MINIMUM CORE SUBJECT AREAS: AIRCRAFT ENGINEERING

AREA	SUBJECTS / DESCRIPTION	RECOMMENDED CONTACT HOURS
A recommendation of 30 hours each in a minimum of 4 out of 7 areas below, totaling no less than 240 hours.		
1. Fluid Mechanics / Flight Mechanics / Flight Control	– selected topics on hydrostatics and aeronautics; viscous flow and boundary layers, inviscid incompressible flow; compressible flow; airfoil theory; mechanics of flight; computational fluid dynamics (CFD); aircraft performance in steady and accelerated flight; aircraft stability and control; aeroelasticity and vibrations; Fly-By-Wire principles; feedback and control systems; artificial intelligence/robotics; electronic control and drive system etc.	30
2. Propulsion / Thermodynamics	– selected topics on engine / gas turbine cycles/theories; propulsion systems; propellers; turbo-machinery, engineering thermodynamics, heat and mass transfer etc.	30
3. Structural / Solid Mechanics	– selected topics on statics and dynamics; Finite Element Analysis (FEA); aircraft structures, solid mechanics; structural analysis etc.	30
4. Material Science	– selected topics on properties and applications of materials; polymers, composites and ceramics; ferrous and non-ferrous alloys and applications; materials engineering design, advanced electronic materials; advanced metals processing; fracture, fatigue and corrosion and their control; materials failure in mechanical applications; semi-conductor/electronic materials; nanomaterials and technology etc.	30
5. Design / Manufacturing	– selected topics on aircraft design and manufacturing/production; aviation safety and reliability; CAD/CAM; manufacturing technologies and processes; mechanical design; engineering design and applications; design of analogue/digital integrated circuits; logic circuit design; antenna design; control system design; electro-robot design etc.	30
6. Electrical and Electronics Systems	– selected topics on aviation power system; analogue/digital circuits; digital signal processing; integrated power electronics; power/energy storage, distribution and conversion; embedded systems; aircraft electrical and actuation systems; aircraft avionics system; power system analysis and control; engineering electromagnetism; digital & analogue control systems; microwave circuits	30
7. Communication Systems	– selected topics on digital and wireless communications systems; communications engineering; data communications and networking; optical communication systems and networks; electromagnetics; radio frequency engineering; signal analysis and applications; digital signal processing	30