	M. Janssen	4	2/2/0/0
MS4101	Production of Materials	Katgerman	3	0/4/0/0
CH4011MS	Polymer Science	Picken	3	0/0/0/4
SPM9232	Complex Organisations	Van der Voort	3	0/0/3/0

It is assumed that some basic knowledge in the field of materials science (for instance as described in the book *Materials Science and Engineering, An Introduction* by W.L. Callister) has already been acquired in during the Bachelor's programme. If this is not the case, students are advised to study the content of module Materiaalkunde 1 (TM4011TU).

The total size of the pre-Master's programme is 39 EC of which 17 EC are

from modules which are part of the Master's programme. Furthermore, TH Bachelors are exempted from the 6 EC worth of elective modules in the Master's programme. This means that the entire study programme for TH Bachelors amounts to 39 + 120 -17 - 6 = 136 EC.

Note that, while following the pre-Master's programme, the TH Bachelor can choose to take additional modules from the Master's programme. However, this will be difficult if he does not have a sound knowledge of mathematics.

1.5 MSC PROGRAMME MATERIALS SCIENCE AND ENGINEERING

- Coordinator of the MSc-MSE programme is Dr. M. Janssen, tel. +31 (0)15 27 85866, m.janssen@tudelft.nl

Materials Science and Engineering is an interdisciplinary field covering the study of the physical, chemical and mechanical aspects of material properties. It combines this with training in production techniques and material selection for a wide range of applications. Students learn to understand the behaviour of materials under different conditions and assess their suitability in products and industrial processes. More specifically, they study how to design material properties at nano and micro levels to suit applications on different scales. With a strong focus on the design of new materials, the programme finds itself at the forefront of modern technology. Covering subjects from atoms to applications, from material design to disposal, it attracts students from fundamental science as well as applied engineering backgrounds.

The aim of the programme is to offer students high-quality, multi-disciplinary education, and to turn out graduates capable of making immediate and significant contributions to a wide range of industrial and academic areas at a global level. The objectives are:

1. to provide students with a sound and thorough understanding of the underlying scientific and engineering principles involved in Materials Science and Engineering
2. to enhance knowledge of materials design, selection, processing and characterisation with relevance to a broad range of industrial and other applications

3. to build up awareness of the environmental, economic and human aspects of materials selection, usage, recycling and disposal.
4. to provide students with skills in the planning, execution and reporting of materials processing, characterisation, and implementation for relevant applications

The two-year programme is taught in English and incorporates a combination of academic learning and active research. Course modules are delivered by lectures, workshops and seminars. Assessment is based on written and oral examinations, course work and a thesis derived from the final research project. The programme is structured around a Generic Course (60 EC) which provides the basic knowledge required by all graduates in Materials Science and Engineering, a Specialisation Course (14 EC) focusing on a selected area of interest, Elective modules (6 EC) to cater for the broad-ranging interests of many students, and a Research Project (40 EC).

1.5.1 MSC PROGRAMME STRUCTURE

Generic Course, Individual Programme (30 EC) **1st year, 1st semester**
Students embarking on the programme are qualified in a wide range of areas from applied engineering to more fundamental sciences. So each student receives an initial, personalised assessment which serves to create a tailored introductory programme for the first six months. This consists of modules not yet covered at Bachelor level and required for the second semester.

Generic Course, Core Programme (30 EC) **1st year, 2nd semester**
The second semester of the first year comprises a compulsory set of lecture modules focusing on Materials Science and Engineering fundamentals. This so-called Core Programme offers a firm grounding upon which the student can develop more specialised or wider ranging interests.

Specialisation Course & Electives (14 EC & 6 EC) 2nd year
In the second year, students select a Specialisation Course based on their interests. Each course focuses on science, engineering and application-related issues in its own area. In addition some elective modules are selected, which also include the possibility of an internship in the industry.
The Specialisation Courses are:
1. Metals Science and Technology (MST)
2. Advanced Functional Polymers (AFP)
3. Materials for Energy and Environmental Impact (MEE)
4. Materials in Art and Archaeology (MAA)
5. Management of Technology (MoT)

Research Project / Thesis (40 EC) **2nd year**
The Research Project is the final programme component, during which the student performs a literature survey and independent scientific investigation that leads to a thesis. This thesis may relate to the Specialisation Course chosen or another specific area of interest. The research project can be undertaken in one of the Materials Science and Engineering research groups, in another research group of Delft University of Technology, outside the university in an Industrial environment, or in collaboration with another educational institute.

1.5.2 MSC PROGRAMME CONTENT

A. Generic Course

First Semester - Individual Programme
Materials Science and Engineering is a highly multidisciplinary field. In many cases, students, from "neighbouring" disciplines, like physics or mechanical engineering, develop an interest for materials through their experience with the behaviour of materials in their own discipline. The Master's programme Materials Science and Engineering appreciates this by starting off with an Individual Programme: a flexible first semester with ample possibilities for fine-tuning the educational needs of the individual student. After completion of this semester, students from various disciplines will have reached the common level of knowledge that is needed for the remainder of the Generic Course, the Core Programme offered in the second semester and containing identical modules for all students.

The programme that is offered in the first semester can be subdivided into

two blocks (30 EC each), "Materials Science" and "Materials Engineering" to cater for those with an engineering-related or science-related background respectively.

