



# Programme syllabus

[An accessible version of the syllabus can be found in the Course and programme directory.](#)

## Master's Programme, Engineering Mechanics 120 credits

Masterprogram, teknisk mekanik

*Valid for students admitted to the education from autumn 08 (HT - Autumn term; VT - Spring term).*

This is a translation of the Swedish, legally binding, programme syllabus.

### Programme objectives

#### Knowledge and understanding

A master of science in Engineering Mechanics will:

- have the ability to independently apply mathematics and basic engineering science in the field of engineering mechanics.
- have the ability to master and apply principles in the field of engineering mechanics.
- be able to be creative and critical in order to formulate and investigate mechanical problems using modern methods and tools.

## Skills and abilities

A master of science in Engineering Mechanics will:

- have the ability to critically and systematically analyse, judge and handle complex mechanical problems and situations even with access to limited information.
- have the ability to critically, independently and creatively formulate problems and to plan and perform work within given time limits.
- have the ability to, both orally and in writing, communicate and discuss conclusions and the underlying theory and argumentation.
- be able to follow the latest development and research and have the ability to participate in research and development work in the field of engineering mechanics.

## Ability to make judgements and adopt a standpoint

A master of science in Engineering Mechanics will:

- have the ability to in the field of engineering mechanics to make decisions regarding research and development work based on relevant scientific, societal and ethical aspects.
- show insight regarding the possibilities and limitations of engineering science and its role in the society.
- have ability to identify the need for further knowledge in the field and take responsibility for keeping their personal knowledge up to date.

Complete information on degree requirements can be found at the local degree policy of KTH, see [www.kth.se/info/kth-handboken/II/19/1.html](http://www.kth.se/info/kth-handboken/II/19/1.html)

## Extent and content of the programme

The programme, given in English, is two years long (120 university credits) and starts every year at the end of August.

The objective of the courses is to provide students with advanced knowledge in Solid, Fluid and Multibody Mechanics and to give them, through a large number of elective courses, the opportunity of defining their own specialisation. The education alternates theoretical topics with more applied ones through laboratories and applications using commercial programs.

## Eligibility and selection

### Basic eligibility requirements

A completed Bachelor's degree, equivalent to a Swedish Bachelor's degree (180 university credits), from a university recognized by government or accredited by other recognized organisation. A good knowledge of written and spoken English. Applicants must provide proof of their proficiency in English.

### **Specific eligibility requirements**

The programme is open to students who have completed a Bachelor's degree or equivalent degree in the field of Mechanics, Physics, Aeronautics or Civil Engineering and obtained good academics results.

### **Selection process**

The selection process is based on a total evaluation of the following selection criteria: university, grade points average (GPA), motivation letter and references. Complete information on admission requirements can be found at the local admission policy of KTH, see [www.kth.se/info/kth-handboken/II/11/inledning.html](http://www.kth.se/info/kth-handboken/II/11/inledning.html)

## **Implementation of the education**

### **Structure of the education**

The academic year at KTH is divided into 4 periods. Each period lasts approximately 7 weeks with at least 33 days of study. Each period is followed by an examination period consisting of supplementary days and at least 5 exam days. In addition to these 4 regular exam periods there are 3 additional re-examination periods, after christmas, after may, and immediately preceding the first study period of the academic year. The academic year lasts for a duration of 40 weeks. If necessary, teaching activities can be scheduled outside the academic year.

### **Courses**

The programme is course-based. Lists of courses are included in appendix 1.

The course part of the programme lasts three semesters (90 university credits). Seven courses (corresponding to 44.5 university credits) are compulsory. The other courses are elective and must be chosen among a list of elective courses in solid or fluid mechanics. The students can also, in agreement with the program director, take as elective courses one or two courses in applied mechanics given by other departments of KTH.

The list of compulsory and elective courses is given in appendix 1.

## Grading system

Courses in the first and the second cycle are graded on a scale from A to F. A-E are passing grades, A is the highest grade. The grades pass (P) and fail (F) are used for courses under certain circumstances.

## Conditions for participation in the programme

No Later than November 15 and May 15 each academic year students are required to make a study registration and course selection for the coming term. At least 40 university credits have to be completed during the first academic year, including the re-examination period in August, in order for the student to be promoted to the second year of the programme.

