Human Factors Horizons

HUMAN INFORMATION PROCESSING IN AVIATION
Information Booklet

Module HIP: Human Information Processing in Aviation

Aim

The aim of this course is the introduction to the fundamental aspects of human information processing. You will also become familiar with the concept of the cognitive workload associated with measurement techniques. In the end, you will also be exposed to human factors considerations within the aviation context. This course will be the starting point in your training journey as a Human Factor Subject Matter Expert.

Learning Outcome

On successful completion of this course, you should be able to:

- Describe the structure and function of the human information processing system
- Explain the relationship between human information processing and cognitive workload
- Apply the principles in the aviation context

Indicative Content

This course provides:

- An introduction to human information processing system (e.g. sensory register, perception, working memory, long term memory, attention, arousal, resource theories).
- Examples of applied information processing (e.g. cognitive workload).
- A view of the human information processing system in the aviation context.

Course Team

All team members hold PhD and MSc in Human Factors in Aviation. They have working experience in applied Human factors in leading aviation companies, in military and universities worldwide. If you have any queries or concerns about the course, please contact us.

Due to our other commitments, it is recommended you send an initial email via the learning platform, and one of us will acknowledge you as soon as possible. We can then determine the most appropriate way to address your query (e.g. email, telephone, Skype, Webex, Zoom).

Course Expectations

We have designed our course materials as a straightforward means to get you started in the specific topic areas. Hopefully, they have been written to provide an accessible introduction to each topic and a starting point for you to further explore the area. The content is based on a fine line between being superficial or well deep into cognitive psychology. Also, we tried not to be mesmerised by numbers.

The training material includes references and reflect a digest of eminent sources, which are referenced. Along the way, you will come across thought-provoking interactive activities, recommended readings, videos and presentations to support your learning experience. After each topic, there will be a progress quiz to ensure your understanding. In the end, a summary of references, selected readings and course handout will be provided to prepare you for the final assessment quiz. Upon successful course completion, a certificate will be awarded.

Progress Checker

We suggest spending approximately 1-2 hours on each topic.

Module assessment

The assessment for this module is based on a topic – subject area quiz. All the module items must be completed to proceed to the quiz. You may sit the quiz up to 3 times per day, and feedback will be provided.

Recommended Reading

Many books are covering the range of topics discussed in the HIP course. References from the session and further readings will be provided along the course and neatly summarised in the final handout.

Internet Sources

There are many available Human Factors resources available for free on the internet. Some resources are from credible, reliable sources and far more comprehensive than any textbook on the topic and often contain more practical advice. They are also updated relatively frequently to reflect changes in technology and the underpinning science base.

Some examples include:

The Federal Aviation Administration Human Factors Design Standard is an exhaustive compilation of human factors practices and principles. This is freely available to download from: http://hf.tc.faa.gov/hfds/

Since 1956 the European Association for Aviation Psychology (EAAP) provides a forum for professionals working in the various domains of

aviation psychology and human factors. This is freely available to visit from: https://www.eaap.net/about.html

	Topic – Subject Area	Activities
1.	**HIP System**	Human Information Processing System Introduction and Overview Readings – links - quiz
2.	**Attention and cognitive arousal**	Attention in Theory and in Practice Cognitive Arousal Readings – links - quiz
3.	**Perception**	Perception in Theory and in Practice Readings – links - quiz
4.	**Data, Information and Resource Theories**	Data – Information – Knowledge Single and Multiple Resource Theories Readings – links -quiz
5.	**Sensory Register and Memory Structure**	Sensory Register Working Memory Long Term Memory Readings – links -quiz
6.	Mental Models, Startle & Surprise	Mental Models Startle & Surprise Readings – links -quiz
7.	**Workload**	Cognitive load Underload Ways to measure Readings – links -quiz

8.	**HIP in Aviation Context**	Limitations
		Identified Risks
		Lessons Learned
		Readings – links -quiz