Materials Science Block

Students holding a Bachelor's degree in an engineering-related field will often have a limited background in materials science and the underlying physics. These students will typically follow a programme which is based on the Materials Science block, consisting of the following modules:

Code	Name	Coordinator	EC	Schedule
MS4021	Structure Characterisation	Sloof	5	4/4/0/0
MS4031	Waves	Richardson	3	4/0/0/0
MS4041	Structure of Materials	Sietsma	5	0/4/0/0
MS4051	Physics of Materials	Böttger	6	4/4/0/0
MS4061	Thermodynamics and Kinetics	Sietsma	4	4/0/0/0
MS4181	Mesoscopic Structures	Goossens	3	0/4/0/0
MS4121	Practicals Materials Science	Hermans	4	0/x/0/0

Materials Engineering Block

Students holding a Bachelor's degree in the field of fundamental sciences will often have a limited background in engineering-related subjects. These students will typically follow a programme that is based on the Materials Engineering block, consisting of the following modules:

Code	Name	Coordinator	EC	Schedule
MS4071	Materials in Art and Design	Dik	3	4/0/0/0
MS4081	Properties of Materials	M. Janssen	4	2/2/0/0
MS4091	Joining	Richardson	4	0/4/0/0
MS4101	Production of Materials	Katgerman	3	0/4/0/0
MS4151	Recycling of Engineering Materials	Yang	3	0/4/0/0
MS4161	Designing (with) Materials	Katgerman	10	x/x/0/0
MS4171	Durability	De Wit	3	4/0/0/0

Each student will follow an individual programme composed of modules from these two blocks, tailored to his or her personal situation.

Second Semester – Core Programme

The Core Programme of the second semester focuses on Materials Science and Engineering fundamentals. It offers students a firm grounding upon which they can build more specialised or wider ranging interests. This programme comprises the following, compulsory lecture modules (total of 30 EC):

Code	Name	Coordinator	EC	Schedule
MS3011	Semiconductor Principles and Devices	Thijsse	3	0/0/4/0
MS3021	Metals Science	Richardson	4	0/0/4/0
MS3031	Computational Materials Science	Thijsse	4	0/0/0/4
MS4011	Mechanical Properties	M. Janssen	3	0/0/4/0
MS4111	Thin Film Materials	G. Janssen	3	0/0/0/4
CH4011MS	Polymer Science	Picken	4	0/0/0/4
CH4021MS	Ceramic Science	Goossens	3	0/0/4/0
WM0329ST (§)	Ethics & Engineering	Zandvoort	3	0/0/x/0
SPM9232 (§)	Complex Organisations	Van der Voort	3	0/0/3/0

§ Students who started before 2006 instead take the module WM0710TU, Technology and Society, Wiersma, 6 EC, 10/0/0/0

B. Specialisation Course & Electives

Within the space of the Electives (20 EC), it is compulsory to choose a Specialisation Course of 14 EC. The available courses and the modules they contain are described below.

Metals Science and Technology (MST)

The aim of the MSc specialisation "Metals Science and Technology" is to focus on design, characterisation, engineering, production and performance of metallic microstructures to meet the challenges of our future.

The principal subject areas within this profile fall under the broad headings of:

- Production and processing of metals
- Properties of materials and their microstructure
- Performance of metals

The Metals Science and Technology activities have strong interfaculty links within Delft University of Technology as well as collaborative links with the Netherlands Institute for Metals Research (NIMR) and with the industry.

Content of Specialisation Course *Metals Science and Technology*

Code	Name	Coordinator	EC	Schedule
MS3412	Processing of Metals	Katgerman	4	4/0/0/0
MS3442	Relation between Properties and Microstructure	Sietsma	4	4/0/0/0
MS3461	Corrosion and Protection against Corrosion	De Wit	3	4/0/0/0
MS3452	Total Performance Approach: Case Studies	Katgerman	3	2/0/0/0

Enquiries: Prof. L. Katgerman, L.Katgerman@tudelft.nl.

Advanced Functional Polymers (AFP)

The mission of the Specialisation Course in Advanced Functional Polymers is to educate students to design, characterise and process functional polymer materials for optical, electronic and high-performance mechanical applications.

The profile covers activities in the important professional fields of:

- Polymer Chemistry/Synthesis
- Polymer Physics/Characterisation
- Polymer Engineering/Processing

The Polymer Materials and Engineering activities have strong interfaculty links within Delft University of Technology as well as collaborative links with other Dutch Universities and with the industry.

Content of Specialisation Course *Advanced Functional Polymers*

Code	Name	Coordinator	EC	Schedule
CH4041MS	Structure Formation and Characterisation	Jager	4	4/0/0/0
CH4131MS	Polymer Structure and Dynamics	Mendes	3	4/0/0/0
CH4141MS	Advanced Polymer Applications	Bergsma	4	4/0/0/0
CH4091MS	Polymer Processing and Blends	Picken	3	4/0/0/0

Enquiries: Prof. Dr. S.J. Picken, S.J.Picken@tudelft.nl.

Materials in Art & Archaeology (MAA)

The objective of the Specialisation Course "Materials in Art & Archaeology" is to instil in students an awareness and knowledge, at an academic level, of the applications of Materials Science and Engineering in these fields.

The Specialisation Course covers activities in the important professional fields of:

- Materials: History, Properties, Modern analysis techniques
- Art history and Archaeology, Authenticity research
- Materials degradation and countermeasures

The Materials in Art & Archaeology activities have strong collaborative links with other universities, with the Netherlands Institute for Cultural Heritage (ICN) and with museums.

Content of Specialisation Course *Materials in Art & Archaeology*

Code	Name	Coordinator	EC	Schedule
MS3221	History of Materials Production and Usage	Dik	3	x/0/0/0
MS3471	Modern Analysis Techniques & Authenticity Research	Dik	4	x/0/0/0
MS3252	Materials Degradation and Countermeasures	Dik	3	x/0/0/0
MS4201	Art History and Archaeology	Dik	4	x/0/0/0

Enquiries: Dr. J. Dik, J.Dik@tnw.tudelft.nl.

Management of Technology (MoT)

The Specialisation Course "Management of Technology" supplies MSc students with a basic knowledge, insight and competence of a non-technical nature in the fields of (i) management of projects, innovation, knowledge and research & development, (ii) strategy of enterprises, (iii) corporate structure, (iv) decision-making and (v) patents. This Specialisation Course adds a branch to the student's knowledge of Materials Science and Engineering that is very useful for a role in the industry and organisations, as well as in entrepreneurship.

Content of Specialisation Course *Management of Technology*

Code	Name	Coordinator	EC	Schedule
MOT9501	Advanced Project Management & Corporate Structure	Den Hartigh	6	0/0/x/0
MOT2420	Knowledge Management and R&D Management	Andriessen	6	0/0/0/x
WM0621TU	Managing Innovation	Kleinknecht	3	?

