Department of ECE

Simulation and Microcontrollers Lab

About the Lab:

Welcome to the Simulation and Micro controllers Lab and Spread across 98.28 square meters, this facility serves as the hub for curriculum laboratories, Microprocessors and Microcontrollers, ARM Microcontrollers and Programmable Digital Signal Processors and Basic Simulation. Operating nine sessions per week, the lab is furnished with equipment worth 77 lakhs. Notable resources include 8051 Microcontroller kits, 8086 Microprocessors, Arduino uno boards, Cortex M3 boards, DSP Processor 6748 boards along with essential peripherals and software such as MATLAB, Keil µVision 5 (C51), Keil µVision 4 (ARM IDE), Flash Magic, TASM, Code Composer Studio, Arduino IDE. These tools empower students, providing hands-on experiences in cutting-edge technologies. This lab is used for UG and PG students.

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Name of Coordinator: Dr. P. Chandrasekhar
Designation: Asst. Prof.
Email: chandrasekhar@gnits.ac.in

Objectives:

- Familiarize the students with Assembly Language and C Programming of modern microcontrollers and DSP processors.
- Familiarize the students with simulation of signals, systems, and its operations using MATLAB.
- Impart the skills for interfacing the microcontroller with the help of Embedded C/Assembly Language Programming.
- Develop the microcontroller-based systems for real time applications.

Faculty associated with Simulation and Micro controllers Lab

S. No	Name of the faculty	Designation	Qualification	Area of research
1	Dr. P. Chandrasekhar	Asst. Prof.	Ph.D.	Speech Processing
2	Ch. Hari Prasad	Asst. Prof.	M.E	IoT
3	P. Madhuri	Asst. Prof.	M.Tech	Communications
4	B. Srikanth Reddy	Asst. Prof.	M.S	VLSI
5	T. Srilatha	Asst Prof	M.Tech (Ph.D.)	IoT
6	P. Roopa Ranjani	Asst Prof	M.Tech (Ph.D.)	IoT
7.	K. Swathi	Asst Prof	M.Tech	Communications
8.	P. Lavanya	Asst Prof	M.Tech (Ph.D.)	Communications

Photos:

Students learning MATLAB operations in Basic Simulation Lab

Students learning LCD interface with 8051 in Microprocessors and Microcontrollers Lab

Students learning LED interface with Cortex-M3 in Microcontrollers and Programmable Digital Signal Processing Lab

Facilities

The lab for Simulation and Microcontrollers has the following software and hardware kits. The facilities are available for all faculty and students who would like to participate in this lab.

Software's:

MATLAB, Keil µVision 5 (C51), Keil µVision 4(ARM IDE), Flash Magic, TASM, Code Composer Studio, Arduino IDE.

Hardware Kits

S. No	Name	Quantity
1	8051 Microcontroller Trainer Kits	10
2	I/O Interfaces for 8051	10
3	8086 Microprocessors Trainer Kits	10
4	Peripherals Interfaces for 8086	10
5	Arduino Uno Boards	02
6	Sensors: Temperature Sensor, Humidity Sensor	02
7	Computer Systems	34
8	Cortex M3 Boards	10
9	DSP 6748 Boards	06

Faculty as Resource Persons

S. No	Name of the program	Lecture Topic	Name of the Faculty	Duration	Venue	Organized by
1	Workshop on Practical Embedded Systems	Cortex M3 System tick Timer Interface	Dr. P. Chandrasekhar	7/02/2023 AN Session 3 hrs	MPMC Lab	ECE Dept
2		Introduction to 8051	Dr. K. Ragini	6/02/2023 FN Session 1 hr	MPMC Lab	ECE Dept
3		Arduino Interfacing	T. Srilatha	6/02/2023 AN Session 1.30 hr	MPMC Lab	ECE Dept
4		Arduino Interfacing	Ch. Anusha	6/02/2023 AN Session 1.30 hr	MPMC Lab	ECE Dept

