Reg No: MTAD19/20232

Faculty of Health, Science and Technology
Materials Engineering

Syllabus

Surface Technology and Tribology

Course Code:	MTAD19
Course Title:	Surface Technology and Tribology *Ytteknik och tribologi*
Credits:	7.5
Degree Level:	Master's level
Progressive Specialisation:	Second cycle, has only first-cycle course/s as entry requirements (A1N)

Major Field of Study:
MTA (Mechanical Engineering)

Course Approval
The syllabus was approved by the Faculty of Health, Science and Technology 2022-08-30, and is valid from the Autumn semester 2023 at Karlstad University.

Prerequisites
Registered for Materials Engineering, 7.5 ECTS credits, Deformation and Failure, 7.5 ECTS credits, and Materials Characterisation, 7.5 ECTS credits, plus upper secondary level English 6, or equivalent

Learning Outcomes
The aim of the course is for students to obtain the basic knowledge of surface technology and tribology needed to analyse tribological problems in industrial applications and be able to propose solutions based on design changes, improved selection of materials, or use of tribological surfaces.

Upon completion of the course, students should be able to:
- explain and apply central concepts in the field of tribology, including friction, wear, and lubrication

- give an account of the mechanisms that control friction and wear in a tribological contact
- give an account of the basic tribological properties of the material classes metals, ceramics, and polymers
- give an account of procedures and use basic tribological knowledge to analyse tribological problems
- compare surface treatment methods to each other with reference to their applicability in a given tribosystem.

Content
The course includes lectures and seminars covering the mechanical contact and friction of surfaces, lubrication and lubricants, wear, and different contact cases and mechanisms; the tribological properties of metals, ceramics, and polymers; surface treatment, surface modification, and surface finishing; tribological problems and measures; abrasion testing.

Reading List
See separate document.

Examination
Examination is in the form of a written exam and oral and written presentations of seminar assignments.

If students have a decision from Karlstad University entitling them to Targeted Study Support due to a documented disability, the examiner has the right to give such students an adapted examination or to examine them in a different manner.

Grades
One of the grades 5 (Distinction), 4 (Some Distinction), 3 Pass , or Fail (U), is awarded in the examination of the course.

Quality Assurance
Follow-up relating to learning conditions and goal-fulfilment takes place both during and upon completion of the course in order to ensure continuous improvement. Course evaluation is partly based on student views and experiences obtained in accordance with current regulations and partly on other data and documentation. Students will be informed of the result of the evaluation and of any measures to be taken.

Course Certificate
A course certificate will be provided upon request.

Additional information
The local regulations for studies at the Bachelor and Master levels at Karlstad University stipulate the obligations and rights of students and staff.