Enquiries: P.A. van der Duin, P.vanderDuin@tbm.tudelft.nl.

Materials for Energy and Environmental Impact (MEE)

The generation and storage of energy is of paramount importance in today's world. It affects the structure and nature of modern society and has an increasing impact on our environment. In turn, energy generation and storage is critically dependent on the availability of materials with appropriate properties. This Specialisation Course examines the use of materials in different energy systems, including consideration of the production and disposal of materials as well as wider aspects of sustainable technologies.

Content of Specialisation Course *Materials for Energy and Environmental Impact*

Code	Name	Coordinator	EC	Schedule
WB4438	Energy, Society and Sustainability	Verkooijen	3	0/0/4/0
WB4422	Thermal Power Plants	Verkooijen	4	0/0/4/0
ET4149	Solar Cells	Zeman	3	0/0/0/x
MS4211	Materials at High Temperature	Verkooijen	3	?
MS4221	Materials for the Hydrogen Economy	Sloof	2	?

Enquiries: Prof. Dr. I.M. Richardson, I.M.Richardson@tudelft.nl.

Elective Modules

In addition to one of these Specialisation Courses, 6 EC of other elective modules should be chosen. Please find below an overview of elective modules offered from within Materials Science and Engineering.

Code	Name	Coordinator	EC	Schedule
CH3471	Polymer Chemistry	Jager	3	app
CH4122MS	Practicals Characterisation & Processing	Picken	3	app
CH4151TU	Nanostructured Polymers	Mendes	3	2/2/0/0
MS3401	Primary Metals Production	Boom	3	0/0/0/2
MS3421	Developments in Production & Processing	Zhou	2	3/0/0/0
MS3432	Determination of Microstructure	Sloof	4	0/0/2/2
MS3912	Internship	Sietsma	6	pro
MS4131NS	Solid State Physics II	Sluiter	3	x/0/0/0
MS4191	Materials for Conventional Energy Production	Richardson	2	app
NS3021	Supramolecular Chemistry	Picken	3	0/0/2/2

app = an appointment should be made first with the module coordinator
pro = a proposal should be submitted first to the Board of Examiners

Also acceptable are all other modules of the Master's programme Materials Science and Engineering not already taken by the student, i.e. modules

from other Specialisation Courses or from the individual programme of the Generic Course.

In general, selected elective modules should increase the knowledge and skills of the student. Students should therefore take notice of the following:

1. Any of the following items can be regarded as an elective module, provided its level and weight are sufficiently high:
   a) A module scheduled at Delft University of Technology.
   b) A special assignment or project defined and supervised by a scientific staff member of the Department MSE or someone participating as lecturer in the Master's programme MSE.
   c) An internship ('stage') involving a research project, organised by an external organisation or institution, supervised by local staff, and approved and assessed by a scientific staff member of the Department MSE or someone participating as lecturer in the Master's programme MSE.
2. Before starting elective modules, each student should present his or her elective programme to the Board of Examiners for approval. Changes can be allowed at a later stage, but only after renewed approval by the Board of Examiners.
3. Cooperation between students during a minor part of an assignment or project is allowed, but each elective module is assessed on an individual basis. This means that each assignment or project should be a unique piece of work and lead to an individual report (and presentation).
4. A student can earn no more than 6 EC as part of his or her full elective modules programme.

Notes:

a) Student activities that are mainly undertaken to acquire work experience or to make a first acquaintance with job conditions cannot be regarded as elective modules.
b) The Master's thesis supervisor (afstudeerdocent) has no role in approving or disapproving a student's proposed programme of elective modules. This is simply because students often start elective modules without already having chosen a thesis supervisor. The thesis supervisor may, however, require passing certain modules as part of the thesis research project.

C. Research Project

During the final programme component (40 EC) the individual student undertakes a literature study and an independent scientific investigation leading to a thesis. This research project may be related to the chosen Specialisation Course, but can also concern another Materials Science and Engineering subject of interest. The research project can be undertaken in one of the Materials Science and Engineering research groups, in another research group of Delft University of Technology, outside the university in an industrial environment, or in collaboration with another educational institute. The thesis has the same emphasis on original, independent research as a PhD thesis, but is less comprehensive. This final research project culminates in a presentation and oral defence of the written thesis.

Potential research projects include:

- Laser-plasma welding
- Computer simulation of friction and adhesion
- New nanostructured ultra hard coatings
- Design of X-ray equipment for use on Mars
- Hydrogen storage for energy applications
- Authenticity of Van Gogh paintings
- Nanostructure of soap, water and oil
- Single-grain observation of phase transformation
- Towards new light-emitting polymers
- Modelling of microstructure during solidification
- Fatigue crack initiation in TRIP steel

1.5.3 ANNOTATION SUSTAINABLE DEVELOPMENT

The annotation Sustainable Development can be completed as an addition to the specialization programme. After completing the annotation, the student receives a supplement to the MSc degree, which declares a more than average knowledge about that subject.

The study programme, including the annotation, has to comply with the requirements of section 1.2 (120 EC).

Sustainable development is becoming of increasing importance. Questions are: "What will the world look like in 50 years?" or: "What should the world look like in 50 years?". The curriculum is based on elective modules, a colloquium and the MSc thesis. The aim of the colloquium is to develop broad knowledge of all kinds of environmental and technical issues and to place this in perspective.

The curriculum should include:

- a colloquium in sustainable development of 3 EC
- modules to be chosen from the following two clusters (at least 6 EC from each cluster):
  - Technology and Design
  - Organisation and Society
- an MSc thesis, which shall be devoted also to sustainable development. The coordinator will approve the problem formulation of the thesis and the extent to which sustainable development is integrated into the thesis. The coordinator will further determine whether the theme of sustainable development has been sufficiently integrated into the problem formulation, the execution of the project and the project report.

Further information about the available courses can be obtained from www.odo.tudelft.nl.
For enquiries concerning the colloquium and enrolling: Gertjan de Werk, g.dewerk@tbm.tudelft.nl.

