EC6006 AVIONICS

DETAILED SYLLABUS

OBJECTIVES:

- To understand the needs for avionics for both Civil and military aircraft.
- To introduce various digital electronic principles and working operations of digital circuit.
- To integrate the digital electronics with cockpit equipments
- To understand the various principles in flight disk and cockpit panels.
- To study the communication and navigation equipment
- To study certificate aspects of the Avionics system

UNIT I INTRODUCTION TO AVIONICS

Basics of Avionics-Basics of Cockpits-Need for Avionics in civil and military aircraft and space systems – Integrated Avionics Architecture –Military and Civil system – Typical avionics System and Sub systems – Design and Technologies.

UNIT II DIGITAL AVIONICS BUS ARCHITECTURE

Avionics Bus architecture–Data buses MIL–RS 232- RS422-RS 485-AFDX/ARINC-664-MIL STD 1553 B–ARINC 429–ARINC 629- Aircraft system Interface

UNIT III FLIGHT DECK AND COCKPITS

Control and display technologies CRT, LED, LCD, EL and plasma panel - Touch screen - Direct voice input (DVI) – ARINC 818-Civil cockpit and military cockpit: MFDS, PFDS-HUD, HMD, HMI

UNIT IV AVIONICS SYSTEMS

Communication Systems - Navigation systems - Flight control systems - Radar electronic Warfare - Utility systems Reliability and maintainability Fundamentals- Certification-Military and civil aircrafts.

UNIT V ON BOARD NAVIGATION SYSTEMS

Over view of navigational aids, Flight planning, Area navigation, required time of arrival, RNAV architecture, performance aspects, approach and landing challenges, regulatory and safety aspects, INS, GPS and GNSS characteristics.

TEXT BOOK:

1. R.P.G. Collinson, “Introduction to Avionics”, Chapman & Hall Publications, 1996.

REFERENCES:

1. Cary R. Spitzer, “The Avionics Handbook”, CRC Press, 2000.

2. Middleton, D.H. “Avionics Systems”, Longman Scientific and Technical, Longman Group UK Ltd., England, 1989.

3. Spitzer, C.R. “Digital Avionics Systems”, Prentice Hall, Englewood Cliffs, N.J., U.S.A., 1987.

4. Brain Kendal, “Manual of Avionics”, The English Book House, 3rd Edition, New Delhi, 1993

5. Jim Curren, “Trend in Advanced Avionics”, IOWA State University, 1992.