

THE AVIATION AND AEROSPACE FUNDAMENTALS SHORT COURSES

COURSE OUTLINES 2020



A AVIATION/
AEROSPACE
AUSTRALIA
SKILLS & TRAINING

NO OTHER CAREER CAN TAKE YOU HIGHER



FIND YOUR FLIGHT PATH

Aviation and Aerospace Fundamentals is a series of short courses designed to offer you the foundational skills and knowledge you need. Designed by industry for industry, in as little as one day you can do sample or short courses that can help you pursue the path that's right for you.



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1. AEROSPACE

This course will provide you with foundational knowledge of the aerospace industry evolution, key moments in history that influenced advancements and a unique insight into the next 50 years of aerospace. You will explore the design and creation of an aerospace vehicle including: specifications, aerodynamics, materials and structures, electronics and avionics. You will learn about the critical aspects of performance, safety, data analytics and operational systems, and get an overview of design successes and failures, drawing on key case studies that influence aerospace today.

TOPICS COVERED INCLUDE:

- / Evolution of aerospace
- / Aerospace in Australia
- / Regulations that influence the creation of aerospace vehicles
- / Aerospace failures from a design and operational perspective
- / Aerospace successes and emerging innovations
- / Design, manufacture, maintenance and operations



2. AIR TRAFFIC MANAGEMENT

This course will provide you with an overview and foundational knowledge of Air Traffic Management (ATM) and Air Traffic Control (ATC). All aircraft need to be controlled and separated, which requires a high degree of expertise. The course will give you a real taste of the daily life of an air traffic controller and the many interesting tasks and responsibilities that the job entails.

TOPICS COVERED INCLUDE:

- / Air Traffic Control awareness
- / The engineering life cycle
- / Separation standards - keeping planes apart in the air and on the ground
- / Navigation and communication systems used in ATM



3. AVIATION – INNOVATION/ NEW TECH

This course will provide you with an understanding of innovation and new technologies used in the aviation and aerospace industry, and how these innovations affect flight safety and efficiency and address environmental concerns. You will gain an insight into the ethical and environmental issues and responsibilities that come with new technologies and innovation.

TOPICS COVERED INCLUDE:

- / Key areas within aviation and aerospace affected by new technologies and innovations
- / The importance of innovation and new technology
- / Key challenges, risks and factors influencing the development of new technologies and innovations into safety-critical operations
- / Current and emerging innovations and new technology
- / The changing roles and functions in the aviation and aerospace industry as a result of innovation and new technologies
- / Innovation management models



4. AVIATION ECOSYSTEM

This course will give you an insight into the world of aviation and aerospace. The industry is made up of many different sub-sectors, and you'll learn how all of these different elements, systems, functions, roles and organisations work together to seamlessly deliver and support safe and efficient air transport. It's a must for anyone wishing to enter the aviation and aerospace industry.

TOPICS COVERED INCLUDE:

- / Roles and functions across the aviation sector
- / The regulatory environment
- / The framework including legislation, training and licensing
- / Civil and military operations
- / Safety, security and environmental systems
- / Aerospace operations
- / Innovation and technology in aviation



5. AVIATION MANAGEMENT SYSTEMS

This course will introduce you to the fundamental knowledge required to design a management system within the aviation and aerospace industry, particularly with regards to safety, environmental and security systems. You will develop an awareness of why we need these systems, as well as the responsibilities when designing and developing these important tools. The course will help you understand documentation, risk management, reporting systems, surveillance and records management. It's suitable for both those with little or no professional experience in the aviation and aerospace arena or those already working in the industry.

TOPICS COVERED INCLUDE:

- / The reasons behind the implementation of management systems
- / Risk management at a systems level
- / The attitudes, behaviours, and safety culture of the industry
- / Legislation and industry requirements
- / Risk identification and assessment
- / Quality assurance
- / Implementing a management system



6. AVIATION SAFETY – INTRODUCTION

Over a relatively short time period, aviation and aerospace has developed into one of the safest, most extensive, highly regulated and integrated industries. This course will provide you with a foundational level of understanding and basic skills and awareness of the non-technical aspects of the work environment, the role of the individual and the connections between the individual and organisational management of risk and safety.

TOPICS COVERED INCLUDE:

- / Safety Management Systems and how they contribute to continuous improvement in safety
- / Regulations (Civil Aviation Safety Authority (CASA) & International Civil Aviation Organisation (ICAO)) and how they apply to different roles
- / Understanding and working within a just culture
- / Identifying hazards, assessing risks and applying controls using a hierarchy of controls
- / Considering roles, responsibilities and accountability in safety
- / Impacts of non-compliance on self, organisations and the industry



7. BASIC AVIATION THEORY

This course will introduce you to the basics of aviation theory including aircraft terminology, navigation and aerodynamics. It will provide you with a greater understanding of aircraft, how they take flight, and factors that may affect an aircraft whilst in flight. The course will help you understand how aircraft get in the air, steer in the air, stay in the air, and land safely.