The following three courses (a total of 10 EC) can form part of an annotation Sustainable Development:

- WB4438 Energy, Society and Sustainability (3 EC)
  Lecturer: Prof. Dr.. A.H.M. Verkooijen
- SM1551 Molecular Engineering I (3 EC)
  Lecturer: Prof. Dr. J. Schoonman
- MSxxxx Materials for Sustainable Energy Storage and Conversion (4 EC)
  Lecturers: Prof. Dr. I.M. Richardson and Dr. W.G. Sloof

1.5.4 TECHNICAL UNIVERSITY TEACHER COURSE (TULO)

Graduated Masters of Science Systems and Control, Mechanical Engineering or Maritime Technology have the opportunity of participating in a special course to become a high school teacher in science or mathematics.

There is a standard course, which includes 60 EC. A maximum of 30 of these ECs can be integrated in the MSc study programme, the other, at least, 30 EC have to be earned in a post-MSc course.

For more information on admission to the programme and the study programme, please contact the office of TULO.

Office of TULO
Faculty TBM
Jaffalaan 5
2628 BX Delft
Tel: +31 (0)15 27 82786 / 83768
E-mail: j.geerlings@tudelft.nl

1.6 STUDY AND INTERNSHIP ABROAD

Study abroad offers a lot of attractive prospects. You become acquainted with a different (organisational) culture, a different university life and a different educational system. Besides you expand your personal network, you learn to live within a foreign environment, and you improve your knowledge of languages. To put it briefly: a period of study abroad will make a valuable contribution to your personal education and you will draw much benefit from it during your search for a permanent job.

You can make use of one of many exchange agreements with European and non-European universities for your study at a foreign university. Within such an agreement you do not pay the foreign university any tuition fee. In addition to this, grants are available for financing the additional expenses for staying abroad. For initial information on studying abroad you are advised to visit the Back Office International Programmes of the Student Facility Centre. Much documentation about study abroad is available from

this Centre, like information on all universities with which exchange agreements exist, possibilities of financing, and travel reports from students. Information is also available on the website: www.sfc.tudelft.nl.

If you have a clear idea about where you want to go to, you can ask the Coordinator for International Exchange for advice about your programme at the foreign university and about the recognition of your results at the host university. Your graduation professor will judge your work afterwards according to the rules you agreed upon, prior to departure. The foreign programme should at least contribute 12 EC to the Master's programme. To arrange everything you have to do a lot yourself. Therefore you have to take a preparation period into account of preferably a year, but at least half a year.

Internship
Usually an internship is arranged via one of the staff members of the department. In addition to this you can visit the Information Centre of the Student Facility Centre (see above). They offer a lot of information, not only on a large number of companies abroad, but also on finance-related affairs, working permits, visa, etc. Additional information is available from the website: www.sfc.tudelft.nl.

International Coordinator 3mE
Mrs M.P.I. Toppenberg
Room 8C, ground floor
Mekelweg 2
2628 CD Delft
Tel: +31 (0)15 27 86959
Fax: +31 (0)15 27 88340
E-mail: m.p.i.toppenberg@tudelft.nl

1.7 ENROLLING FOR MODULES AND TESTS

Usually it is necessary to enrol for modules and tests.

Modules
Students can enrol for specific modules through Blackboard. Most of the communication between lecturer and students runs via Blackboard announcements. Exchange of information, assignments and reports often takes place via Blackboard also.

Tests
Enrolling for tests is compulsory and can be done at the TAS site (Tentamen Aanmeld Systeem www.tas.tudelft.nl). This should be done two weeks before the test takes place at the latest, otherwise the test will not be accounted for by the lecturer. If a student has enrolled, but decided not to do the test, the student must cancel this at least one week before the test takes place.

1.8 PASS RULES AND CRITERIA FOR 'CUM LAUDE'

Pass rules
To pass a course or assignment, a grade of at least 6 is necessary. It is possible to pass the MSc examination with one grade of 5. The grades are rounded off to the nearest integer.

Re-sits
For those subjects subject to written examinations, the student will have at least one opportunity per year to do a re-sit. Re-sits generally take place in the first period after the regular period for a certain examination. Re-sits for the tests given in period 2B are scheduled in the second half of August.

Examination
On completing the programme, the student should apply for the Master's examination by means of a form, available from the Education Support Staff.

'Cum laude'
At the discretion of the Board of Examiners, a candidate for the Master's degree can receive the designation "cum laude" if he or she meets the following conditions:

a) the mark awarded to the components specified in the Master's examination implementation procedures shall average no less than 8, excluding the Master's Thesis in a list that contains no marks below 6;
b) the candidate concerned shall have completed the Master's degree programme in no more than three years;
c) the mark awarded for the thesis project shall be no less than 9;
d) the examiner of the graduation assignment shall have submitted a proposal for the award of "cum laude".

This is part of the "Regulations and guidelines for the Board of Examiners", appendix 6.1 of this study guide.

1.9 HONOURS TRACK

For excellent students it is possible to follow an honours track for their programme. An honours track is a special individual programme, in addition to the regular Master's programme, of 30 EC (840 hours) and is related to Materials Science and Engineering and / or to the role of technology within society. The extra programme has to be completed during the Master's programme of the student. Students who have successfully completed their honours track receive a special certificate from the university. Students who have finished the Bachelor's programme with a weighted averaged mark of 7.5 or higher and students who have shown an excellent performance during the first semester (no fails and weighted averaged mark 7.5 or higher), are eligible for following the honours track in their Master's programme. The Director of Education is responsible for the programme of each individual honours track.

1.10 PROFILE OF THE ENGINEER MATERIALS SCIENCE & ENGINEERING

The MSc programme in Materials Science and Engineering at Delft University of Technology combines the skills and management of a standard engineering programme with the knowledge of the various types of structures, mechanisms and limits that govern our material world, applying physics, chemistry and mechanical engineering with the depth and insight close to that expected from Bachelors in physics, chemistry and mechanical engineering.

