GANPAT UNIVERSITY									
FACULTY OF ENGINEERING & TECHNOLOGY									
Programme	Master of Technology					Branch/Spec.	Electronics and Communication Engineering – Embedded Systems		
Semester	II					Version	1.0.0.0		
Effective from Academic Year			2026-27			Effective for the Batch admitted in			July 2026
Course Code	3ES2106		Course Name			Embedded Laboratory-II			
Teaching Scheme						Examination Scheme (Marks)			
(Per week)	Lecture (DT)		Practical (Lab.)		Total		CE	SEE	Total
	L	TU	P	TW					
Credit	-	-	2	-	2	Theory	-	-	-
Hours	-	-	4	-	4	Practical	50	50	100

Pre-requisites

Fundamental knowledge of Embedded C Programming, Microcontrollers and Microprocessors , Digital Electronics, Basic Electronics and Sensors

Course Outcomes

On successful completion of the course, the students will be able to:

CO1	Develop multitasking applications using RTOS concepts.
CO2	Implement embedded Linux-based applications and device interfacing.
CO3	Design IoT-enabled embedded systems using cloud connectivity.
CO4	Develop and validate advanced embedded system prototypes for real-world applications.

Theory Syllabus

Unit	Content	Hrs.
1	A student is required to perform advanced laboratory experiments and develop application-oriented embedded system solutions related to the subjects studied during the semester such as Embedded Linux, Real-Time Operating Systems (RTOS), Internet of Things (IoT), Embedded Security, Device Driver Development, Automotive Communication Protocols, Edge AI, and Cyber-Physical Systems. The laboratory work shall emphasize the design, implementation, and validation of advanced embedded applications using RTOS platforms, embedded Linux environments, IoT devices, cloud connectivity, and industry-standard communication protocols. Students shall gain hands-on experience in multitasking systems, device interfacing, embedded networking, secure communication, and intelligent edge computing applications. The student shall deliver periodic demonstrations and presentations during the semester to illustrate problem identification, system architecture, software development, hardware integration, testing procedures, and performance evaluation. Each student shall maintain a comprehensive laboratory record documenting objectives, design methodology, implementation details, source code, experimental results, and conclusions. At the end of the semester, the student shall demonstrate and defend the developed embedded solutions before a panel of examiners as part of the final evaluation. The laboratory exercises and application developments may be carried out individually or	30

	in groups of a maximum of two students. The group size shall depend on the complexity, scope, and depth of the work, as approved by the course instructor and department.	

Mapping of CO with PO and PSO :															
Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	2	2	3	-	-	-	-	-	1	-	3	3	-
CO2	3	3	2	2	3	-	-	-	-	-	1	-	3	3	-
CO3	3	3	3	2	3	1	-	-	-	-	1	-	3	3	2
CO4	3	3	3	3	3	1	-	-	2	2	2	1	3	3	3