AIRCRAFT OPERATING LIFE AND DURABILITY

1. History of fatigue research.
2. Basic definitions: fatigue, durability, service life.
3. Aviation legislation codes that regulates fatigue strength of aircrafts.
4. Basic loading cycles and their parameters: mean stress, alternating stress, stress range, stress ratio, amplitude ratio.
5. The loads on an airframe structure. Ground-Air-Ground cycle (G-A-G).
6. Airplane Wing Loading
7. Fatigue design criteria: Infinite-Life Design, Safe-Life Design, Fail-Safe Design, Damage-Tolerant Design.
8. In-service inspection of aircrafts structural components.
9. Different phases of the fatigue life.
10. Crack initiation process.
11. Fatigue test machines.
12. Fatigue test specimens.
13. Stress-life (S-N) curves.
14. Factors influencing S-N behavior.
15. Notches and their effects on aircraft structural components durability. Stress concentration factor.
16. Widespread fatigue damage.