



SATHYABAMA

INSTITUTE OF SCIENCE AND TECHNOLOGY

(DEEMED TO BE UNIVERSITY)

Accredited with "A" Grade by NAAC

Jeppiaar Nagar, Rajiv Gandhi Salai, Chennai - 600 119.

Phone: 044 - 2450 3150 / 51 / 52 / 54 / 55 Fax: 044 - 2450 2344

www.sathyabama.ac.in



SAEA4001	Fundamentals of Aerospace Technology	L	T	P	C
		3	0	0	3

UNIT1 BASIC PROPERTIES OF ATMOSPHERE

9Hrs.

Heat, Temperature, and Temperature Scales - The Electromagnetic Spectrum - Composition of the Atmosphere - Layers in the atmosphere are defined by temperature profiles, How pressure varies in the atmosphere - Principal weather instruments – Earth's Radiation Belts.

UNIT2 CLASSIFICATION OF AEROSPACE VEHICLES

9Hrs.

Fixed wing Aircraft – Classification of Aircraft, Aircraft as a Space Launcher assistance – Rotorcraft – Classification of Rotorcraft – Missiles – Classification of Missiles, Missile technology missions – Space Vehicles – classification of space vehicles.

UNIT3 SATELLITE MISSION AND CONFIGURATION

9Hrs.

Mission Overview – Requirements for different missions – Spacecraft configuration - Spacecraft Bus–Payload–Requirements and constraints– Initial configuration decisions and Trade-offs– Spacecraft configuration process– Broad design of Spacecraft Bus–Subsystem layout–Types of Satellites–Constellations– Applications

UNIT4 FUNDAMENTALS OF MISSILE SYSTEMS

9Hrs.

History of guided missile for defence applications- Classification of missiles– The Generalized Missile Equations of Motion- Coordinate Systems- Lagrange's Equations for Rotating Coordinate Systems-Rigid-Body Equations of Motion-missile system elements, missile ground systems.

UNIT5 SPACE ENVIRONMENT

9Hrs.

Peculiarities of space environment and its description– effect of space environment on materials of spacecraft structure and astronauts- manned space missions – effect on satellite life time

Max.45 Hrs.

TEXT/REFERENCEBOOKS

1. Cornelisse, J.W., "Rocket Propulsion and Space Dynamics", J.W. Freeman &Co.,Ltd, London, 1982
2. Siouris, G.M. "Missile Guidance and control systems", Springer, 2003.
3. James R.Wertzand WileyJ.Larson," Space Mission Analysis and Design", (Third Edition),1999.
4. Charles D.Brown, "Spacecraft Mission Design", AIAA Education Series, Published by AIAA, 1998
5. Van de Kamp, "Elements of astromechanics", Pitman Publishing Co., Ltd., London, 1980.