

# Reliability Academy

## Workshop: Reliability Engineering Basics

**Date:** Nov 15-16, 2011  
**Venue:** xxx

Example  
Example

This 2-day course introduces the most widely used reliability engineering methods used in design and procurement of technical systems and products. The goal of the course is to give the engineers basic understanding of the Reliability techniques, including practical tools. Through exercises and team work the students will be acquainted with the methods introduced. Prior knowledge of the basic statistical methods will be helpful.

<b>DAY 1</b>	<b>Tuesday 15.11.</b>
<b>8:45</b>	<b>WELCOME and Introduction of the Course Program (+ coffee/tea)</b>
<b>9:00</b>	<b>A1. Basic Terms in Reliability Engineering</b> <ul style="list-style-type: none"> <li>- Reliability terms and concepts</li> <li>- Failure rate, MTBF</li> </ul>
<b>10:00</b>	<b>A2. Basics of the Reliability Calculations</b> <ul style="list-style-type: none"> <li>- Reliability parameters and statistical distributions</li> </ul>
<b>10:45</b>	- Exercises / team work
<b>11:30-12:00</b>	<b>LUNCH</b>
<b>12:00</b>	- Exercises / team work
<b>12:30</b>	<b>A3. Reliability of Systems</b> <ul style="list-style-type: none"> <li>- Series and parallel structures</li> <li>- Unrepairable and repairable systems</li> </ul>
<b>13:30-13:15</b>	<b>COFFEE/ TEA</b>
<b>13:15</b>	- Exercises / team work
<b>14:30</b>	<b>A4. Reliability and Risk Analysis methods</b> <ul style="list-style-type: none"> <li>- Overview of the most widely used analysis methods: FMEA, Fault Tree, Block Diagrams models etc.</li> <li>- System "bottle necks", allocation of unreliability</li> <li>- Production losses and unreliability</li> <li>- Timing of the reliability engineering activities in product development</li> </ul>
<b>15:45-16:00</b>	<b>SUMMARY, discussions</b>

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## ... Reliability Engineering Basics

<b>DAY 2</b>	<b>Wednesday 16.11.</b>
<b>8:45</b>	<b>INTRODUCTION to Day 2, Coffee/ Tea</b>
<b>9:00</b>	<b>A5. Reliability management</b> <ul style="list-style-type: none"> <li>- Reliability management in product development</li> <li>- Reliability Program Plan, Reliability Specification</li> <li>- FRACAS – Reliability data collection</li> </ul>
<b>09:45</b>	- Exercises / team work
<b>11:30-12:00</b>	<b>LUNCH</b>
<b>12:00</b>	<b>A6. Reliability of Electronics</b> <ul style="list-style-type: none"> <li>- Failure modes of electrical components</li> <li>- Parts count and MIL-217 methods: calculation of MTBF</li> <li>- Basics of Reliability Testing</li> </ul>
<b>13:15</b>	- Exercises / team work
<b>14:00-14:15</b>	<b>COFFEE/ TEA</b>
<b>14:15</b>	- Exercises / team work
<b>15:00</b>	<b>A7. Safety System Reliability – Functional Safety</b> <ul style="list-style-type: none"> <li>- IEC-61508 –standard: Functional Safety of the Electronic Safety Devices</li> <li>- SIL (Safety Integrity Level)</li> <li>- Failure Modes and hazardous failures, fault diagnostics</li> <li>- Improving safety device reliability</li> </ul>
<b>16:00-16:15</b>	<b>CONCLUSIONS, discussion</b>

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