DARcorporation
Design • Analysis • Research

Aerospace Structural Analysis Course Outline April 2014

Design Criteria
- Basic Overview
- FAA Airworthiness Regulations

Materials
- Properties and Design Allowables
- Selection: Metallic and Composite

Loads
- Developing Loads
- Application of Aerodynamic, Inertial and Environmentally Induced Loads

Static Stress Analysis
- Failure Theory
- Classical Methods
- Finite Element Analysis
- Margin of Safety and Failure Mode

Dynamic Normal Mode Analysis and Frequency Response Analysis
- Natural Frequencies and Mode Shapes
- Damping and Response

Elastic Stability
- Buckling
- Crippling

Joints
- Fastened
- Bonded

Aeroelasticity Analysis
- Divergence
- Flutter

Fatigue Analysis
- Fatigue History
- Crack Growth

Static Load Test
- Testing Requirements
- Testing Instruments

Dynamic Test and Ground Vibration Test
    Testing Instruments
    Data Processing