Completion of the programme prepares the graduates for contributions and advancements related to the field of materials science and engineering in any industry, research institute or academia. Such contributions and advancements are the development of new materials, the understanding and improvement of existing materials, their properties, their production and processing. Graduates find professional careers in materials production, development and industry-led research or – as a materials expert – in high-level consultancy and management functions. Many work at steel and aluminium producing companies. Other fields include higher education and research, polymer and recycling industries, industries for high tech micro-devices of biomedical prostheses, patent offices, authenticity research of art works and support for museum & archaeological field studies.

2 Organisation

2.1 FACULTY

The faculty 3mE offers the study programmes Biomedical Engineering (BME), Materials Science and Engineering (MSE), Mechanical Engineering (ME), Marine Technology (MT), Systems and Control (SC) and Offshore Engineering (OE). The faculty also participates in the interfaculty MSc programmes Transport, Infrastructure and Logistics (TIL).
3mE is an abbreviation of Mechanical, Maritime and Materials Engineering.

The organisation of the faculty and the structure of the educational and Board of Examiners of the faculty are described in the faculty regulations. The dean has the final responsibility for the faculty. He is assisted by the Director of Education. Together with the department heads they form the management team. The dean is supported by the Faculty staff and is advised by a number of advisory boards.

Dean
Prof. M. Waas, room: 8F-1-14,
Tel: +31 (0)15 27 85401,
E-mail: m.waas@tudelft.nl

2.2 EDUCATION AND STUDENT AFFAIRS

The education and student affairs staff is responsible for providing support to Mechanical Engineering students. Students can obtain information on all issues related to the Mechanical Engineering programmes. The department consists of the following staff:

Dr. Eric Logtenberg
Manager Department O&S
E-mail: e.h.p.logtenberg@tudelft.nl
Tel: +31 (0)15 27 89520

Dorothea Brouwer
Assistant Coordinator Education
E-mail: d.j.w.m.brouwer@tudelft.nl
Tel: +31 (0)15 27 83302

Fatma Çinar
Assistant International Coordinator
E-mail: f.s.cinar@tudelft.nl
Tel: +31 (0)15 27 86753

Teuni Eden
Study Adviser
E-mail: t.eden@tudelft.nl
Tel: +31 (0)15 27 82176

Ewoud van Luik
Coordinator Education
E-mail: e.p.vanluik@tudelft.nl
Tel: +31 (0)15 27 85734

Susanne van der Meer
Secretary and Quality Assurance
E-mail: s.d.w.m.vandermeer@tudelft.nl
Tel: +31 (0)15 27 85499

Dr. Dick Nijveldt
Educational Adviser
E-mail: d.nijveldt@tudelft.nl
Tel: +31 (0)15 27 85921

Mascha Toppenberg
International MSc Coordinator
E-mail: m.p.i.toppenberg@tudelft.nl
Tel: +31 (0)15 27 86959

Prof. Dr. Peter Wieringa
Director of Education
E-mail: p.a.wieringa@tudelft.nl
Tel: +31 (0)15 27 85763

Jaap v.d. Zanden
Study Adviser
E-mail: j.vanderzanden@tudelft.nl
Tel: +31 (0)15 27 82996

Education and Student Affairs
Mekelweg 2
2628 CD Delft
Location 8C, ground floor
Tel: +31 (0)15 27 85499
Fax: +31 (0)15 27 88340

2.3 EDUCATION COMMITTEE

The education committee advises the dean and the director of education on the contents and the structure of the study programme and the examinations. The education committee exists of four lecturers and four students. In addition the director of education, the education adviser and a study adviser take part in the meetings.

Chairman
Prof. Laurens Katgerman
Tel: +31 (0)15 27 82249
E-mail: L.Katgerman@tudelft.nl

2.4 BOARD OF EXAMINERS

The Board of Examiners consists of all lecturers involved in the study programme, as mentioned in paragraph 1.5.
The Board of Examiners is responsible for the rules and regulations of the examinations and the assessment of the examination results. Requests for a deviation to the standard programme can be submitted to the Board of Examiners.

Chairman
Prof. Dr. Barend J. Thijsse
Tel: +31 (0)15 27 86730
E-mail: B.J.Thijsse@tudelft.nl

Secretary
Ewoud P. van Luik
Tel: +31 (0)15 27 85734
E-mail: e.p.vanluik@tudelft.nl

2.5 STUDENT SOCIETY "HET GEZELSCHAP TUBALKAÏN"

'Het Gezelschap Tubalkaïn' ('Tub' for short) was founded in 1952 to represent the interests of all Materials Science and Engineering students. The name 'Tubalkaïn' finds its origin in the Bible. In Genesis (4:22) Tubalkaïn is referred to as: a master of everybody who works in copper and iron.
Tub has a continuous 'open door' policy, encouraging students to drop by with queries and comments. Obviously, you can also come in for a friendly chat and laugh. Materials Science students account for 90% of Tub membership.
Tub organizes excursions on a regular basis. These aim to familiarise students with the work field. Every other week there is a 'borrel' (drinks reception) in order to promote friendly relations between students and staff. These occasions are ideal opportunities to pick the brains of more senior students, and to have informal discussions with lecturers and other members of staff.
Don't forget! You can always drop by when you have questions or when you are just in the mood for a chat.

Student Society "Het Gezelschap Tubalkaïn"
Tel: +31 (0)15 27 82245
E-mail: tubalkain@tnw.tudelft.nl
Website: www.tubalkain.com

2.6 STUDENT GUIDANCE

2.6.1 MSC COORDINATOR

The MSc coordinator is the person for questions or problems related to the individual study programme and for monitoring progress.
Every student can consult the MSc coordinator to set up an individual study programme using the following ingredients: compulsory courses, current ideas about the theme of the thesis project, the Specialisation Courses that bridge the gap between the compulsory courses and the thesis project and the use of the free elective space. The student submits his/her plan for approval to the Board of Examiners.
In order to finish the programme in two years, the student should plan to take an average of 30 credits worth of courses per semester. At the end of the first year, the student and the MSc coordinator will discuss his/her progress and planning. Also, the student is asked to fill in a questionnaire to enable evaluation of the Master's programme.

