Course Overview

Course Background

This MSc level course module for Aviation Fuels & Additives was originally developed in 2016 as part of a collaboration between Airbus and the UK Government’s then Department for Business, Innovation & Skills (BIS) as part of the Employer Ownership of Skills (EOS) programme.

The aim of the course is to provide training to develop specialist skills in a growing field where there is currently a knowledge and skills gap in the industry. This follows the increase in new semi-synthetic fuel blends entering the market and the work around the world to accelerate development of the next generation alternative fuels.

The University of Sheffield

The University of Sheffield have been selected by Airbus as a preferred partner for development of this course in recognition of the existing strong links that the University has, both with Airbus and other large organisations working in Aviation Fuels.

Sheffield’s reputation for the excellence, impact and distinctiveness of their research-led learning and teaching, coupled with enthusiasm to work across different faculties and with industry lecturers makes them the obvious partner of choice.

Hosting the course in the world class facilities of The Diamond will provide a fantastic place for modern interdisciplinary teaching, as well as specialist engineering teaching facilities.
**Key Information**

- **Start Dates:** 8th to 12th April 2019
- **Training:** 35 hours directed learning at an MSc Level of teaching.
- **Delivery:** The University of Sheffield at ‘The Diamond’ building, a state-of-the-art engineering learning and teaching facility. Also includes a practical lab day at the Sheffield Low Carbon Combustion Centre in nearby Beighton Industrial Park.
- **Teaching:** 50-50 Split between leading academics and industrial guest lecturers. A mix of lectures, tutorials, practical hands on lab sessions, plenary sessions and group exercises and case studies.
- **Cost:** £1750 per delegate excluding accommodation

For more information about contributing to the course development or attending the course, please contact:

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Course Content

Target Audience
Aerospace professionals working in areas affected by aviation fuels and additives e.g. new aviation fuel clearances, future equipment and sub-system design (fluids & gauging), process and strategy, in-service support, aviation fuel and additive production and processing.

Learning Objectives
At the end of the course you will:

- Be able to demonstrate a thorough understanding of current practice in fuels approval and its limitations and some appreciation of likely new developments.
- Be able to demonstrate knowledge of the relationship between fuel type (origin and performance properties) / additives and the impact on aircraft and gas turbine safety, performance, emissions, material compatibility and reliability.
- Have an appreciation of fuel performance and design limits to support the design, development, certification and in-service support of fuel related aircraft and gas turbine systems.
- Be able to use fundamental knowledge of aviation fuels and additives to investigate new and emerging technologies through analysis of the fuel properties and performance in service.
- Understand the role and impact fuels and additives can play on the environmental sustainability of the aerospace industry.
- Be able to undertake investigation work of in-service fuel system and component problems and issues and interpret fuel analysis data.
A Greener Future

Whilst there are Fuel and Additive courses available today, none focus on the aspects of fuel composition with an airframer or engine manufacturer in mind, particularly for new fuels from alternative feedstock.

Whether you are producing the next generation biofuel, designing the next aircraft fuel system or power plant, or simply supporting aircraft in service, this course will arm you with knowledge and practical experience to improve your effectiveness in the industry.

Course Content

Aviation Fuel Chemistry, Properties & Production Processes
(Traditional petroleum crude based fuels)

New Fuel Pathway Properties & Production
(for Certified & emerging synthetic fuels pathways)

Fuel Specifications, Standards & Governance
  • ASTM / DEF STAN specifications (role, management processes and fuels evolution impact)
  • Role of ICAO / FAA / EASA and sustainability groups

Jet Fuel Control: Specification Test Methodology
  • Test methods theory and application
  • Practical laboratory session

Effect of Fuel Composition on Aircraft Emissions & Local Airport Air Quality
  • Gaseous and particulate matter emissions

Jet Fuel & Additive Clearance: Powerplant Assessment & Testing
Inc. OEM engineering process of approval

Jet Fuel & Additive Clearance: Airframe Systems Assessment & Testing
Inc. OEM engineering process of approval

In-Service Support & Diagnostics
  • How to think / who to see / what to do

Microbiological Contamination of Jet Fuel
  • Chemistry, prevention, treatment, research/future trends

Designing for Challenges Facing Fuel Suppliers, Airlines & Airports
  • Policy, demand, environment and sustainability
  • Fuel quality and fuel supply infrastructure needs with alternative fuels