

Liverpool John Moores University

Title: Human Factors in Design and Operations
Status: Definitive
Code: **7555RTC** (120388)
Version Start Date: 01-08-2019

Owning School/Faculty: Maritime and Mechanical Engineering
Teaching School/Faculty: Risktec Solutions

Team	Leader
Alan Wall	Y

Academic Level: FHEQ7 **Credit Value:** 10 **Total Delivered Hours:** 16.5
Total Learning Hours: 100 **Private Study:** 83.5

Delivery Options

Course typically offered: Semester 1

Component	Contact Hours
Lecture	8
Online	.5
Tutorial	8

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Essay	AS1	An essay question comprising several component parts, based around a case study, up to 4,000 words long.	95	
Test	AS2	Individual and group activities e. g. quiz, forum.	5	

Aims

To define the scope and objectives of Human Factors and be able to justify the need for its appropriate consideration in risk assessment and control.

To examine why humans make mistakes and what tools are available to identify and

analyze human errors and the conditions and situations that cause them. To appreciate the positive impact excellent process design, optimal working environment and unambiguous clearly written procedures can have in reducing the probability of human error and improve human performance.

Learning Outcomes

After completing the module the student should be able to:

- 1 Justify the application of human factors to the design and assessment of tasks, equipment, systems and processes.
- 2 Compare and contrast the different types of human error and violations, and devise appropriate strategies for prevention/reduction.
- 3 Critically review the tools and techniques available to support human error identification and quantification.
- 4 Illustrate and interpret models of accident causation, relating them to actual industrial accidents and strategies for improving safety.
- 5 Consider to what extent HF can be or has been successfully applied to a project, facility or organisation.

Learning Outcomes of Assessments

The assessment item list is assessed via the learning outcomes listed:

4000 word essay	1	3	4	5
individual and group work	2			

Outline Syllabus

Introduction to Human Factors

Defining Human Factors

Overview of things to consider

The benefits of Human Factors

Human Factors integration

The benefits of applying HF

Regulatory requirements

What HF Integration (HFI) is, why it is important and how to achieve it within a project, operating facility or organisation

Understand where and what HF inputs need to occur throughout the system lifecycle

Defining Human Error

Human error and violations theory basics

Error identification and accident/incident root cause analysis

Human reliability analysis steps and comparison of various techniques available

Human Reliability Analysis

Task Analysis

Human Error Identification

Human Error Assessment

Error mitigation and reduction
Review of Key Learning Points
Bibliography, sources of further study
Module conclusions and close out

Learning Activities

A combination of lectures, exercises and supported self study.

Notes

The purpose of this module is to explain how an understanding of human abilities, limitations and needs can be applied to the design and assessment of tasks, equipment, systems and processes, in order to reduce human error, improve safety and increase efficiency. It also aims highlights how and why human errors occur, and describes the methods, tools and techniques that can be used to identify, analyse and reduce them.

Assessment is in the form of an essay combined with activities (e.g. tests, discussions etc.). The delivery modes for the module elements are explained below.

Lecture (using slides and notes): will be delivered by classroom based teacher (face to face) or online self-study (distance learning) or mixture of the two (blended learning).

Tutorial/Activities (exercises and reviews): will be delivered by classroom based teacher (face to face) or online activities with teacher feedback/virtual classroom (distance learning) or mixture of the two (blended learning).

Tutor supported online: will be delivered by email support prior to assessment submission (face to face) or tutor feedback activities, virtual classrooms and email support (distance learning) or mixture of the two (blended learning).