

7th Semester	RAE7D005	UAV Systems	L-T-P 3-0-0	3 Credits
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Module-I:**INTRODUCTION TO UAV**

History of UAV –classification – Introduction to Unmanned Aircraft Systems--models and prototypes
– System Composition-applications

Module-II:**THE DESIGN OF UAV SYSTEMS**

Introduction to Design and Selection of the System- Aerodynamics and Airframe Configurations- Characteristics of Aircraft Types- Design Standards and Regulatory Aspects-UK,USA and Europe- Design for Stealth--control surfaces-specifications.

Module-III:**AVIONICS HARDWARE**

Autopilot – AGL-pressure sensors-servos-accelerometer –gyros-actuators- power supply-processor, integration, installation, configuration, and testing

Module-IV:**COMMUNICATION PAYLOADS AND CONTROLS**

Payloads-Telemetry-tracking-Aerial photography-controls-PID feedback-radio control frequency range –modems-memory system-simulation-ground test-analysis-trouble shooting

Module-V:**THE DEVELOPMENT OF UAV SYSTEMS**

Waypoints navigation-ground control software- System Ground Testing- System In-flight Testing- Future Prospects and Challenges-Case Studies – Mini and Micro UAVs.

Books:

- [1] Reg Austin “Unmanned Aircraft Systems UAV design, development and deployment”, Wiley, 2010.
- [2] Robert C. Nelson, Flight Stability and Automatic Control, McGraw-Hill, Inc, 1998.
- [3] Kimon P. Valavanis, “Advances in Unmanned Aerial Vehicles: State of the Art and the Road to Autonomy”, Springer, 2007
- [4] Paul G Fahlstrom, Thomas J Gleason, “Introduction to UAV Systems”, UAV Systems, Inc, 1998
- [5] Dr. Armand J. Chaput, “Design of Unmanned Air Vehicle Systems”, Lockheed Martin Aeronautics Company, 2001