



# An Introduction to Human Factors in Airport Operations

# AN INTRODUCTION TO HUMAN FACTORS IN AIRPORT OPERATIONS

## 1. MODULE SUMMARY

### Aims and Target Groups

Many ground handling related incidents at airports are due to human failings. This module aims to provide an introduction to human factors and their impact on safety and security of airport operations. The module will concentrate on the generic human factors impacting on the wide range of tasks encompassed by airport operations, but will also include specific factors pertinent to specific ground operation tasks. A student taking this module would typically be a new employee working within the airport operations environment working for either an airline or an airport operator. This module would typically form part of an induction course for new recruits.

This module forms part of a five module course introducing Airport Operations.

This module will meet **EQF<sup>1</sup> level 3**.

### Duration

It is recommended that **8 hours** of contact should be allocated for this module.

### Required pre-requisite knowledge

No experience of having worked in an airport is necessary, but it would be beneficial if the student had already completed a tour of an airport. This module forms part of a five module introductory course in Airport Operations.

## 2. TEACHING, LEARNING AND ASSESSEMENT

### Intended Learning Outcomes

Upon successful completion of this module, students should be able to appreciate:

1. Why human factors are important in airport operations (EQF III knowledge) [10%]
2. Organisational/procedural factors which affect performance, safety and well-being (EQF III knowledge) [15%]
3. Key human performance limitations (EQF III knowledge and skill) [25%]
4. The impact of communication and teamwork on workplace performance (EQF III knowledge) [15%]
5. The impact of shift/task turnover and fatigue affecting performance and work-family dynamics (EQF III knowledge) [15%]
6. Risk management and implement procedures in an airport operation environment (EQF III skills) [20%]

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<sup>1</sup> European Qualifications Framework (EQF) is a translation tool that helps communication and comparison between qualifications systems in Europe. Its eight common European reference levels are described in terms of learning outcomes: knowledge, skills and competences. For more information please go to: [https://ec.europa.eu/ploteus/search/site?f%5B0%5D=im\\_field\\_entity\\_type%3A97](https://ec.europa.eu/ploteus/search/site?f%5B0%5D=im_field_entity_type%3A97)

### Proposed teaching and learning methods

Teaching will be delivered through a combination of traditional classroom lectures and practical work. The module can be enhanced by e-learning used either during the classroom teaching or as guided study to reinforce the learning.

Study Activity	Learning Hours
On-Line Material - Learning Objects	1
Classroom Teaching	6
Assessment	1
<b>Total</b>	<b>8</b>

### Method of Assessment

The assessment strategy comprises of a multi-choice test which is a common technique used in the industry. However to aid learning, this module also incorporates a small formative case study report to enable students to develop work on a relevant topic depending on their work environment. This case study may be carried out as an individual or group activity and can be used to encourage further discussion on the subject.

Assessment Task	Assessment Description	Intended Learning Outcomes assessed	Formative (F) and / or Summative (S)	Contribution to module mark	Indicative time taken to carry out assessment task (hours)
1	1 case study report related to a Human Factors investigation in Airport Operations	6	F	0	5
2	1 hour Multiple Choice Examination	all	S	100%	5 (including preparation for 1 hr test)

Summative assessments (S) will be marked and the marks will contribute directly to the overall pass requirement for the module.

Formative assessments (F) are intended to enable the student to learn from carrying out the assessment and receiving feedback, but any marks are indicative of performance only and do not contribute directly to the overall pass requirement for the module.

Reassessment is by new test.

### Attendance Requirement

80% minimum attendance required for all classroom teaching activities.

## Indicative Content

### 1. Why human factors are important in airport operations

- Introduce human factors concept
- Highlight influence of human factors in airport operations
- Show how human factors can improve safety, loyalty and satisfaction of passengers and employees
- Study examples of human errors and their impact on airport security and safety.
- Human factors as part of a robust management plan, risk-based approach
- Identify top key human factors issues that impact airport operations
- Human Factors and Decision Making in Airport Operations (e-learning)

### 2. Organisational/procedural factors which affect performance

- Safety Management System
- Procedure management policy effects on performance
- Operating procedures, audits, tools and sign off practices
- Shift/task turnover issues
- Working practices / fatigue
- Anonymous and blame-free reporting
- Training
- Event management/investigation
- Importance of managing processes to control human factors in airport operations
- Manning levels, peer pressure, supervision
- Claustrophobia, Access limitations Fear of heights
- Legal requirement for physical and mental fitness
- Effects of toxins: carbon monoxide, alcohol, drugs, alcohol limits

### 3. Key human performance limitations

- Information processing, human error and reliability
- Fitness and health, stress, workload, fatigue, medication, environment
- Physical and non-physical limitation, motivation, task repetitiveness and complexity
- Work and communication within and between teams
- Human error and technical fault incidents
- Time availability
- Work environment
- Physical effort required

- Error models, types of errors
- Transgression and deception
- Competence
- Communication & teamwork introduction
- Fatigue and task/shift turnover introduction

#### 4. The impact of communication and teamwork on workplace performance

- Verbal, written, body language, workplace social culture
- Maintaining good working relations
- Formal work logging
- Inspection
- Communication within the organisation
- Reading briefing material, notices and amendments to maintenance procedures
- Prevention of accidents
- High performance teams: features and development process
- Teamwork and Communication (e-learning)

#### 5. The impact of shift/task turnover and fatigue affect performance

- Fitness and health, stress, workload, fatigue, medication, environment
- The nature of tasks: physical work, visual inspection, complexity and repetition
- Distraction, false assumptions, personnel conflicts, cultural prejudices
- Failure to document, information exchange during task turnover/shift changeovers
- Effects of rotating shifts on health, sleep disturbances and work-family conflict

#### 6. Risk management and implement procedures in an airport operation environment

- Identification of safety hazards and effects of fatigue
- Risk assessment
- Identifying and mitigating risk
- Assessing risk – likelihood verses severity
- Regulation
- Introduction to Safety Management Systems
- Case study: (e-learning)

### 3. MODULE RESOURCES

#### Essential Reading

##### Course materials

The three AIRVET (<http://airvet-project.eu/>) developed e-learning lessons could be used to support the teaching:

- Human Factors and Decision Making in Airport Operations
- Teamwork and Communication
- Case study

##### Other sources:

- *FAA Operator's Manual "Human Factors in Airport Operations", 2007:*  
[http://www.faa.gov/about/initiatives/maintenance\\_hf/library/documents/media/support\\_documentation/opsman\\_ramp\\_final.pdf](http://www.faa.gov/about/initiatives/maintenance_hf/library/documents/media/support_documentation/opsman_ramp_final.pdf)
- "Methodology for Operational Risk Assessment in Aviation Organisation" ARMS working group: [www.easa.europa.eu/essi/documents/Methodology.pdf](http://www.easa.europa.eu/essi/documents/Methodology.pdf)
- "SMS for Aviation – a practical guide Safety Risk Management":  
[http://casa.gov.au/wcmswr\\_assets/main/sms/download/2012-sms-book3-safety-risk-management.pdf](http://casa.gov.au/wcmswr_assets/main/sms/download/2012-sms-book3-safety-risk-management.pdf)

#### Required Equipment

Access to on-line teaching materials