

Liverpool John Moores University

Title: Human Factors in Design and Operations
Status: Definitive
Code: **7086RTC** (127354)
Version Start Date: 01-08-2021

Owning School/Faculty: Engineering
Teaching School/Faculty: Engineering

Team	Leader
Ben Matellini	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: Summer

Component	Contact Hours
Lecture	8
Online	.5
Tutorial	8

Grading Basis: 50 %

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 2,500 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 Analyse the role of HF in systems engineering in order to achieve safe and effective designs, systems and processes.
- 2 Evaluate the human characteristics which influence a user's experience of the workplace environment to ensure it is comfortable, healthy, safe and effective (accounting for physical and psychological capabilities and limitations).
- 3 Evaluate human error types (including violation) and their potential causes.
- 4 Appraise human reliability and performance using appropriate methods in order to develop measures to reduce the likelihood of human error.

Learning Outcomes of Assessments

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

Essay	2	4
Test	1	3

Outline Syllabus

1. *Introduction to Module & Human Factors*
 2. *Physical Human Factors*
 3. *Cognitive Human Factors*
 4. *Workplace Design*
 5. *Factors Affecting Performance*
 6. *Understanding Human Error and Violations*
 7. *Human Reliability Analysis*
 8. *Changing Behaviour Through Design*
 9. *Human Factors Integration*
 10. *Organisational Factors*
- 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 to highlight how and why human errors occur, and to describe the methods, tools and techniques that can be used to identify, analyse and reduce them. The module describes the benefits of Human Factors Integration (HFI) and the typical HFI activities required to support major projects throughout the design lifecycle.

Assessment is in the form of an essay combined with activities (e.g. tests, discussions etc.).

The module is delivered by a combination of face-to-face and online learning, described as follows:

Lecture (using slides and slide notes): face-to-face workshop sessions

Tutorial/Activities (Exercises and reviews): Online activities with teacher feedback, and virtual classrooms

Tutor-supported Online: Tutor feedback for activities, virtual classrooms and email support