Course syllabus

Utmattning - ingenjörs- och materialaspekter
Fatigue

FMEN30, 7,5 credits, A (Second Cycle)

Valid for: 2023/24
Faculty: Faculty of Engineering, LTH
Decided by: PLED M
Date of Decision: 2023-04-11

General Information

Elective for: F5, M4-pu, M4-bem
Language of instruction: The course will be given in English on demand

Aim

The aim of the course is to describe the physical mechanisms behind fatigue, and the methods that are used in design against fatigue.

Learning outcomes

Knowledge and understanding
For a passing grade the student must

- be familiar with the different types of fatigue, the basic mechanisms behind fatigue and be able to use commonly accepted methods of design against fatigue.
- be familiar with engineering design against fatigue.

Competences and skills
For a passing grade the student must

- demonstrate the ability to perform construction design against fatigue and to recognize situations and mechanisms relevant to fatigue.

Contents

Cyclic deformation and crack initiation. Fracture mechanisms. Fracture mechanics treatment of fatigue cracks. Fatigue crack growth in ductile and brittle materials. Short fatigue cracks. Contact fatigue. Fatigue and evironment: Corrosion fatigue and high temperature fatigue. Life estimates and dimensioning against fatigue.

Examination details

Grading scale: TH - (U,3,4,5) - (Fail, Three, Four, Five)
Assessment: Written exam.

The examiner, in consultation with Disability Support Services, may deviate from the regular form of examination in order to provide a permanently disabled student with a form of examination equivalent to that of a student without a disability.

Admission

Assumed prior knowledge: Materials Engineering or Advanced Material Technology, Solid Mechanics, Basic Course.
The number of participants is limited to: No
The course overlaps following course/s: FKM090

Reading list

- S.Suresh: Fatigue of Materials, Cambridge University Press. Material provided by the department.

Contact and other information

Course coordinator: Prof. Solveig Melin, solveig.melin@mek.lth.se
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Course homepage: http://www.material.lth.se