

Vivekanand College, Kolhapur (Empowered Autonomous)

Department of Electronics

Academic Year: 2024-25


Annual Teaching Plan

Name of the teacher: **Dr. C. B. Patil**


Programme: B.Sc. II Semester- III

Subject: Electronics Course Title: **DSC03ELE32 Microprocessor 8085**

Month : July 2024			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	1) Microcomputer Organization: 2) Architecture of 8085 Microprocessor: Practicals Group A: 1.To study Amplitude Modulator and demodulator 2.To study FM modulator 3.To study Pulse Amplitude Modulation (PAM) 4.To study Pulse Width Modulation (PWM) 5.To study ASK Modulator	1) Components of microcomputer, RAM (SDRAM,DRAM) , ROM Memory Interfacing and Memory Map 2) Features of 8085.Block diagram and Pin description of 8085. Data and address bus, Registers, ALU, Stack pointer, Program counter, Flag register, Clock and reset circuits. Interrupts in 8085.Demultiplexing of AD0-AD7.T-states, Machine cycle, Instruction cycle. Timing diagram of MOV and MVI instructions
8	16	24		
Month: August 2024			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	3) Instruction Set of 8085 Microprocessor : Practicals Group A: 1. To study PSK Modulator 2. To study FSK Modulator 3. To study PCM 4. To study PPM 5. Study of Tuned Amplifier	3) classification of Instruction Set, Addressing modes , Instruction set: Data transfer, Arithmetic, logical, branch and control instructions
8	16	24		
Month : Sept 2024			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	4) Programming with 8085 Microprocessor: Practicals Group B: 1.Addition of Two 8 Bit Numbers 2.Subtraction of Two 8 Bit Numbers 3.Multiplication of Two 8 Bit Nos. 4.Division of Two 8 Bit Numbers 5.Program to transfer the memory block 6.Program to exchange the memory blocks	4) Programs of Addition (8 and 16 bit), Subtraction, Multiplication, Division, Block Transfer and Exchange, Masking,
8	16	24		
Month : Oct 2024			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	4) Programming with 8085 Practical Group B: 7.To arrange the given number in ascending and descending order 8.Programs to find even and odd nos. 9.To find total number of even and odd numbers in an array 10.Programs for masking and to find parity of given number	ascending and descending order, Time delay generation using register and register pair, Detection of odd and even numbers.
4	8	12		


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Department of Electronics

Academic Year: 2024-25

Annual Teaching Plan

Name of the teacher: **Dr. C. B. Patil**

Programme: B.Sc. II Semester- III

Subject: Electronics Course Title: **MIN03ELE32: Architecture of 8051 Microcontroller**

Month : July 2024			Month : July 2024	Month : July 2024
Lectures	Practicals	Total	1) Fundamental of 8051 Microcontroller:	1) features of 8051 family, Block diagram of 8051, Pin description of 8051, , RAM structure of 8051, SFR's and GPR's in 8051,PSW register ,Clock and reset circuit, Memory organization ,I/O Ports.
8	-	8		
Month: August 2024			Month: August 2024	Month: August 2024
Lectures	Practicals	Total	2) Instruction Set of 8051:	Classification of instruction sets, Addressing modes.Instruction set of 8051: Data transfer, Arithmetic, Logical, Jump, Call, Boolean instructions.
8	-	8		
Month : Sept 2024			Month : Sept 2024	Month : Sept 2024
Lectures	Practicals	Total	3) Timers and Counters :	Introduction to Timers, Timer Registers, Timer modes and Timer Programming using mode 1 and mode 2:- Square wave generation, rectangular wave generation Counter Programming: pulse counter
8	-	8		
Month : Oct 2024			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	4) Serial and Interrupt Programming:	Serial port of 8051, modes, Serial port Registers, Serial Port programming. Interrupt: Interrupt in 8051, Interrupt registers, Programming with interrupt
4	-	4		



