SATHYABAMA
INSTITUTE OF SCIENCE AND TECHNOLOGY
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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Ref: EEE / BOS / 2021-2022 /   Date: 9th April 2022

Minutes of Board of Studies Meeting held on 9th April, 2022

Venue: Online

Zoom Credential:

Agenda

- Choosing of open elective / core elective course for the semester students
- To Review and finalize the contents of newly framed and revised courses framed for 2019 Regulation syllabus.
- Inclusion of Employability / entrepreneurship / higher studies enhancer course.as credit course.
- To discuss and finalize the weightage for NPTEL/SWAYAM and professional training courses.

Members present:

The following points were discussed during the meeting and the minutes were recorded as below:

- The Dean of School of Electrical and Electronics, Dr. N.M.Nandhitha greeted and welcomed all members of Board of Studies.
- Dr. Radhika.S explained and justified the changes made in Principles of Embedded System. She explained that unit I and II about 8051 micro controller were replaced with Arduino, SoC and SoM as it fetches the research opportunities. According to theory the corresponding modified Embedded System and DSP lab content were presented before the panel members.
- Dr.V.Senthilnayagam explained the changes made in the subject Microprocessor Interfacing and its Applications and also justified the necessary for inclusion of microcontroller along with microprocessor applications.
- The Dean thanked the members for their suggestions and active participation in the meeting.

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Subject code: SECA1706

Subject Name: Principles of Embedded System

Unit	Content	Inclusion / Deletion	Reason
I	RISC EMBEDDED CONTROLLER Comparison of CISC and RISC controllers - PIC 16F877 architecture - Memory organization - Addressing modes - Assembly language instructions. 8051 MICROCONTROLLER ARCHITECTURE Comparison of microprocessors and microcontrollers - 8051 architecture - hardware, I/O pins, ports, memory, counters, timers, serial I/O interrupts.	Inclusion Deletion	Content from third unit shifted as 1 unit
II	ARDUINO Introduction to ARDUINO, Architecture, overview of its I/O Ports, Serial Ports, PWM, ADC, Interfacing with different type of Sensors and Communication modules, Hardware timers, watchdogs and interrupt handling in Arduino. Controlling embedded system based devices using Arduino. PROGRAMMING OF 8051 Addressing modes - Instruction sets - Simple programs with 8051-I/OProgramming.-Timer programming-Serial communication programs- Interrupt programming- Memory programming- Delay Programs.	Inclusion Deletion	
III	ARM PROCESSOR BASED Overview of ARM 7 Architecture- ARM 7 Architecture-Register organization-Modes and states. Overview of Intel ARM based hard processor System on Chip (SoC) with an on chip FPGA - Overview of System on Module (SoM) using ARM based SoC. RISC EMBEDDED CONTROLLERS Comparison of CISC and RISC controllers - PIC 16F877 architecture - Memory organization - Addressing modes – Assembly language instructions- ARM 7 Architecture-Register organization- Modes and states.	Inclusion	
IV	EMBEDDED NETWORKING Embedded networking -RS 232 - RS485 - Inter-Integrated Circuit (I2C) - Serial Peripheral Interface (SPI) - Universal Serial Bus (USB) - Controller Area Network (CAN)-Ethernet- Distributed Embedded system EMBEDDED NETWORKING Distributed Embedded system - Embedded networking - RS 232 - RS485 - Inter-Integrated Circuit (I2C) - Serial Peripheral Interface (SPI) - Universal Serial Bus (USB) - Controller Area Network (CAN)- Ethernet.		

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V	EMBEDDED SOFTWARE DEVELOPMENT TOOLS and REAL TIME OPERATING SYSTEM Introduction to assembler - Compiler -Cross compilers -Linker/ Locators - Simulators - RToS - Desktop OS versus RTos - Software architectures - Round Robin, Round-Robin with Interrupts, Function Queue Scheduling architecture - ISRs and Scheduling -Task management - Task scheduling - Race conditions - Priority Inversion -– Inter task Communication. REAL TIME OPERATING SYSTEMS Introduction - Desktop OS versus RTOs - Task management - Task scheduling - Race conditions - Priority Inversion - ISRs and Scheduling - Intertask Communication.		

Subject code: SECA2703

Subject Name: EMBEDDED AND DSP LAB

List of Experiments

Existing	Revised	Reason
1. Basic illustration programs using arithmetic, Logical and bit-oriented instructions for AT89C51. 2. Interfacing light bulb using relay. 3. Interfacing LCD display in static display. 4. Interfacing stepper motor with ULN2003 to rotate in specific angle. 5. Interfacing DC motor with H-bridge to make it rotate in front, back, left, right. 6. Illustration of interrupts using LED on/off using timer delay. 7. Illustration of serial communication to transfer data from one microcontroller to other.	**Using PICF877** 1. Basic illustration programs for arithmetic operations using PIC16F877. 2. Basic illustration programs for logical operations using PIC16F877. 3. Interfacing LED. 4. Illustration of TIMER. 5. Interfacing of LDR . **Using Arduino** 6. Interfacing LCD for display. 7. Interfacing of sensors. 8. Interfacing with the wireless communication modules 9. Design of Stepper Motor Control System 10. Design of Temperature Monitoring System Using RF Modem	According to theory lab experiments are modified. Deletion Inclusion

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PROGRAMS USING MATLAB	DSP LAB	
1. Generation of Standard Signals. 2. Design of FIR filters using Windowing technique. 3. Design of IIR Filters using Butterworth filters. USING TMS320CX2407 DSP Processor 1. Single pulse fixed PWM generation using general purpose Timers. 2. Two pulse fixed PWM generation using Timer 1 and Timer 2. 3. Six pulse fixed PWM generation using full compare unit. 4. Six pulse fixed PWM generation with dead band.	**Programs using MATLAB** 1. Generation of Standard Signals. 2. Design of FIR filters using Windowing technique. 3. Design of IIR Filters using Butterworth filters	

Subject code: SECA1508

Subject Name: Microprocessor, Interfacing and Its Applications

Unit	Content	Inclusion / Deletion	Reason
I	**8085 MICROPROCESSOR** 8085 Architecture-Timing Diagram-Interrupts-Addressing Modes-Instruction Formats-Instruction Set-Programming of 8085.		
II	8086 MICROPROCESSOR 8086 Architecture-Maximum and Minimum Mode-Memory Banks-Memory Segmentation-Programming Model -Instruction Set-Programming of 8086.		
III	PERIPHERALS INTERFACING USING 8085/8086 Introduction, memory and I/O interfacing, data transfer schemes, programmable peripheral interface (8255), programmable DMA controller (8257), programmable interrupt controller (8259), Universal synchronous asynchronous receiver transmitter (USART) (8251), programmable counter/interval timer(8254		
IV	INTERFACING CONCEPTS WITH 8085/8086 Switches-Matrix Keyboard-interfacing LED, 7 segment LED, LCD, Analog to Digital Converter (ADC), Digital to Analog Converter (DAC), Memory Interfacing (RAM and ROM).		
V	APPLICATIONS USING 8085/8086 and Introduction to Microcontroller Stepper motor interfacing with ULN2003-specific angle rotation, Motor speed control, Temperature control system, Traffic light control-6V relay to control AC Bulb- PWM generation for Single phase controlled rectifier with specific firing angle 8051 MICROCONTROLLER ARCHITECTURE Comparison of microprocessors and microcontrollers - 8051 architecture - hardware, I/O pins, ports, memory, counters, timers, serial I/O interrupts. Addressing modes - Instruction sets - Simple programs with 8051	Inclusion Deletion	