TOPICS COVERED INCLUDE:

- / Aircraft terminology
- / Aerodynamics
- / Navigation
- / Performance and loading
- / Air law
- / Meteorology



8. CIVIL/MILITARY – GENERAL AWARENESS

This course will provide you with introductory knowledge of Australian military aviation and the inherent differences to civil aviation. You will also learn the similarities and alignments. It explores legislation, air space, safety, variations of aircraft, and career pathways into defence, including roles supporting defence operations. This course is a useful introduction for those working in civil operations with Australian Defence, or those transitioning from Defence into civil operations. It's also suited to learners entering the aviation and aerospace industry or as a refresher or primer for cross-industry or inter-industry graduates, managers and support personnel.

TOPICS COVERED INCLUDE:

- / The military ecosystem, roles and responsibilities
- / The history of military aviation
- / Defence regulatory framework
- / Military aircraft and air traffic management
- / National security and overseas operations
- / Primes working with defence, restrictions and guidelines
- / Military careers and job opportunities



9. CRITICAL INCIDENT MANAGEMENT

This course will provide you with foundational knowledge of the procedural response framework and supporting processes that underpin critical incident management in the aviation industry. It provides an overview of the legislative and regulatory framework and a more detailed understanding of the response framework based on the Australasian Inter-Service Incident Management System (AIIMS) - Australia's system of incident management for fire and emergency services agencies. We will explore the response and planning roles at the four functional levels – tactical response, critical incident response, business continuity plans and incident communication plans. You will have an opportunity to practice through an immersive Virtual Reality (VR) experience.

TOPICS COVERED INCLUDE:

- / Defining critical incidents
- / Identifying examples of critical incidents
- / Identifying the objectives of critical incident management
- / Legislative acts and regulations governing the management of critical incident
- / Australia's Critical Incident Response Framework
- / Functional roles in critical incident response
- / Scalability under which the framework operates
- / Investigating and reporting critical incidents



10. DANGEROUS GOODS

Fundamental to handling goods is our ability to detect a dangerous good and therefore prevent harmful risks involved for humans, the environment and property. This course will introduce you to the basics of Dangerous Goods Awareness. When applied to aviation operations, dangerous goods knowledge is used in a variety of roles to ensure the safe and regulated practice of carrying goods by air. Through the course, you will develop awareness on how to identify the nine classes of dangerous goods, along with those hidden dangers which are unknowingly present in some goods.

TOPICS COVERED INCLUDE:

- / Regulations covering Dangerous Goods
- / Responsibilities of all people involved in handling dangerous goods
- / Documentation requirements
- / Handling and loading dangerous goods correctly
- / Responding to an emergency situation



11. FATIGUE RISK MANAGEMENT OHS/WHS

This course will provide you with an understanding of the foundational issues pertaining to Fatigue Risk Management in the aviation and aerospace industry. You will learn how to develop life skills in identifying and managing the signs and symptoms of fatigue and its impact on alertness, safety and operational performance. It will provide you with a toolkit and 'go to' ready references to support you in dealing with fatigue in a variety of situations. Fatigue Risk Management is pivotal to the safety and welfare of all personnel in aviation. Adopting a range of fatigue risk management strategies is the cornerstone of CASA's Fatigue Risk Management program.

TOPICS COVERED INCLUDE:

- / Identifying shared duty of care in terms of Occupational Health & Safety (OHS) and Workplace Health & Safety (WHS)
- / Recognising personal signs/symptoms of tiredness and fatigue
- / Understanding the different levels of fatigue impairment and impacts on performance
- / Applying approaches that enhance alertness and increase personal performance
- / Increasing performance by practising strategies and tactics specific to individuals in your role



12. HUMAN FACTORS

This course will introduce you to the foundational concepts involved in the field of human factors, relating to human performance. A greater understanding of human performance results in better informed employees, contributing to a safer and more positive workplace environment. You will learn and practice skills in: identifying outcomes that can arise due to human limitations; effective, productive and efficient decision making; simple analysis of the systemic cause(s) of human error.

TOPICS COVERED INCLUDE:

- / Human performance limitations
- / Human performance benefits
- / Human information processing and decision making
- / How the application of human factors has changed the way we work today
- / The future of automation within the work environment, and how this changes the amount of human interaction
- / How human performance is managed in the aviation industry



13. INTRODUCTION UAV/RPAS (DRONES)

Whilst drones are popular for recreational use, they're also becoming more widespread in workplaces, with significant benefits to organisations. This course will introduce you to the Remotely Piloted Aircraft Systems (RPAS), also known as Unmanned Aerial Vehicles (UAV) or drones. You will learn about RPAS operations in Australia and the regulatory and safety framework in which they operate. You will get a greater understanding of the history and evolution of unmanned system technology, the possibilities and applications, as well as legislative and other operational requirements. You'll also have an opportunity explore their application in a 'fun to fail' environment using virtual reality (VR).

TOPICS COVERED INCLUDE:

- / The history of UAV/RPAS, the applications, benefits and limitations
- / The ecosystem of the RPAS/UAV industry
- / Legislation and regulations
- / The future of RPAS/UAV



14. PROBLEM DEFINITION & SOLVING

This course will enable you to develop a fundamental awareness of problem definition and solving across a variety of roles within aviation. You will work through a given problem scenario, mapping your analytical thinking to the steps and stages of the D.E.C.I.D.E model. As time constraints often compromise even the most logical decision-making models, the scenario will include a timeframe typically imposed on people in aviation environments. The problem-solving process will require a structured, step-by-step approach, enabling you to develop your own action plan scenario, drawing on strong teamwork, critical thinking and an open mind.

