

Courses in English Course Description

Department	03 Mechanical, Automotive and Aeronautical Engineering
Course title	Fatigue and Fracture
Hours per week (SWS)	4
Number of ECTS credits	6
Course objective	After successful completion of this module, the student will be conversant in the theory of fatigue analysis due to the effects of cyclic loading. The proper application of learned methods with respect to fatigue and fracture analysis will be expected.
Prerequisites	Engineering Math, Statics, Strength of Materials
Recommended reading	
Teaching methods	
Assessment methods	Exam
Language of instruction	English
Name of lecturer	Prof. Dr.-Ing. Klemens Rother
Email	klemens.rother@hm.edu
Link	
Course content	<ol style="list-style-type: none">1. Introduction Static and fatigue damage, damage mechanisms, elastic and elastic-plastic stress/strain behavior2. S-N-curves (Wöhler Diagram, Gassner Diagram) Stress Cycle, SN-curve (Wöhler Diagram), scatter of experimental data, test evaluation, linear damage accumulation, probability of failure3. Loads and Stresses Cycle counting, load spectra for elastic and elastic-plastic conditions4. Factors Affecting Fatigue Behavior Effects due to loading, notches, material, size, technology, surface, temperature, corrosion, sequence effect5. Stress Based Concept Analysis scheme, synthetic "Wöhler Diagrams", nominal-, structural-, notch stress concept
Remarks	