The MSc coordinator is Dr. Michael Janssen
Tel: +31 (0)15 27 85866
E-mail: m.janssen@tudelft.nl

2.6.2 STUDY ADVISER

For assistance and advice to students the faculty has two study advisers. The study adviser is the person to see about questions or problems related to your studies or issues which may influence your ability to study.
The study adviser also acts as a confidential contact to students.

Individual help and advice

The study advisers have no teaching responsibilities and can, therefore, devote themselves to helping individual students solve problems which may be an obstacle to their academic progress. They are also involved in several committees and are in contact with the lecturers, so they are always up-to-date with the latest developments in the Mechanical Engineering programme. They are in contact with the study advisers at the other TU Delft faculties and with those outside the University; they know what is going on in their field.

Personal circumstances

Personal information will often be discussed during a talk with a study adviser. You can be sure that this information will be dealt with confidentially. This kind of information will only be used with your permission for requests to make an exception to TU Delft or faculty regulations.

Advice to the Board of Examiners, a professor, ...

Under certain conditions a study adviser can decide to advise for example the Board of Examiners to change a decision in favour of a specific student. If necessary the study adviser will act as intermediary between student, dean, psychologists and family doctors. The degree to which the study adviser helps a student is up to the student. The study adviser keeps an eye on the academic progress of all students and may contact them if necessary, but you are strongly recommended to contact the study adviser yourself when facing a question or problem. Waiting often only makes the problem worse. You can contact the two study advisers of the faculty with any questions. They also have their own specialisms.

Foreign Student Financial Support (FSFS)

The Delft University of Technology provides financial assistance to foreign students in cases where they face a study delay due to special circumstances like an illness, a physical or sensory disorder, mental problems, and insufficient organisation of the educational programme by the faculty.

Mrs Teunie Eden, study adviser for all 3me BSc and MSc students, as well as harassment counsellor (see below)
Specialisms: Exchange students, International MSc students, social programme international students.
Mekelweg 2,
Room 8C, ground floor
E-mail: t.eden@tudelft.nl
Tel: +31 (0)15 27 82176

Jaap v.d. Zanden, study adviser for all 3me BSc and MSc students
Specialisms: Graduate students, polytechnic high school students, quality control, student mentors.
Mekelweg 2, 8C, ground floor
Tel: +31 (0)15 27 82996
E-mail: j.vanderzanden@tudelft.nl

Dyslexia

Students suffering from dyslexia usually have problems reading and understanding long texts. This may hamper 'normal' academic progress. These students are therefore advised to contact one of the study advisers and to set up a remedial plan. Important issues are:

- A planned study delay often helps
- If necessary, extra time for examinations can be requested
- Studying with a fellow student often improves academic progress
- IBG offers extra student grants

2.7 WORKING CONDITIONS, RSI AND HARASSMENT

RSI (Repetitive Strain Injury) is a well-known problem. Within TU Delft, the number of complaints caused by RSI is increasing. Too many employees and students still neglect the first symptoms of RSI, not knowing where to find answers to their questions. A lot of information on this issue is available on the Internet. An example is www.rsi.pagina.nl. Free software can be downloaded from the 3mE website, which can help you prevent RSI: go to www.3me.tudelft.nl > facilities.

Causes

There are two mechanisms that cause RSI:

- Repetitive tensing of muscles in fingers and hands, without taking breaks, can cause an overload in these muscles. Friction between muscles, tendons and bones can eventually cause damage.
- Constant tension of muscles in the neck, shoulders and arms restricts blood circulation and damages nerves. This results in cold and tingling fingers. Mental stress and poor posture increase this effect.

Symptoms

There are various symptoms that indicate RSI: pain, stiffness, tingling and a loss of strength can occur in the neck shoulders, arms, wrists, hands and sometimes even in the legs. Without rest, these symptoms will only get worse.

Prevention

How to prevent RSI:

- Intersperse repetitive movements, like typing and using a mouse, with non-repetitive ones, like walking to the printer or reading documents.
- Take regular breaks. You are advised to take a 10-minute break after every two hours of work and a 20-second break after every 10 minutes of work in order to improve blood circulation. It is even better to do exercises during these breaks. Anti-RSI software can help in this respect.

- It is strongly discouraged to do more than six hours of computer work a day.
- Make sure that you maintain a good working posture. Arrange the workstation to suit you. Sit straight in front of your monitor and keyboard. The height and distance of the monitor and desk should be sufficient. A chair with a convex back at waist height is favourable.
- Try not to work under stress caused by deadlines or private problems.

Do not ignore the symptoms of RSI. If you have any questions, please contact the following people:

- Study Adviser
- Health & Safety Adviser: Leen Paauw, e-mail l.paauw@tudelft.nl
- Student Health Care (SGZ), tel: +31 (0)15 21 21507, e-mail studentenartsen@sgz.nl
- Student Facility Centre (SFC), e-mail www.sfc.tudelft.nl
- VSSD support, tel: +31 (0)15 27 82057, e-mail www.vssd.nl

Harassment

Harassment is inappropriate, unwanted behaviour that is offensive, frightening, or in any way distressing. Teasing, mocking, gossiping, bullying, sexual or racial intimidation, violence and discrimination are all forms of harassment.

Harassment Counsellor

If you have problems you can turn to the Harassment Counsellor appointed by the Faculty. These counsellors operate on a strictly confidential basis and can offer advice, information, support and assistance to victims of harassment. When necessary they may enlist the assistance of mediators. They can also assist and guide you should you wish to submit your complaint to the TU Delft Complaints Committee. All actions are subject to your permission and approval. If you experience any problems in this area, do not hesitate! Everyone at TU Delft has the right to feel safe and respected! The Harassment Counsellor of our Faculty is:

Mrs T. Eden
Mekelweg 2
Room 8C, ground floor
Tel: +31 (0)15 27 82176
E-mail: t.eden@tudelft.nl

2.8 QUALITY CONTROL

The quality of the education is continuously monitored and evaluated. This is done by the faculty itself and by external organisations. The results of the evaluations are public. A summary of these results can be found on the Internet. Based on these results, the Education Committee and the Director of Education advise the dean.

