Master of Technology
(Avionics)

Program Outcomes (POs)

- PO1: An ability to independently carry out research / investigation and development work to solve practical problems.
- PO2: An ability to write and present a substantial technical report / document.
- PO3: Students should be able to demonstrate a degree of mastery over the area as per the specialization of the program. The mastery should be at a level higher than the requirements in the appropriate bachelor.

Program Specific Outcomes (PSO)

- ✓ PSO 1: Graduates will possess skills in design, development and testing of avionics and systems for aerospace applications.

- ✓ PSO 2: Graduates will become professionally competent to take up real time projects through aerospace industries.

- ✓ PSO 3: Graduates will become globally competitive by pursuing research in the area of avionics.

Department of Aerospace Engineering

Course Outcomes (COs)

2019 – 2021 Batch

Semester	Course Code	Course Name	Course Outcomes (COs)
I	**19MTAVS101**	Introduction to Avionics Systems	CO1:Analyse, understand and articulate the need for avionics systems in flight vehicles CO2:Synthesise various constituting subsystems and identify the LRUs CO3:Configure a typical cockpit / Flight deck based on modern displays CO4: Classify the critical nature of the software and hardware items and prepare flow charts for developing the same. CO5:Appreciate the EMI and need for EMC in flight vehicles.
	19MTAVS102	Flight Instrumentation	CO1: The learners will able to measure the error and can find the error estimation in the aircraft instruments CO2: The learners will be able know about the various air data systems and synchronous data transmissions systems CO3: The learners will be able to know the principle of gyroscope and its property, principle of DGU, RMI, FMS and its operation mode in 4D flightmanagement. CO4:The students will also have an exposure to various topics such as measurement concepts, air data sensors and measurements, Flight Management Systems, and other instruments pertaining to Gyroscopic measurements and Engine data measurements and will be able to deploy these skills effectively in understanding and analyzing the instrumentation methods in avionicsengineering.
	19MTAVS111	Smart actuators and sensors for aerospace applications	CO1:The learners will able to explain the principle of actuation system and types of actuation system CO2:The learners will able to apply the principle of servo valves and servo amplifierspick-offs CO3:The learners will able to perform design and testing on actuationsystems CO4:The learners will able to discuss the principle, theory and application of inertialsensors. CO5:The learners will able to perform testing onsensor.

	19MTAVS 112	Elements of Satellite Technology Engineers	CO1:Upon completion of this course, students will explain the advanced concepts of satellite architecture and technology to the engineers and provide the necessary mathematical knowledge that are needed in modeling physicalprocesses. CO2:The students will have an exposure on various satellite sub-systems ranging from telemetry, attitude and orbital control, propulsion, structure and satellite mission related concepts and will be able to deploy these skills effectively in the solution of problems in avionics engineering
	19MTAVSA VS113	Electro Optic Systems for Aerospace Engineers Engineers	CO1:The students will also have an, working and applications of LASERs and Infrared imaging and trackingdevices. CO2:To discuss the advanced topics relating to fiber-optic systems, allowing the avionics engineers to deploy these skills effectively in the design and development of optical systems in avionics engineering.
	19MTAVS12 1	Electronic Warfare	CO1:To discuss the electronicwarfare CO2:To explain the electronic support measure and electronic countermeasures CO3: To development and integration using Radar detection performance low RCS aircraft CO4: To demonstrate the receiver subsystem, the pre-processor and the data servo loop - Mile parameter tracking CO5:To explain system assessment, counter measures(ECCM)
	19MTAVS12 2	Avionics Network Technology	CO1: Students will explain the advanced concepts of Avionics Networking Technology to the engineers and provide the necessary knowledge that are needed in understanding the relatedprocesses. CO2:The students will have an exposure on various networks in an aircraft ranging from optical, telecommunication, wireless sensor network and military avionics network and will be able to deploy these skills effectively in the solution of problems in avionicsengineering.
	19MTAVS12 3	Aircraft System Engineering, Standards and Certification	CO1: Upon completion of this course, students will explain the advanced concepts of Aircraft product and system engineering, standards and certification to the engineers and provide the necessary knowledge that are

			needed in design and development of new aircraft systems. CO2: The students will have an exposure on various topics such Avionic system engineering design life cycle, design standards and certification, DO-178B and DO 254 standards and will be able to deploy these skills effectively in the solution of problems in avionics engineering.
	198MTAV	Research Methodology and IPR	CO1: Understand that today's world is controlled by Computer, Information Technology, but tomorrow world will be ruled by ideas, concept, and creativity. CO2: Understanding that when IPR would take such important place in growth of individuals & nation, it is needless to emphasis the need of information about Intellectual Property Right to be promoted among students in general & engineering in particular. CO3:Understand that IPR protection provides an incentive to inventors for further research work and investment in R & D, which leads to creation of new and better products, and in turn brings about, economic growth and social benefits
II	**19MTAVS201**	Navigation and communication systems	CO1: Ability to understand the modern navigation systems like ADF, DME, etc for the flight management. CO2: Learn about Inertial navigation system components like Gyroscopes accelerometers and other systems. CO3: Understand about different communication systems like TDMA, FDMA, CDMA and its application for the aerospace requirements. CO4: Learn about SATCOM systems, airborne systems and the antennas used for communication. CO5: Ability to understand the Antenna and HF systems
	19MTAVS202	UAV system design	CO1: Upon completion of this course, students will explain the advanced concepts of UAV System Design to the engineers and provide the necessary mathematical knowledge that are needed in modeling and analyzing an unmanned system. CO2: The students will have an exposure on various topics such as Design and development of UAVs, payloads and design standards, concluding with case studies of different such unmanned systems and will be able to deploy these skills effectively in the solution of problems in avionics engineering.

