

AE8016 FLIGHT INSTRUMENTATION

DETAILED SYLLABUS

UNIT I MEASUREMENT SCIENCE AND DISPLAYS

Instrumentation brief review-Concept of measurement-Errors and error estimation- Functional elements of an instrument system –Transducers - classification - Static and dynamic characteristics- calibration - classification of aircraft instruments - Instrument displays panels and cockpit layout.

UNIT II AIR DATA INSTRUMENTS AND SYNCHRO TRANSMISSION SYSTEMS

Air data instruments-airspeed, altitude, Vertical speed indicators. Static Air temperature, Angle of attack measurement, Synchronous data transmission system

UNIT III GYROSCOPIC INSTRUMENTS

Gyroscope and its properties, gyro system, Gyro horizon, Direction gyro-direction indicator, Rate gyro-rate of turn and slip indicator, turn coordinator, acceleration and turning errors.

UNIT IV AIRCRAFT COMPASS SYSTEMS & FLIGHT MANAGEMENT SYSTEM

Direct reading compass, magnetic heading reference system-detector element, monitored gyroscope system, DGU, RMI, deviation compensator. FMS- Flight planning-flight path optimization-operational modes-4D flight management

UNIT V POWER PLANT INSTRUMENTS

Pressure measurement, temperature measurement, fuel quantity measurement, engine power and control instruments-measurement of RPM, manifold pressure, torque, exhaust gas temperature, EPR, fuel flow, engine vibration, monitoring.

REFERENCES:

1. Doebelin. E. O, "Measurement Systems Application and Design", McGraw-Hill, New York, 1999.
2. Harry L. Stilz, "Aerospace Telemetry", Vol I to IV, Prentice-Hall Space Technology Series.
3. Murthy, D.V.S., "Transducers and Measurements", McGraw-Hill, 1995
4. Pallet, E.H.J. "Aircraft Instruments & Integrated systems", Longman Scientific and Technical, McGraw-Hill, 1992.