COURSE SYLLABUS

Dimensioneringsmetodik
Applied Solid Mechanics

7,5 ECTS credit points (7,5 högskolepoäng)

1 Course title and credit points
The course is titled Applied Solid Mechanics/Dimensioneringsmetodik and awards 7,5 ECTS credits. One credit point (högskolepoäng) corresponds to one credit point in the European Credit Transfer System (ECTS).

2 Decision and approval
This course is established by Department of Mechanical Engineering 2013-11-20. The course syllabus was revised by Head of Department of Mechanical Engineering and applies from 2014-08-26.

3 Objectives
The aim of the course is to give extended knowledge and train the ability for dimensioning of mechanical components or structures with regard to solidity.

4 Content
Dimension criterion:
Exhaustion, Welds, dimensioning of butt weld, filled weld and fatigue loaded welds, Identification and damage risk assessment, Dimensioning philosophies.

Experimental methods:
Strain gauge and its applications verifying calculated quantity.
Short introduction of fracture mechanics. Tension in different fracture mode, stress intensity factor, fracture toughness.

5 Aims and learning outcomes
On completion of the course the student will be able to:
• know of different risks of damage in materials and constructions as well as apply these in practical context.
• independently dimension materials and constructions with various methods within mechanics of materials (e.g. hand calculation, FEM, tables, manuals).

6 Learning and teaching
Teaching is conducted through lectures and exercises, laboration (strain saturation) and a major applied dimensioning assignment. Lectures introduce theory and examples regarding problem solving in various construction context. Independently performed exercises and problem solving gives the opportunity to apply the theory. Searching for articles gives an overview of relevant technical journals and other resources and allow competence in information within own professional field. A web-based course platform can be used for retrieve information, submit assignments and write a log book. Lectures are held in Swedish. The teaching language is Swedish. However, the teaching could be carried out in English.

7 Assessment and grading

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<tr>
<th>Code</th>
<th>Module</th>
<th>Credit</th>
<th>Grade</th>
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<tbody>
<tr>
<td>Written exam</td>
<td>3 ECTS</td>
<td>A-F</td>
<td></td>
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<tr>
<td>Assignment</td>
<td>4.5 ECTS</td>
<td>G-U</td>
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The course will be graded A Excellent, B Very good, C Good, D Satisfactory, E Sufficient, FX Insufficient, supplementation required, F Fail. If grade FX or UX are given, the student may after consultation with the course coordinator / examiner get an opportunity to within 6 weeks complement to grade E or G for the specific course element.

8 Course evaluation
The course coordinator is responsible for systematically gathering feedback from the students in course evaluations and making sure that the results of these feed back into the development of the course.
9 Prerequisites
Courses Mechanics basic course and Solid Mechanics
Basic Course are completed and passed before the
student can be registered on the course (or
equivalent).

10 Field of education and subject area
The course is part of the field of education and is
included in the subject area Mechanical Engineering.

11 Restrictions regarding degree
The course cannot form part of a degree with
another course, the content of which completely or
partly corresponds with the contents of this course.

12 Course literature and other teaching material
Teknisk hållfasthetslära. Tore Dahlberg.
Bengt Sundström etc. “Handbok och formelsamling
i hållfasthetslära.” Publikation 104, Inst. för
Hållfasthetslära, KTH.
Material from the department