Internal Quality Control:

- In order to evaluate the opinion of the students, a **course evaluation system** is in place. This system gives all students the opportunity of giving their opinion on the education programme. The study programme and courses are evaluated each year by means of a questionnaire.
- **Evaluation meetings** with students and lecturers.
- Submitting and dealing with **complaints**. These complaints can be lodged with the student society or the Director of Education.
- The faculty regularly evaluates its education programme and research in self-assessments.

External quality control:

- The programmes are accredited every five years by the NVAO (Nederlands Vlaamse Accreditatie Organisatie). In preparation of the accreditation, the programme is evaluated by a visitation committee formed by QANU (Quality assurance Netherlands Universities)

2.9 INFORMATION SERVICES

Study guide

This study guide is the main source of information on the degree programme and is available to all students from the Service Desk of the Faculty. The most recent information however is always available on the faculty website. Announcements which are of importance for the study, like changes to the schedules, are posted well in advance on the Faculty homepage and on Blackboard. Schedules of lectures, assignments and examinations are available on the campus site. Any changes to these schedules are given on Blackboard. Grades can also be found on Blackboard.
Information not directly related to the programme, like information from the student society 'Leeghwater', will be published on notice boards. Members of 'Leeghwater' are also kept informed by e-mail.

2.10 FACULTY REGULATIONS

- It is not allowed to smoke within the faculty building.
- Students have to follow the instructions of academic and support staff.
- Upon request of a staff member, students shall identify themselves by showing the campus card.
- Students shall be on time, before the lecture, assignment, instruction or meeting starts. The lecturer or student assistant may refuse admission to students who are late.

- Regular times for lectures to start are:

Lecture	Start	End
1st hour:	8.45	9.30
2nd hour:	9.45	10.30
3rd hour:	10.45	11.30
4th hour:	11.45	12.30
5th hour:	13.45	14.30
6th hour:	14.45	15.30
7th hour:	15.45	16.30
8th hour:	16.45	17.30

- All bicycles are to be parked in the racks provided.
- Personal belongings can be stored in lockers located in the main hall. In the corridor alongside lecture rooms A – F bigger lockers are available, suitable for storing helmets. All lockers must be emptied at the end of the academic year, before 15 July and the keys should be returned. Lockers still in use after 15 July will be emptied and provided with a new lock at the student's expense.
- Eating and drinking is only allowed in the canteen, the coffee corner and in the immediate surroundings of a drinks or candy machine.
- Writing or drawing on, or intentionally etching into furniture, walls, doors or windows is prohibited.
- General waste and paper should be disposed of in bins.
- The Rules for Use of Computers, Network Connections, Printers and Plotters should be obeyed.
- Violation of rules and regulations can result in suspension or termination of facilities or services. Theft or intentional damage to Tu Delft property and serious misconduct will be brought to the attention of the proper authorities.

Internet facilities

The utilisation of Internet facilities at the faculty is subject to some regulations:

It is allowed to:

- Send e-mails to persons (or applications) from whom it can be expected that they will not consider the e-mail as annoying. Also, you can receive e-mails which can be stored temporarily in the inbox.
- Read online magazines and to place articles in it.
- Use network information services like WWW servers and FTP servers which are currently in use and those that will become available in the future. All use of services is subject to regulations.
- Use the "Intranet DUNeT" on telephones provided throughout the faculty.

It is not allowed to:

- Damage or disable facilities.
- Use available facilities in any other way than their intended use: downloading, uploading and file sharing of copyright-protected items, such as texts, audio and video files in any format is prohibited.
- Download and install any applications on the faculty computers.
- Play computer games using network facilities.
- Make excessive use of the facilities.
- Let a third party use the facilities (including fellow students).
- Do damage to or obstruct other users or equipment linked to the World Wide Web.
- Disrespect other people's privacy, for example by sending information under a false name.
- Become a member of a mailing list outside the faculty without permission of the "dutwmail director". This rule only applies to students.
- Distribute or show material that can be regarded as offensive, for example insulting phrases or pornographic images or movies.

Sanctions:

- The account is deactivated immediately after a violation has occurred.
- In case of serious or repeated violations: prohibition of the use of ICT facilities for up to a year.
- In case of any breach of the law, this will be reported to the police.
- All claims as a result of violations will be passed on to the violator.

3 Facilities

In this study guide, locations in the faculty building are indicated by means of a number and a letter between brackets which can be found on the map on the campus site of 3mE > Facilities. The floor is also indicated (BG= ground floor, 1st = first floor, etc.).

3.1 LECTURE ROOMS / MEETING ROOMS

Lecture rooms are used for lectures, presentations and instruction. The table below summarises all lecture rooms, giving their capacity and location.
Meeting rooms are available for meetings, discussions etc. for small groups of students. Reservations can be made at the Education and Student Affairs desk.

Room	**Capacity**	**Location**
A	300	6, BG
B	200	6, BG
C	150	6, BG
D	150	6, BG
E	70	6, BG
F	70	6, BG
J	50	8D, 1st
K	30	8G, 1st
L	30	8G, 1st
P	40	4

3.2 INDIVIDUAL STUDY FACILITIES

Individual study places are available at several locations in the faculty. Some of these are equipped with computers. These places are free to use, without a reservation. Places should be left clean and tidy.
In addition to the study places at the Faculty, there are individual study places in the central library. In the library you are expected to observe silence. There, the same rules apply as those for the faculty study places.

3.3 COMPUTER ROOMS

In addition to the computers at the study places, computers are also available in the computer rooms.
All computers provide access to the Internet. The computer rooms are open for use by students, unless they are being used for teaching. In that case, there is restricted access. A schedule on the door of each computer room shows when the room will be in use. The table below gives an overview of all computer rooms and their location.

Room	**Location**
Athena	building part 4, 1st
Parthemus	building part 4, 1st
Pallas	building part 4, 1st
Design studios	building part 8G, BG

3.4 RESEARCH FACILITIES

The faculty has a number of research laboratories. Students may perform part of their studies in these laboratories, like the MSc thesis or a laboratory exercise. Otherwise, the laboratories are used for research activities of PhD students and staff.

