Aircraft Propulsion Systems: Principles and Practices (AERO0080)

Instructor: Saeed Farokhi

Course Highlights
- Modern gas turbine engines, Geared Turbofans, ATP
- Component design guidelines
- System performance evaluation
- Propulsion-Airframe Integration
- Future directions in propulsion and power

Course Description
This course studies the basic principles of propulsion systems with emphasis on jets and fan systems. It also includes the study of inlets and nozzles, compressors, burners, fuels, turbines and jets culminating in design and off-design engine analysis, performance and environmental considerations. The impact of propulsion system integration on external aerodynamics and (noise and IR) signature reduction is also presented, along with an introduction to novel concepts in propulsion.

Who Should Attend?
This course is intended for practicing engineers in the aircraft industry, engineering faculty (mechanical, aerospace, industrial and power), engineering students (undergraduate and graduate), government officials working in the power and propulsion sector, decision makers who need a working knowledge of gas turbines and contractors.

Learning Objectives
- First principles approach to jet engine components and their design guidelines
- Integrate components to form a complete Propulsion System
- Analyze the performance of any conventional and unconventional jet engine
- Understand propulsion-aircraft system integration issues
- Understand tradeoffs involved in “optimal” design
Course Outline

Day 1

Morning Sessions
1. Introduction to Gas Turbines Engines
2. Review of Aero-Thermodynamics

Afternoon Sessions
3. Gas Turbine Engine Cycle Analysis – Part I
4. Gas Turbine Engine Cycle Analysis – Part II

Day 2

Morning Sessions
5. Aircraft Intake Systems- Part I
6. Aircraft Intake Systems- Part II

Afternoon Sessions
7. Combustion Principles & Combustion Chamber Aerodynamics
8. Problem Solving, Practice and Interim Review

Day 3

Morning Sessions
10. Axial-Flow Compressor Aerodynamics & Design Principles- Part II

Afternoon Sessions
11. Centrifugal Compressor Aerodynamics
12. Problem Solving, Practice and Interim Review

Day 4

Morning Sessions

Afternoon Sessions
15. Aircraft Exhaust Systems
16. Problem Solving, Practice and Interim Review
Day 5

Morning Sessions

17. Gas Turbine Engine Component Matching- Part I
18. Gas Turbine Engine Component Matching- Part II

Afternoon Sessions

19. Aircraft Engine Testing Principles
20. Problem Solving, Practice and Summary

Classroom hours / CEUs
35 classroom hours
3.5 CEUs

Certificate Track
Airplane Design

Course Fees
Early registration fee: $2,495 if you register and pay by the early registration deadline (45 days out).

Regular registration fee: $2,695 if you register and pay after the early registration deadline.

U.S. Federal Employee Discount
This course is available to U.S. federal employees at 10% off the registration fee. To receive the federal employee discount, you must enter the code FGVT116 during the checkout process. Please note that you must validate your eligibility to receive this discount by entering your U.S. government email address (ending in .gov or .mil) when creating your online registration profile. This discount is available for both the early registration and regular registration fees.

Netherlands Defence Academy Discount
This course is available to Netherlands Defence Academy employees at a discounted registration fee. Please contact the NDA Procurement and Contracting department for details. Please note that you cannot register using our online system when requesting this discount.

This class is available for delivery at your company.
Your company can realize substantial savings by bringing an aerospace short course to your workplace. On-site delivery is ideal for organizations that need to train 10 or more employees on a specific topic. For more information on on-site course delivery, or to request a cost proposal, please contact us at 913-897-8782, or email us at ProfessionalPrograms@ku.edu.
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