

Module level Master	Credit points 6	Language English	Return annual
Module designation			
Strength and Reliability			
Course(s)			
Strength and Reliability			
Code	Subtitle		
Person responsible for the module	Prof. Dr.-Ing. A. Ricoeur		
Lecturer	Prof. Dr.-Ing. A. Ricoeur		
Workload	Workload: 180 h (30 h contact time, 150 h private study)		
Relation to curriculum	Specialist studies, Simulation and Structural Technology, elective		
Type of teaching, contact hours	Online presentation, digital communication, skype		
Requirements according to examination regulations	None		
Recommended prerequisites			
Modules Mathematics and Solid Mechanics			
Module objective / intended learning outcomes			
Students know different approaches to evaluate strength and reliability of materials. They know how to apply these concepts to the design of wind plant structural components and are able to perform numerical fracture mechanical as well as classical strength calculations.			
Content			
<ul style="list-style-type: none"> • Concept of local stress analysis, strength hypotheses • concept of fatigue and service strength • fracture mechanical concepts: <ul style="list-style-type: none"> – energy release rate – path-independent conservation integrals – cohesive zone models – stress intensity factors – crack weight functions – fatigue crack growth • Fundamentals of numerical fracture mechanical analyses • Introduction to damage mechanics concepts 			
Study and examination requirements and forms of examination	Written exam (90 min) and online oral examination (30 min). The examination results proceed with a weight of 1:1 in the final grade.		
Media employed	online script		
Reading list			
Gross, Seelig: Fracture Mechanics, Springer T.L. Anderson: Fracture Mechanics, CRC Press			