



Twospeed Aviation Training

Syllabus: CRM (Crew Resource Management)

This course is designed for:

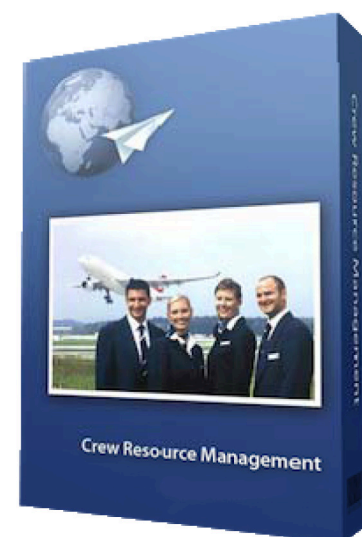
Flight Crew, Cabin Crew, Technicians and Ground Crew.

Content

This course in CRM (Crew Resource Management) complies with EU-OPS.

This course is divided into 12 sections:

1. Introduction.
2. Understanding the Human Factor.
3. Human Perception - Situational Awareness.
4. Understanding human error.
5. Stress - its Causes and Strategies for Coping with it.
6. Fatigue and Rest Management.
7. Automation, the Pros & Cons.
8. Workload Management.
9. Culture - Cross Cultural Crew Environment
10. Pilot Skills - Personal and Leadership.
11. Safety Culture and Standard Operating Procedures.
12. Communication - is this CRM.



Method	CBT, CBT skill test
Sections	12
Questions	96
Duration	3,0 hours
Language	English
Initial training	Yes
Recurrent training	Yes



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Section 1 - Introduction (Duration 10 minutes)

- The basis for this course of training EU-OPS.
- The history of CRM.
- Aviation today is a highly complex and safety-critical environment.
- The principal cause of the majority of aviation accidents originated in human error.
- communication skills, poor leadership and errors in decision-making inside and outside the cockpit.
- CRM opened up a way of dealing with shortcomings.
- Accident rate over the past 40 years.
- What is CRM?
- Focus on flight operations – for both cockpit and cabin crew.
- Authorities have made CRM training a mandatory requirement for all pilots and cabin crew.
- CRM increases the level of safety and also improves productivity and efficiency.
- Good CRM skills does not only come from reading a manual or attending a CBT course.
- Maintaining good CRM is an ongoing process.
- Always file a report to keep the statistics in line with reality.
- CRM does not cause accidents, but a lack of CRM can definitely cause them.
- Using all available resources inside and outside the cockpit in an optimal way.

Section 2 - Understanding the Human Factor (Duration 15 minutes)

- To understand the human factors we have to place the individual in the proper context.
- The SHELL model .
- The SHELL model emphasises the interfaces that exist between the person in the middle.
- Mismatch between the person in the middle and any one of the other four components always leads to a source of human error.
- The five elements of the model.
- The Liveware.
- The Hardware.
- The Software
- The Environment.



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- The Secondary Liveware.
- The L-H System and example.
- The L-S System and example.
- The L-E System and example.
- The L-L System and example.
- Understanding the interaction between the above key elements.

Section 3 - Human Perception — Situational Awareness (Duration 12 minutes)

- Description of the brain.
- The reptile brain.
- The controlling brain.
- The balance between the reptile brain and the controlling brain.
- Our five senses.
- Three types of memory.
- The short term memory.
- The long term memory.
- The motor-memory.
- The short term memory both asks and programs the long term memory.
- The motor-memory is also being programmed.
- Sequence control.
- Perception, personality and attitude.

Section 4 - Understanding human (Duration 19 minutes)

- Human error is a natural part of our lives.
- Accidents don't arise out of errors.
- During accident or incident investigations all errors are considered a result of different threats.
- What is a threat?
- Example of Threats.
- The Swiss cheese model.
- The Decision making level.
- Company level.
- Aircraft systems level Aircraft systems level.



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- The last line of defence, or Operational level.
- It is the crew's responsibility to identify the threats.
- Unintentional and intentional errors.
- Unintentional errors can arise as, mistakes, lapses; or slips.
- Intentional errors are deliberate violations or knowledge-based intentional errors.
- Schematic representation of the process of dealing with threats and errors.
- If the threat is not managed by the crew.
- Creating an open atmosphere where everyone is encouraged to speak.
- The "challenge and response" method.
- Real world example.

