

CRM & Human Factors in Aviation

Master the skills to enhance safety and teamwork in aviation operations for pilots, cabin crew, and safety personnel.

Business Instructor: David Carter • 5 sections • 59 lessons • 19.00h total

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About this course

In aviation, human error is a leading factor in incidents and accidents. Understanding human factors and implementing Crew Resource Management (CRM) is essential for reducing risks and improving team performance. This course covers the foundations of human factors, core CRM principles, advanced skills for practical application, and strategies for complex environments. Through video lessons, real-world case studies, and scenario-based training, you'll gain the tools to enhance safety and collaboration in any aviation operation.

Course curriculum

Foundations of Aviation Human Factors

- **Introduction to Human Factors in Aviation (15m)**
Understand the role of human factors in aviation safety and why it matters for every crew member.
- **Human Performance and Error Dynamics (18m)**
Explore how human performance varies and common sources of error in operational settings.
- **Attention and Perception in the Cockpit (12m)**
Learn how attention works and how to manage distractions during critical phases.
- **Memory and Cognitive Load Management (20m)**
Techniques for reducing cognitive load and improving recall in high-workload situations.
- **Stress and Fatigue: Effects on Performance (25m)**
Identify signs of stress and fatigue, and strategies to mitigate their impact on safety.
- **The SHELL Model: A Framework for Analysis (15m)**
Break down the SHELL model components and apply them to aviation scenarios.
- **Applying the SHELL Model to Real Cases (22m)**
Use the SHELL model to analyze historical incidents and identify human factor issues.
- **Case Study: Historical Accidents and Lessons (30m)**
Examine past accidents to see how human factors contributed and what was learned.

Principles of Crew Resource Management

- **What is Crew Resource Management? (14m)**
Get a clear definition of CRM and its evolution in aviation safety.
- **Effective Communication in Aviation (18m)**
Master the basics of clear and concise communication among crew members.
- **Team Structure and Role Clarity (16m)**
Understand how team roles are defined and the importance of clarity in operations.
- **Decision-Making Models for Pilots (22m)**
Learn structured decision-making approaches to handle complex situations.
- **Leadership in the Cockpit (15m)**
Explore leadership styles and how they influence crew performance.
- **Follower-ship and Supporting the Team (12m)**
The role of follower-ship in maintaining effective crew dynamics.
- **Authority Gradients and Crew Interaction (18m)**
How authority levels affect communication and steps to manage gradients.
- **Building Assertiveness for Safety (14m)**
Develop assertiveness skills to voice concerns without conflict.
- **Introduction to Threat and Error Management (20m)**
Overview of TEM and its importance in proactive safety management.
- **Identifying and Assessing Threats (16m)**
Techniques for spotting potential threats before they lead to errors.

- **Error Detection and Recovery Strategies (22m)**
How to catch errors early and implement recovery actions effectively.
- **Integrating TEM into Daily Operations (25m)**
Practical steps to embed TEM thinking into routine flight operations.

Advanced CRM Skills & Practical Application

- **Closed-Loop Communication Techniques (18m)**
Master callouts and read-backs to ensure message clarity and confirmation.
- **Checklist Discipline and Management (15m)**
Best practices for using checklists to prevent omissions and errors.
- **Building Situational Awareness (22m)**
Methods to enhance awareness of the flight environment and crew status.
- **Workload Management in High Phases (20m)**
Strategies to distribute workload effectively during takeoff, landing, and emergencies.
- **Conflict Resolution in the Cockpit (16m)**
Techniques for resolving disagreements without compromising safety.
- **Giving and Receiving Feedback (14m)**
How to provide constructive critique and learn from feedback in real-time.
- **Multi-Crew Cooperation Fundamentals (18m)**
Introduction to MCC and the skills needed for effective crew coordination.
- **MCC Simulator Exercises: Scenarios (30m)**
Apply CRM skills in simulated multi-crew scenarios for hands-on practice.
- **Integrating Skills into Real Flights (25m)**
How to transfer CRM training to actual flight operations seamlessly.
- **Practical CRM Application Review (20m)**
Review key skills and discuss common challenges in applying CRM daily.

CRM in Complex Operational Environments

- **CRM During Emergency Procedures (25m)**
How to maintain CRM principles when handling emergencies and abnormal situations.
- **Managing System Degradations (20m)**
Crew strategies for dealing with failing or degraded aircraft systems.
- **High-Stress Decision Making (22m)**
Case-based learning on making sound decisions under extreme pressure.
- **Technology Integration: Automation and CRM (18m)**
Understanding human-automation interaction and maintaining situational awareness.
- **Challenges of Automated Flight Systems (16m)**
Common issues with automation and how CRM can address them.
- **Cross-Cultural Crew Communication (15m)**
Navigating communication barriers in diverse crew settings.
- **Organizational Culture Impact on CRM (18m)**
How company culture influences CRM effectiveness and safety outcomes.

- **Case Study: 2020s Incident Analysis (32m)**
Analyze recent incidents to see CRM successes and failures in modern aviation.
- **Adapting CRM for Different Aircraft (20m)**
How CRM practices vary with aircraft type and operational context.
- **Multi-Cultural Crew Dynamics (22m)**
Strategies for building cohesion and understanding in multicultural teams.
- **Authority Issues in New Environments (14m)**
Handling authority challenges when working with unfamiliar crews or procedures.
- **Simulation for Complex Scenarios (28m)**
Advanced simulator training to practice CRM in high-risk situations.
- **Post-Incident Review and Learning (20m)**
Using incident reviews to enhance CRM practices and prevent recurrence.
- **Continuous Improvement in Operations (16m)**
Methods to continually refine CRM skills and team performance.
- **Integrating CRM in High-Risk Phases (22m)**
Focused training on applying CRM during critical flight phases.

The Future of CRM & Human Factors

- **Evolving Trends in Aviation Human Factors (18m)**
Overview of current research and future directions in human factors.
- **Fatigue Management and Sleep Science (22m)**
Latest findings on fatigue and practical strategies for better rest.
- **Mental Health in Aviation Careers (20m)**
Addressing mental health challenges and support systems for professionals.
- **Neurodiversity and Inclusion Practices (16m)**
How to accommodate neurodiverse crew members for team benefit.
- **CRM for Unmanned Aerial Systems (25m)**
Applying CRM principles to drone operations and remote piloting.
- **Single-Pilot Operations and CRM (22m)**
Adapting CRM skills when flying solo or with reduced crew.
- **Data-Driven CRM with FOQA/FDM (20m)**
Introduction to flight data monitoring for proactive CRM enhancement.
- **Analyzing Flight Data for Insights (18m)**
How to use data from FOQA/FDM to identify CRM trends and issues.
- **Proactive Safety Management (15m)**
Shifting from reactive to proactive safety using data and CRM.
- **Developing a Personal CRM Mindset (14m)**
Cultivate habits and attitudes for continuous safety improvement.
- **Continuous Learning Strategies (12m)**
Methods to keep CRM skills sharp through ongoing education.
- **Future Technologies and CRM (20m)**
How emerging tech like AI and VR will influence CRM training and operations.

- **Regulatory Evolution and Standards (16m)**
Current and future regulations shaping CRM implementation.
- **Course Summary and Integration (25m)**
Recap all CRM principles and how to apply them in your career.

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