	19MTAVS231	Surveillance systems	CO1: To understand the aircraft surveillance systems for avoiding the mid-air collision. CO2: To learn about Traffic collision avoidance systems. CO3:To understand about TCAS components, ACAS logic and TCAS displays. CO4: To study about recent advances in Surveillance Systems.
	19MAEAV232	Soft computing for Avionics Engineers	CO1: Students will explain the advanced concepts of Soft-computing to the engineers and provide the necessary mathematical knowledge that are needed in modeling the related processes. CO2: The students will have an exposure on various topics such as Neural Networks, Fuzzy logic and Neuro-fuzzymodeling CO3: Students will be able to deploy the skills effectively in the solution of problems in avionics engineering
	19MAEAV233	Digital Avionics	CO1: To impart the basic concepts of Avionics Systems to theengineers. CO2: To provide the necessary knowledge on working of avionics systems in an aircraft. CO3: To give an exposure on various topics such as Avionics system architecture, Avionics bus systems, integration, display systems andpackaging. CO4: Todeploytheseskillseffectivelyintheunderstandingandanalysisofavionicssystems.
	19MAEAV241	Flight Dynamics	CO1: Upon completion of this course, students will explain the advanced concepts of Flight Mechanics and exhibit the necessary mathematical knowledge that are needed in modeling physicalprocesses. CO2: The students will have an exposure on various topics such as Equations of motion, stability and control, design and orientation and will be able to deploy these skills effectively in the solution of problems in avionicsengineering.
	19MAEAV242	Display system Architecture	CO1: Explain the advanced concepts of Display systems to the engineers and provide the necessary domain knowledge that are needed in understanding displaysystems. CO2: The students will have an exposure on various display systems, cockpit display, display architecture and graphics pertaining to aircraft display systems and will be able to deploy these skills effectively in the design and

			development of display systems foraircrafts.
	19MAEAV243	Electromagnet Interference and compatibility in system design	CO1: Analyze Electromagnetic interference effects inPCBs CO2: Propose solutions for minimizing EMI inPCBs CO 3: Analyze Electromagnetic environment, EMI coupling, standards, measurement and control techniques
	19MAEAV201 L1	Navigation/ Communicatio n Lab	CO1: Understand the position fixing using dead reckoning and multiple bearing CO2: Measure airspeed using IMU in the wind tunnel and experiment with IMU to sense parameters using dynamic conditions CO3: Generate AM and FM waves and study the characteristics CO4: Understand the data coding and decoding technique
	19MTAVS203L2	Radar Lab	CO1: understand the operation of basic radar CO2: understand the operation of advanced radar CO3: determine the range and velocity of the distant objects CO4: determine the directivity and gain of antennas and to compare them
III	**19MTAVS351**	Landing aids and air traffic control	**CO 1:Classify the equipment characteristics and specifications of airport visual landing aids.** **CO 2:Determine use cases for aircraft and airport navigation aids using ILS, MLS and satellite based navigation.** **CO 3:Explain the concept of airborne warning systems for ground proximity and weather related threats.** **CO 4:Apply airborne equipment to counter proximity threats due to air traffic to reduce mid-air collisions.**
	198MTAV	Embedded Computing Systems	**CO 1:To analyze embedded system architecture and to develop I/O SW** **CO 2:To apply the c Progeamme for microcintrolers** **CO 3:To identify test requirements for SW on host machine** **CO 4:To analyze RTOS scheduling models and OS security issues**
	19MTAVS352	Spacecraft Communication	CO1: Upon completion of this course, students will explain the advanced concepts of Spacecraft communication systems to the engineers and provide the

		systems	necessary mathematical knowledge that are needed in understanding the physical processes. CO2: The students will have an exposure on various topics such as Orbital mechanics, elements of satellite communication system, links and multiplexing, multiple access, telemetry , tracking and tele-command and will be able to deploy these skills effectively in the solution of problems in avionics engineering.
	198MTAV	Introduction to Aerospace Vehicles	**CO1: Summarize the basics of aircraft and the origins of aircraft designs** **CO2: Identify the components of aircraft systems and the aerospace environment** **CO3: Classify different aircraft systems, aircraft structures and their effects** **CO4: Able to understand the basics of space dynamics and rocket propulsion**