Laboratory for Joining Technology
Contact Laboratory manager: F.J.A.M. Bosman
Tel: +31 (0)15 27 84875
Location: 3B, ground floor

Laboratory for Microstructure of Metals
Contact Laboratory manager: N. Geerlofs
Tel: +31 (0)15 27 84920
Location: 3B, ground floor

Laboratory for Light Metals Processing
Contact Laboratory manager: J.P. Boomsma, MSc
Tel: +31 (0)15 27 83578
Location: 3A, ground floor

Laboratory for Resource Engineering
Contact Laboratory manager: J.A.M. van den Berg
Tel: +31 (0)15 27 82531
Location: 3A, ground floor

Laboratory for Mechanical Testing
Contact Laboratory manager: Dr. A.C. Riemslag
Tel: +31 (0)15 27 82220
Location: 3B, ground floor

Laboratory for Corrosion
Contact Laboratory manager: L. Norbart
Tel: +31 (0)15 27 82278
Location: 3A/3B, ground floor

Laboratory for Surfaces & Interfaces
Contact Laboratory manager: Prof. Dr. G.C.A.M. Janssen
Tel: +31 (0)15 27 81684
Location: 3B, ground floor

Virtual Materials Laboratory
Contact Laboratory manager: Prof. Dr. B.J. Thijsse
Tel: +31 (0)15 27 82221
Location: none

Laboratory for Surface Analysis
Contact Laboratory manager: C. Kwakernaak
Tel: +31 (0)15 27 82223
Location: 3B, 1st floor

Laboratory for X-ray Analysis
Contact Laboratory manager: P. Visser
Tel: +31 (0)15 27 82255
Location: 3B, 1st floor

Fluid Mechanics Laboratory
Contact Laboratory manager: B v.d. Velden
Tel: +31 (0)15 27 82892
Location: Leeghwaterstraat 21

Delft Bio-robotics Laboratory
Facilities Several bi-pedale robots
Contact Laboratory manager: Dr. M. Wisse
Tel: +31 (0)15 27 86585
Location: 5, 1st floor, room 03-L

Engineering Dynamics Laboratory
Facilities Dynamic test equipment and analyzing systems
Contact
Tel laboratory: 015 27 89394
Tel manager: +31 (0)15 27 86739
Location: 5, BG, room 07

Laboratory for Precision Manufacturing and Assembly
Contact J.J.L. Neve
Tel: +31 (0)15 27 86581
Location Leeghwaterstraat 37b

Laboratory for process equipment & Thermal Power Engineering
Facilities Pilot scale research equipment and utilities, Analytical equipment, Computational Tools
Contact Laboratory manager: J. v. Os
Tel: +31 (0)15 27 86921
Location: API building, Leeghwaterstraat 44

Laboratory of Systems and Control
Contact Laboratory manager: R. van Puffelen
Location: 5, BG

Mechanics of Materials Laboratory
Facilities Test machines and analyzing equipment
Contact Tel: +31 (0)15 27 89394 / 89424
Location: 5, BG, room 07

Tribology Laboratory
Facilities Tribological Test Equipment
Contact Laboratory manager: B. Hoevenaar
Tel: +31 (0)15 27 86805
Location: 5, BG, room 16

3.5 LECTURE NOTES AND BOOKS

Most lecture notes required for courses at the faculty can be bought at the 'repro', as well as some book and office supplies. Books are also available from the student society 'Leeghwater' (www.leeghwater.nl) and VSSD (www.vssd.nl).
Opening hours repro: Monday to Friday, 9:00 - 16:00.
Website: www.io.tudelft.nl/repro/
Tel: +31 (0)15 27 83062
Room: 10, BG (see campus site 3mE > Facilities)

For courses at other faculties, lecture notes can be bought at the faculties concerned:

- Aerospace Engineering
  Location: 1st floor
  Tel: +31 (0)15 27 81250
- Applied Physics
  Room no. C 057
  Tel: +31 (0)15 27 87992
- Civil Engineering
  Tel: +31 (0)15 27 81727
- Management of Technology
  Location: ground floor, next to entrance
  Tel: +31 (0)15 27 86373
- Electrical Engineering, Mathematics and Computer Science (EWI)
  Room 350
  Tel: +31 (0)15 27 87855

3.6 CATERING

The faculty offers a variety of catering facilities.

Canteen
The faculty canteen serves a wide range of lunch choices.
The canteen can be found at location 10, BG.

Coffee corner
The coffee corner offers quick snacks. The coffee corner is situated near the main entrance (8F). Chairs, tables and couches are available. Drinks and candy machines are situated opposite the coffee corner. Paying at these machines is only possible with the electronic chip card 'or chipknip'.

Faculty room
The faculty room is the place to hold symposia, meetings or graduation parties ("afstudeerborrels"). A reservation can be made at the Service Desk of the Faculty 3mE.

't Lagerhuysch
't Lagerhuysch is situated below ground level in section 8B, with access from the square in front of the faculty. Graduation parties (afstudeerborrels) can be held in the Lagerhuysch, but also symposia and meetings.
The student societies Gezelschap Leeghwater and William Froude regularly organise activities. A route description to the Lagerhuysch and a reservation form can be found on their website: www.lagerhuysch.tudelft.nl.

Aula Congress Centre
The Aula Congress Centre of TU Delft offers a variety of catering facilities. They are open for lunch from 11.30 to 13.30, and for dinner from 16.30 to 19.30.

3.7 MAP OF THE FACULTY

This guide mentions numbers, indicating locations in the faculty building. As an extensive map could not be included in this guide, please visit the 3ME website to view the map: campus.3me.tudelft.nl > Facilities.

4. Course Descriptions

Course descriptions of MSc courses are not part of this guide. Detailed information is available in the Digital Study Guide via the Study Information System (SIS) on www.tudelft.nl/sis

5. Course and Examination Regulations / Regulations and Guidelines for the Board of Examiners

The Course and Examination Regulations and the Regulations and Guidelines for the Board of Examiners are available on campus.3me.tudelft.nl