## Recognition of previous academic studies

Under certain circumstances, credits for previous academic studies can be received according to the local policy of KTH, [www.kth.se/info/kth-handboken/II/13/3.html](http://www.kth.se/info/kth-handboken/II/13/3.html)

## Degree project

The last semester is spent on a five month (30 university credits) Master's thesis project performed in industry or at university. The purpose of the thesis project is that the students should demonstrate their ability in performing independent work, using and developing the skills obtained from the courses in the programme.

Students must have completed at least 65 university credits before they begin their Master's thesis.

The students must actively search for a suitable thesis project in industry or at a university.

More information on KTH policy about Degree project can be found at [www.kth.se/info/kth-handboken/II/15/1.html](http://www.kth.se/info/kth-handboken/II/15/1.html)

## Degree

Students who have completed all the requirements of the program will be awarded the degree of Master of Science (two years).

Students must apply for the degree and also show proof of their bachelor (or equivalent) degree and the payment of the student union fees.

Detailed information can be found at [www.kth.se/info/kth-handboken/II/19/1.html](http://www.kth.se/info/kth-handboken/II/19/1.html)

Appendix 1 - Course list  
Appendix 2 - Programme syllabus descriptions



# Appendix 1: Course list

## Master's Programme, Engineering Mechanics (TTEMM)

### General courses

#### Year 1

#### Mandatory courses (21.0 Credits)

| Code                   | Name                             | Credits | Edu. level   |
|------------------------|----------------------------------|---------|--------------|
| <a href="#">SE1025</a> | FEM for Engineering Applications | 6.0 hp  | First cycle  |
| <a href="#">SG2212</a> | Computational Fluid Dynamics     | 7.5 hp  | Second cycle |
| <a href="#">SG2214</a> | Fluid Mechanics                  | 7.5 hp  | Second cycle |

## Optional courses

| Code                   | Name   | Credits | Edu. level   |
|------------------------|--|---------|--------------|
| <a href="#">SE2116</a> | Dynamic Problems in Solid Mechanics                        | 6.0 hp  | Second cycle |
| <a href="#">SE2121</a> | Introduction to Biomechanics                               | 9.0 hp  | Second cycle |
| <a href="#">SE2122</a> | Applied Solid Mechanics                                    | 9.0 hp  | Second cycle |
| <a href="#">SE2123</a> | Testing Techniques in Solid Mechanics                      | 6.0 hp  | Second cycle |
| <a href="#">SE2125</a> | Solid Mechanics Modelling for Design                       | 9.0 hp  | Second cycle |
| <a href="#">SE2127</a> | Packaging Materials  | 7.5 hp  | Second cycle |
| <a href="#">SE2129</a> | Fracture Mechanics and Fatigue                             | 9.0 hp  | Second cycle |
| <a href="#">SG2126</a> | Non-linear Oscillations and Dynamical Systems in Mechanics | 7.5 hp  | Second cycle |
| <a href="#">SG2211</a> | Vehicle Aerodynamics                                       | 6.0 hp  | Second cycle |
| <a href="#">SG2213</a> | Applied Computational Fluid Dynamics                       | 3.0 hp  | Second cycle |
| <a href="#">SG2215</a> | Compressible Flow  | 7.5 hp  | Second cycle |
| <a href="#">SG2218</a> | Turbulence   | 7.5 hp  | Second cycle |
| <a href="#">SG2219</a> | Advanced Compressible Flows                                | 7.5 hp  | Second cycle |
| <a href="#">SG2221</a> | Wave Motions and Hydrodynamic Stability                    | 7.5 hp  | Second cycle |
| <a href="#">SG2860</a> | FEM Modelling  | 8.0 hp  | Second cycle |
| <a href="#">SG2870</a> | Non - Linear Finite Element Methods                        | 7.0 hp  | Second cycle |

## Year 2

### Mandatory courses (23.5 Credits)

| Code                   | Name  | Credits | Edu. level   |
|------------------------|---|---------|--------------|
| <a href="#">AK2030</a> | Theory and Methodology of Science (Natural and Technological Science) | 4.5 hp  | Second cycle |
| <a href="#">SE2126</a> | Material Mechanics  | 9.0 hp  | Second cycle |
| <a href="#">SG2127</a> | Research Methodology in Mechanics                                     | 3.0 hp  | Second cycle |
| <a href="#">SG2150</a> | Rigid Body Dynamic  | 7.0 hp  | Second cycle |



# Appendix 2: Specialisations

## Master's Programme, Engineering Mechanics (TTEMM)

This programme has no specialisations.