Section 5 - Stress—its Causes and Strategies for Coping with it (Duration 13 minutes)

- Stress is an instinctive defence mechanism.
- In today's environment the stress is often long term.
- Stress is the reaction of a person being afraid of not being able to cope.
- The medical definition of stress.
- The stressor.
- Physical and mental stressors.
- The long term or Life stressors and the short term or Environmental and Operational stressors.
- Eustress.
- Graph of performance against stress.
- The breaking point.
- Being able to manage stress.
- Three factors: workload, the stress level induced and the performance level required.
- Stress and workload management.
- Key words for stress and workload management.



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Section 6 - Fatigue and Rest Management (Duration 16 minutes)

- A lot of pressure is put on the flight and cabin crew.
- EU-OPS Subpart Q.
- Fatigue is more or less a normal part of every pilot's working day.
- What is fatigue?
- Physical and mental fatigue.
- Micro-sleep.
- Three main types of mental fatigue.
- Circadian rhythm effects.
- Sleep deprivation, and cumulative fatigue effects.
- Industrial or "time-on-duty" fatigue.
- Studies consistently show fatigue to be an on-going problem in aviation safety.
- Reporting system reveals widespread concern among aviation professionals about the safety implications of fatigue.
- Diagram showing how the risk of accidents rises rapidly when working hours increase.
- Crewmember's responsibility to be fit for flight.
- Example of fatigue.

Section 7 - Automation, the Pros & Cons (Duration 14 minutes)

- Automation has come a long way in civil aviation.
- The aircraft manufacturer's solution.
- A number of new systems have been introduced.
- Electronic checklists.
- "Out of the loop".
- Aircraft and cockpit automation is a good thing.
- Generating "information overload".
- Much research has been done.
- Advanced cockpits.
- The FMA, Flight Mode Annunciator.
- Technology and automation has decreased the accident rate considerably.
- Example of a flight approaching a large airport.
- Increasing automation creates an environment with new requirements for knowledge and skill.
- Ongoing training program.
- Maintaining flying skills and boosts confidence.
- The automated cockpit as an extra crew member.



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Section 8 - Workload Management (Duration 16 minutes)

- Many important tasks which constantly compete for the crew member's attention.
- Understanding of workload management.
- Workload is defined as the work to be done divided by time.
- During a regular flight the workload is not evenly distributed.
- Graph of a crew member's workload.
- The margin between the actual workload and the maximum workload.
- The 'number 1' priority for the cockpit crew.
- Example of prioritising.
- Good workload management.
- The workload phase-of-flight diagram.
- The commander's and first officer's workload.
- Example of a real flight.

Section 9 - Culture—Cross Cultural Crew Environment (Duration 15 minutes)

- Today's civil aviation environment is truly cross cultural.
- Individual crew members, of different cultural environments.
- The company culture the company culture.
- Company-managed behaviour monitoring program and an open non-punitive reporting system.
- The reporting system.
- The national aspect.
- The commander's responsibility.
- The professional culture.
- Crew member interaction and information exchange.
- The commander has the highest authority.
- Power distance.
- Small vs. Large power distance.
- Individualism vs. collectivism.
- Masculinity vs. femininity.
- Weak vs. strong uncertainty avoidance.



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Section 10 - Pilot Skills - Personal and Leadership (Duration 22 minutes)

- How leadership can be defined.
- The commander is the leader.
- The team on board the aircraft.
- Good leadership.
- The company regulations, or SOP.
- Distributing workload among the resources available.
- Leadership is all about communication.
- The starting point in leading.
- The respect within the team.
- Empathetic leaders.
- Leaders who do not apportion blame.
- Leaders who show humility.
- Leaders with emotional control.
- Leader being accountable.
- Leader with self-confidence.
- Leaders who focus on the bigger picture.
- Different leadership styles.
- Example of leadership.

Section 11 - Safety Culture and Standard Operating Procedures (Duration 13 minutes)

- Standard Operating Procedures, SOPs.
- The reporting system.
- The company's capacity to modify the SOP.
- The SOP function as a kind a balance mechanism between safety and economics.
- Lessons learnt from a range of incidents.
- Common sense in the interests of flight safety.
- The safety culture within the company.
- The reporting hierarchy.
- Example how the commander lead the team.



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Section 12 - Communication - is this CRM (Duration 15 minutes)

- The need for good communication.
- Communication and its role in good CRM.
- Poor communication is a significant contributing factor in many aircraft incidents and accidents.
- What is communication?
- Communication involves 4 key elements.
- The dictionary of words to be used during all radio communication.
- Standard phraseology.
- Different communication channels.
- Closed Loop Communication.
- Pilot/Pilot.
- Pilot/Cabin Crew.
- Pilot/Radio.
- Example of communication problems over the radio.

The End

Completion standards:

Completion standards: By an online multiple choice test, the student shows a good knowledge of all covered areas.