Availability, Reliability and Maintainability (ARM) Analysis

Purpose
To enable students to apply appropriate ARM methodologies to projects, ensuring that ARM is included within the design and that ARM targets are met. The module also discusses the concept of critical and life-limited items and the use of reliability centred maintenance strategies to reduce maintenance costs. Finally the module considers the trade-offs between ARM and safety requirements, as well as discussing how ARM shortfalls may be addressed.

At the end of the course you will be able to
1. Identify and apply the analysis methodologies to systems and sub-systems, including both design and operation restrictions, to determine the Availability, Reliability and Maintainability of these Systems.
2. Critically review and balance the requirements of the design for ARM and safety.
3. Logically deduce how ARM results for a system may be improved.

Outline content
Introduction to Availability, Reliability and Maintainability (ARM):
- Definition of terms
- Importance of ARM
- Defining the mission
- ARM targets and target apportionment
Availability and safety – potential conflicts
- Differences between safety and ARM
- Claims on repair
ARM planning and choice of methodology
- ARM planning
- Interpreting ARM targets
- Incorporating ARM into the design
- Choice of methodology
- Dealing with ARM shortfalls
ARM assessment methods – deterministic
- Failure modes, effects and criticality analysis (FMECAs)
- Categorising component failures
- Limitations of FMECA
- Functional block diagrams
Numerical ARM assessment techniques
- Parts counts
- Fault tree analysis
- Reliability block diagrams

Critical and life-limited items
- Critical items – novel, expensive, difficult to repair
- Limited life items
Maintainability and maintainability demonstrations
- Incorporation of maintenance into design
Reliability Centred Maintenance (RCM)
- Definitions of RCM
- Processes, requirements and limitations
Methods of improving reliability

Recommended prior study
Education, skills or experience equivalent to undergraduate level
Risktec module: Principles of Risk Management

Who should attend
Managers, discipline engineers and HSE and reliability professionals seeking to improve asset performance.

Delivery Methods
Face-to-face, Distance Learning, or Blended Learning

Levels of Assessment
- Attendance only
- Assessment by Risktec
- Risktec Professional Qualifications
- Postgraduate Qualifications: PgCert, PgDip and MSc

Assessment details
Postgraduate programmes: activities and assignment (total about 80 hours)
RPQ programmes: assignment (about 15 hours)

Module details
- Level: Masters/RPQ
- Duration: 2 days (F2F), 8 weeks (Postgraduate or RPQ DL)

Price
For prices and further information, or to book a course, please contact training@risktec.tuv.com

Contact
Tel +44 1925 611 200
training@risktec.tuv.com
risktec.tuv.com