Faculty as Reviewers and Editorial board members

S. No.	Name of thefaculty	Nature of Contribution	Details of associated Organization / Journal / Conference etc.
1	Dr. P. Chandra Sekhar	Reviewer	Journal of Acoustic Society of America (JASA)

Details of Faculty Professional Body Memberships

S. No	Name of the Faculty	Membership No.					
		IEEE	ISTE	IETE	IEI	Internet Society	Others
1	Dr. P. Chandrasekhar			F-503898			
2	K. Swathi		LM 123917				
3	M. Shanthi			F-503999			

Academic projects carried out by Student Projects last 3 years:

2023-2024

Batch No.	Roll No.	Title of the Project	Name of the Supervisor
1	20251A0452	An IoT based Intelligent system for Real Time Parking Monitoring system	Mrs. B. Tulasi Sowjanya
	20251A0422		
	20251A0416		
	20251A0414		
2	20251A0446	Air pollutants tracking and alerting system in vehicles using embedded system	Prof. Ch. Ganapathi Reddy
	20251A0418		
	20251A0424		
	20251A0455		
3	21255A0407	IoT based Smart Power Quality monitoring and Electricity theft detection system	Mrs. A. Sarada
	20251A0491		
	20251A04A9		
	20251A0474		

2022-2023

Batch No.	Roll No.	Title of the Project	Name of the Supervisor
1	19251A0453	Automatic LPG Cylinder Booking and Leakage Detection using IOT	Ms. GVSNK Sravya
	19251A0439		
	19251A0431		
	19251A0457		
2	19251A0412	Automatic Movable Smart Road Dividers - IOT	Ms. M. Lakshmi
	20255A0406		
	19251A0459		
	19251A0436		
3	19251A04E8	Smart Blind Stick	Mr. Ch. Hari Prasad
	19251A04E3		
	19251A04F6		
	19251A04F8		

2021-2022

Batch No.	Roll No.	Title of the Project	Name of the Supervisor
1	18251A04E1	Women Safety Device with GPS Tracking and Alerts using Arduino	Mrs. T. Sri Latha
	19255A0415		
	18251A04H7		
	18251A04H6		
2	18251A04E3	Digital Hearing Aid System Using MATLAB	Mrs. M. Bhavana
	18251A04F5		
	18251A04E7		
	18251A04G6		
3	18251A0470	Personal Assistance for Disabled People using IoT	Mr. P. Chandrasekhar
	18251A0468		
	18251A04C0		
	18251A04A4		

Outcomes:

➢ Students will be able to do experiments on 8051, Cortex-M3, DSP6748 and MATLAB.

➢ Students will be able to do mini and major projects.

Outcome of the Student Academic projects (2021-2022)
Papers published/communicated

S.No	Name of the Author	Title of the Paper	Name of the Conference/Journal	Conference Dates	Status of the paper(Submiited/Accepted/Published)
1	Mrs. M. Shanthi	Piloting a Drone using hand gesture control system	Technix International Journal for Engineering Research	Vol:9 Issue:7, UGC ISSN: 2349-9249	July, 2022
2	Mrs. P. Roopa Ranjani	AES algorithm for secure ECG signal transmission	GIS science journal	ISSN: 1869-9391 Vol:9 Issue:7, UGC	July, 2022
3	Mrs. K. Swathi, Mrs. G. Madhavi, Mrs. P. Madhuri	IOT based Agri-Bot for Seed Sowing, Smart Leaf Infection Identification and Fertilizer Spray	GIS science journal	Vol:9, Issue: 5, ISSN: 1869-9391	May, 2022
4	Mrs. T. Srilatha	Design of Multifunctional Android based Smart Home control and Monitoring system using Raspberry Pi	1st International Conference on Advances in Signal Processing, VLSI, Communications and Embedded Systems	Volume 2407, Issue 11	December 2021