



Nationella forskarskolan i tribologi

- Course:** *Advanced topics in wear of materials*
- Points:** 4 hp
- Time:** April 9 – 11, 2024
- Scope:** Wear processes can take place under a very wide range of conditions and involve a variety of materials classes. Since friction and wear are not intrinsic properties of a material, but rather a system response, it is necessary to consider the entire system in its analysis.
The course will address selected special topics and applications where different type of materials are exposed to wear under different operating conditions.
- Objectives:** understand wear processes in different situations such as dry, lubricated, and hostile environments,
learn about quantitative description of wear and wear modelling,
understand wear mechanisms of different categories of materials such as metallic and non-metallic materials,
learn about wear resistant materials and surface engineering approaches in controlling wear,
learn about approaches in designing/performing of simulative wear experiments and analysis of results.
- Contents:** Overview of mechanisms and theories of sliding and abrasive wear; wear modelling; lubricated wear in non-conformal contacts; wear in hostile environments; wear of non-metallic materials; wear of self-lubricating materials; wear resistant materials and surface engineering for wear control; analysis of wear related failures and simulative wear testing.
- Teaching:** Lectures and laboratory work
- Prerequisites:** Basic courses on tribology or similar
- Examination:** Home assignments
- Grading:** Pass or Fail
- Examiner:** Jens Hardell, Professor
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- Literature:** Course hand-outs, selected research articles and books on tribology, wear and surface engineering
- Location:** Luleå University of Technology, Luleå.