TOPICS COVERED INCLUDE:

- / Problem definition
- / Problem categorisation
- / Risks associated with various problems
- / Personal risk appetite
- / Human thinking and personal biases
- / The impact of personal perception on problems and potential solutions
- / The D.E.C.I.D.E model and its application
- / Problem analysis and action plans



15. RADIO COMMUNICATIONS

This course will give you foundational knowledge of the use of radio communications across the aviation industry. It will explain how radio communications are applied in delivering and supporting air transportation safely and efficiently, particularly within the Australian context. Radio communications are vital to working in the industry, and this course will give you a sound understanding of their application.

TOPICS COVERED INCLUDE:

- / The history and use of radio communication in aviation and aerospace
- / Different applications of radio across aviation and aerospace
- / Frequencies and equipment
- / Limitations and mitigations
- / Radio etiquette and discipline
- / Phonetic alphabet and phraseology
- / Regulations and certification



16. REGULATORY ENVIRONMENT

This course will provide you with knowledge of the relevant regulatory frameworks across the aviation and aerospace industry and how they are operationalised within the Australian context. The course is suited to people entering the aviation and aerospace industry or for those wanting a refresher or primer for cross-industry or inter-industry graduates, managers and support personnel. Throughout the course, you will learn and practice how to locate acts, regulations and legislation relating to individual roles and sub-sectors of aviation and aerospace.

TOPICS COVERED INCLUDE:

- / How regulatory frameworks affect people and their work
- / The importance of safety and risk mitigation/elimination
- / The organisations and authorities that provide oversight to the industry
- / Acts, regulations and other legislative instruments that provide mitigation through governance to the industry
- / Non-compliance on a world stage



17. RESPONSIBLE OPERATIONS – ALCOHOL & OTHER DRUGS

This course will provide you with foundational knowledge on the effects of alcohol and other drugs and the importance of responsible operations in safety-sensitive aviation and aerospace activities. It's critical that personnel operating in aviation and aerospace roles consider the potential effects of alcohol and other drugs on work performance and the ability of a person to complete tasks efficiently, effectively and in a safe manner. This course is a good introduction to the formal requirements an aviation or aerospace employer may require you to undertake.

TOPICS COVERED INCLUDE:

- / What constitutes “drugs”
- / What does “under the influence” mean
- / The effects that alcohol, medications or drugs may have on performance
- / The testing process of alcohol and other drugs
- / The regulatory requirements around alcohol and other drugs in the aviation and aerospace industry
- / Aviation and aerospace culture, organisational and individual attitudes towards alcohol and other drug use, and the ramifications within the ecosystem



18. SECURITY

This course will provide you with a foundational level of understanding of the security related roles and responsibilities across the aviation and aerospace ecosystem. The course will introduce you to physical security, cyber security and biosecurity considerations. You will learn how to follow a structured step-by-step approach to develop your own Transport Safety Plan and apply learning to the workplace.

TOPICS COVERED INCLUDE:

- / Application of the theory and model to a range of aviation roles
- / Industry-relevant case studies and research and guided discussions
- / The role of the International Civil Aviation Organization (ICAO)
- / Aviation Transport Security Act 2004 (Cwth)
- / Security policies and procedures and practices
- / Technology Control Plans (TCPs)



19. SIMULATION

This course will introduce you to the use of simulation and simulated environments within the aviation industry. Simulation doesn't just mean the big jet flight simulators you may have seen. Simulators are used widely across the industry for training, testing, recruitment and many other purposes. Ground operations, air traffic management and manufacturing all use simulators of one kind or another. Once you've completed this course you will certainly be interested in trying it out for yourself.

TOPICS COVERED INCLUDE:

- / The history of simulation
- / Use of simulation activities across the sub-sectors of aviation, including cabin crew, air traffic management, manufacturers and pilots
- / Purposes and benefits of simulation
- / Limitations and regulations of simulation
- / Future of simulation



20. TECHNICAL DOCUMENTATION

This course will provide you with foundational knowledge of a broad range of technical documentation applied in aviation and aerospace. It will address their importance, management and inter-relations across a diverse and complex sector. With a rapidly growing and changing aviation and aerospace industry landscape, forecast higher traffic volumes and a broader range of airspace users, awareness of technical documentation and its application becomes increasingly critical. This is further heightened with accelerated technological change, digitalisation and greater integration of airspace and flight information regions.

TOPICS COVERED INCLUDE:

- / Technical and operations documentation across aviation and aerospace
- / The legislative framework, governing bodies, regulators, policy and procedure
- / The aviation ecosystem
- / Types of documents including engineering, manufacturing and air traffic management systems
- / Quality Processes/Systems
- / Regulatory framework
- / Compliance and auditing



1300 889 459
info@aviationaerospace.org.au
MyFlightPath.org.au

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