



SNS COLLEGE OF TECHNOLOGY

COIMBATORE-35



DEPARTMENT OF MECHATRONICS ENGINEERING

19MCT402-APPLIED MECHATRONICS ENGG.

Unit – 3 AVIONICS

Navigation Management System

It comprises the operation of all radio navigation aid systems and the combination of data from all navigation sources such as GPS and INS systems, to provide the best estimation of the aircraft position and ground speed.

Autopilots and Flight Management Systems

The autopilot relieves the pilot in long range mission. FMS came into use in 1980's (Civil Aircraft). The FMS tasks are given below.

- (i) Flight Planning
- (ii) Navigation Management
- (iii) Engine control to maintain the planned speed
- (iv) Control of Aircraft Flight Path
- (v) Minimizing Fuel consumption
- (vi) Ensuring the aircraft is at the planned 3D position at the planned time slot (for Air Traffic Control).

Engine Control and Management

Modern jet engines are having the Full Authority Digital Engine Control System (FADEC). This controls flow of fuel. This control system ensures the engine's temperature, speed and acceleration in control. Engine health monitoring system record a wide range of parameters, so it will give early warning of engine.

performance deterioration, excessive wear, fatigue damage, high vibrations, excessive temperature etc.,

House Keeping Management

Automation of the background task which are essential for the aircraft's safe and efficient operation.

Background tasks include

- i) Fuel management
- ii) Electrical power supply management
- iii) Hydraulic power supply management
- iv) Cabin / Cockpit pressurization systems
- v) Environmental control systems
- vi) Warning systems
- vii) Maintenance and monitoring systems.

AVIONICS SYSTEM DESIGN

Starting point for designing a digital avionics system is a clear understanding of the mission requirements. The three stages of avionics system design are:

- Conceptual design
- Preliminary design
- Detailed design