



Department of AERONAUTICAL ENGINEERING



AIRCRAFT SYSTEMS (R20A2140) COURSE COVERAGE SUMMARY

Prepared by: E Dinesh Guptha Assistant Professor Department of ANE dineshgupta.aero@mrcet.ac.in

B.TECH II – II SEMESTER - COURSE COVERAGE SUMMARY SUBJECT: AIRCRAFT SYSTEMS (R20A2140)

UNIT	TITLE OF THE UNIT	TOPIC OF THE UNIT	NAME OF THE TEXT	CHAPTER	PAGE
			ВООК	NO.	NO.
1	INTRODUCTION TO AIRCRAFT SYSTEM HYDRAULIC SYSTEM	Types of aircraft system-airframe, vehicle, avionics, mission and their subsystems. Specifications of requirements (mission and performance requirements). Operating environmental conditions. Need for integration. Enumeration of aircraft systems and some subsystems-purpose and very brief description. Function, merits and system loads. Principle components, pumps, reservoir and accumulator. Flight control actuation, need for redundancy.	MOIR, I. AND Sea bridge , A., Aircraft systems: mechanical, Electrical and avionics sub systems integration, 3rd edition, John Wiley 2008 ISBN 978-0-470-05996-8 MOIR, I. AND Sea bridge , A., Aircraft systems: mechanical, Electrical and avionics sub systems	1,2,3	1-135
		Hydraulic fluid properties requirements. Operating fluid pressures and flow rates. Landing gear and brake management system.	integration, 3rd edition, John Wiley 2008 ISBN 978-0-470-05996-8		
111	ELECTRICAL SYSTEMS AND FLIGHT CONTROL SYSTEMS	Electrical loads in aircraft, Electrical power generation and control-DC, AC. Power conversion and batteries. Load protection. Variable speed constant frequency (VSCF) Cyclo- converter, 27V DC system. Flight control systems-primary and secondary flight control. Flight control actuation systems in brief	MOIR, I. AND Sea bridge , A., Aircraft systems: mechanical, Electrical and avionics sub systems integration, 3rd edition, John Wiley 2008 ISBN 978-0-470-05996-8	5&1	181-203 & 1-7
IV	PNEUMATIC AND ENVIRONMENTAL CONTROL SYSTEMS	Engine as a source of high pressure air-engine bleed air and its users. Wing and engine anti-ice system. Engine starting system. Pitot-static system. Principal heat sources in aircraft. Method of cooling-ram air, fuel cooling. Cooling system-air cycle refrigeration-types-turbo fan, bootstrap, reverse bootstrap systems. Cabin pressurization. G-tolerance and protection. Molecular-Sieve oxygen concentrator.	MOIR, I. AND Sea bridge , A., Aircraft systems: mechanical, Electrical and avionics sub systems integration, 3rd edition, John Wiley 2008 ISBN 978-0-470-05996-8	6&7	239-256 & 259-274 & 284-286
V	ENGINE CONTROL AND FUEL SYSTEM	Principle of operation of aircraft gas turbine engine. Engine-airframe interface. Control of fuel flow, air flow, exhaust gas flow- need, means, system parameters, basic input and outputs. Limited authority and full authority engine control systems. Engine monitoring sensors and indicators.	MOIR, I. AND Sea bridge, A., Aircraft systems: mechanical, Electrical and avionics sub systems integration, 3rd edition, John Wiley 2008 ISBN 978-0-470-05996-8	2 & 3	51-60 & 87- 93, 94-96

Power off takes-need, types and effect		
on engine performance. Fuel system-		
components, fuel tank safety-fuel		
inerting system.		