



# ME115

## Human Reliability, Error and Human Factors in Engineering Maintenance

## Course Introduction:

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Achieving high reliability is the ultimate aim of safety management. The quantification of equipment failure rates is a well-established part of this process but this knowledge represents only a portion of the complete picture. To understand and therefore minimize the risk associated with industrial processes it is essential to understand the human reliability component. Identifying likely sources of human error, quantifying the likelihood of error and implementing measures to prevent, detect and recover are of crucial importance in managing safety and achieving high reliability and a number of human reliability assessment techniques are available for this purpose.

In this course, one of the most accessible techniques, the Human Error Assessment and Reduction Technique (HEART), which has been in use for over 20 years, will be explained. HEART is an easily used form of human reliability assessment which is used in a wide range of industries such as chemical, oil, gas, nuclear, transport, defense and medicine and which gives insight into potential sources of error.

## Course Objectives:

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Upon successful completion of this course, the delegates will be able to:

- Understand the basics of human behavior and errors
- Describe the impact of human error
- Present performance influencing factors
- Identify human error identification
- Illustrate generic task types
- Detect error producing conditions
- Implement human performance and quantified risk assessment

## Who Should Attend?

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This course is intended for risk analysts, safety case assessors and managers, operations managers, safety advisors and specialists, systems engineers, system and equipment design assessors, regulators, inspectors and human factors advisors.

## Course Outline:

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### Day 1:

#### **General/Introduction to Human Factors**

- Need to address human factors
- Statistics
- Incidents

## Safety Culture/Organizational Factors

### Day 2:

#### Human Error

- Error models and theories
- Types of errors in maintenance tasks
- Violations
- Implications of errors
- Avoiding and managing errors
- Human reliability

#### Human performance & limitations

- Vision
- Hearing
- Information-processing
- Attention and perception
- Situational awareness
- Memory
- Claustrophobia and physical access
- Motivation
- Fitness/Health
- Stress
- Workload management
- Fatigue
- Alcohol, medication, drugs
- Physical work
- Repetitive tasks/complacency

### Day 3:

#### Environment

- Peer pressure
- Stressors
- Time pressure and deadlines
- Workload
- Shift Work
- Noise and fumes
- Illumination
- Climate and temperature
- Motion and vibration

- Complex systems
- Hazards in the workplace
- Lack of manpower
- Distractions and interruptions

### **Procedures, Information, Tools and Practices**

- Visual Inspection
- Work logging and recording
- Procedure — practice/mismatch/norms
- Technical documentation — access and quality

### **Day 4:**

#### **Communication**

- Shift/Task handover
- Dissemination of information
- Cultural differences

#### **Teamwork**

- Responsibility
- Management, supervision and leadership
- Decision making

### **Day 5:**

#### **Professionalism and Integrity**

- Keeping up to date; currency
- Error provoking behaviour
- Assertiveness

#### **Organization's HF Program**

- Reporting errors
- Disciplinary policy
- Error investigation
- Action to address problems
- Feedback

## Course Certificate:

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**International Center for Training & Development (ICTD)** will award an internationally recognized certificate(s) for each delegate on completion of training.

## Course Methodology:

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**A variety of methodologies will be used during the course that includes:**

- (30%) Based on Case Studies
- (30%) Techniques
- (30%) Role Play
- (10%) Concepts
- Pre-test and Post-test
- Variety of Learning Methods
- Lectures
- Case Studies and Self Questionnaires
- Group Work
- Discussion

## Course Fees:

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**To be advised as per course locations.** This rate includes participant's manual, Hand-outs, buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

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International Centre For Training & Development

## Course Timings:

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### Daily Course Timings:

08:00 - 08:20	Morning Coffee / Tea
08:20 - 10:00	First Session
10:00 - 10:20	Coffee / Tea / Snacks
10:20 - 12:20	Second Session
12:20 - 13:30	Lunch Break & Prayer Break
13:30 - 15:00	Last Session