



HÖGSKOLAN I GÄVLE

Reliability Engineering 7.5cr

Tillförlitlighetsteknik 7,5hp

Set by Faculty of Engineering and Sustainable Development

Version

Set at

Valid from

6/2/16

HT2016

Level	G1F
Education level	First cycle
Course identifier	IEG307
Credits	7.5cr
Main field of study	Industrial Economics
Subject group	Industrial Engineering and Management
Disciplinary domain	Technology 100.0%

Learning outcomes After completion of the course the student shall be able to:

1. introduce concepts and methods in the field of reliability engineering
2. use of TQM (Total Quality Management) tools to measure and evaluate the quality of products
3. perform reliability analysis of a system and designing the same
4. apply the acquired knowledge in a practical operational problems or research projects
5. evaluate the use of reliability engineering for industrial activities.

Course content

Review of Reliability Engineering
Review of probability and statistics

Definition and concepts
Commonly used Lifetime distributions
Failure rate and bathtub curve
Reliability models
Calculation of reliability
Relations between density function, failure rate function and reliability function

Reliability block diagram and Structure function
 Series system
 Parallel system
 Series-Parallel systems
 Computation of system reliability

Fault tree analysis
 Failure mode and effect analysis
 Reliability prediction and allocation
 Reliability design and management

Types of reliability testing
 Graphical techniques in reliability
 Model selection
 Reliability estimation

Characteristics of software quality
 Software life-cycle model
 TQM tools in software development
 Customer-focused testing method for software
 Introduction of software reliability
 Software Quality assurance standards (ISO 9001).

Teaching	Lectures, seminars, labs and project work.
Prerequisites	Engineering Data Analysis and Statistics 7.5 credits and Total Quality Management A 7.5 credits or equivalent.
Examination	Written examination, Labs, Project work
Grade	A, B, C, D, E, Fx, F
Other regulations	Criteria for final grade will be handed out at the beginning of the course.
Sustainable environment	A minor part of the course content deals with sustainable development.

Module			
	0010	Written examination	3cr Grade: AF
	0020	Laborations	1.5cr Grade: UG
	0030	Project work	3cr Grade: UG