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Department of Electronics

Academic Year: 2024-25

Annual Teaching Plan

Name of the teacher: **Dr. C. B. Patil**

Programme: B.Sc. III Semester- V

Subject: Electronics

Course Title: **DSC-1005E1 Section – II 8051 Microcontroller Interfacing**

Month : July 2024			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	1) Introduction to embedded C Practicals: Group A : (Instrumentation-I & II) 1. Design of multi-range ammeter, voltmeter, conversion of ammeter into voltmeter 2. Study of temperature sensor RTD and Thermistor 3. Automatic Porch light control using LDR and relay 4. Measurement of displacement using LVDT 5. Study of ON/OFF Temperature controller (LM34/LM35/AD590) 6. Study of Actuator (Solenoid) 7. Study of solid state relay & Project work	1) Advantages and disadvantages of programming in 8051-C & Assembly Language. Data types, Time delay – using for loop and using 8051 Timers, I/O programming, Logical operations, Data conversion programs
12	32	42		
Month: August 2024			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	2) Interfacing of Input Output Devices Practicals: Group A : (Instrumentation-I & II) 1. Study of simple dipole $\lambda/2$ antenna 2. Study of folded dipole $\lambda/2$ antenna 3. Study of simple dipole $\lambda/4$ antenna 4. Study of Yagi-Uda with 3 and 5 element simple dipole antenna & Project work	2) Output devices: LED, Relay, Opto-coupler, LCD, Seven Segment Display, Seven Segment Display (multiplexing mode), DC Motor, Stepper Motor Input devices: Switch, 4X4 matrix keyboard, thumb wheel switch
12	32	42		
Month : Sept 2024			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	3) ADC, DAC Interfacing 4) Sensor Interfacing Practicals: Group A : (LIC & PLC) 1. Study of Timers in 8051 Microcontroller. 2. LED, Switch and Relay interfacing to 8051 microcontroller. 3. LCD Interfacing with 8051 Microcontroller. 4. DC motor interfacing to 8051 microcontroller. 5. Stepper Motor interfacing to 8051 microcontroller. 6. DAC0808 interfacing to 8051 microcontroller. 7. ADC0804 interfacing to 8051 microcontroller. 8. Serial communication with PC using 8051 microcontroller	3) Interface ADC 0804, ADC 0808/0809, ADC MAX1112, DAC 0808 (Triangular wave, Ramp, Staircase) 4) Reed sensor, smoke sensor, PIR sensor, Temperature sensor (LM 35, PT-100), Humidity sensor (SY HS 230), Light sensor (LDR), Moisture/rain sensor, Gas sensor (MQ series)
12	32	42		



			Project work	
Month : Oct 2024			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	4) Sensor Interfacing 9. Study of PLC Simulator (TriLOGI Software)/ codesys-software/ hardware and implementing Boolean function 10. Programming with PLC (TriLOGI Software)/ codesys-software/ hardware) for sequential logic RS-FF, JK-FF 11. Programming with PLC (TriLOGI Software)/ codesys-software/ hardware) for sequential logic T-FF, D-FF 12. Study of PLC timers and counters in PLC ((TriLOGI Software)/ codesys-software/ hardware)	AC current sensor (CT-current Transformer), AC voltage sensor (PT-potential transformer), LVDT, Ultrasonic module
6	16	22		


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Department of Electronics

Academic Year: 2024-25

Annual Teaching Plan

Name of the teacher: **Dr. C. B. Patil**

Programme: B.Sc. II Semester- IV

Subject: Electronics Course Title: **DSC03ELE42: Microcontroller 8051**

Month : Dec 2024			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	1) Introduction to 8051 Microcontroller: Practicals Group A: 1. To design Op-Amp as Inverting and Non-Inverting amplifier 2. To study Op-Amp as adder and Subtractor 3. To study Op-Amp as integrator and differentiator 4. To study Op-Amp as Schmitt trigger. 5. To study Op-Amp as comparator	Comparison between microprocessor and microcontroller, Salient features of 8051 family, Block diagram of 8051, Pin description of 8051 microcontroller, RAM structure of 8051, SFR's and GPR's in 8051, PSW register, Clock and Reset circuits, I/O Ports
8	16	24		
Month : Jan 2025			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	2) Instruction Set of 8051: Microprocessor : Practicals Group A: 1. Arithmetic instruction 2. Logical instruction 3. Boolean/Bit manipulation instruction 4. Code conversion using 8051 5. Study of timers of 8051 in mode 1 6. Study of timers of 8051 in mode 2 7. Study of counters of 8051	Classification of instruction sets, Addressing modes. Instruction set of 8051: Data transfer, Arithmetic, Logical, Jump, Call, Boolean instructions.
8	16	24		
Month : Feb 2025			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	3) 8051 Timer Programming : Microprocessor: Practicals Group B: 6. To design phase shift oscillator 7. To design Wein bridge oscillator 8. To study triangular wave generator 9. To study as Square wave generator 10. To study precision rectifier. 11. To study peak detector	Introduction to Timers, Timer Registers, Timer modes and Timer Programming using mode 1 and mode 2:- Square wave generation, rectangular wave generation Counter Programming: pulse counter
8	16	24		
Month : March 2025			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	8051 Serial and Interrupt Programming: 8. Study of Serial programming 9. Study of Timer Interrupts programming 10. Study of Serial communication Interrupts programming 11. Study of External hardware Interrupts programming	Serial ports: Serial port of 8051, modes, Serial port Registers, Serial port programming. Interrupt: Interrupt in 8051, Interrupt registers, Programming with interrupt
4	8	12		


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Name of the teacher: **Dr. C. B. Patil**

Programme: B.Sc. II Semester-IV

Subject: Electronics Course Title: **MIN03ELE42: 8051 Microcontroller Interfacing and Embedded C**

Month : Dec 2024			Month : July 2024	Month : July 2024
Lectures	Practicals	Total	1) Introduction to Embedded C	Advantages and disadvantages of programming in 8051-C, Data types, Time delay – using for loop and using 8051 Timers, I/O programming, Logical operations, Data conversion programs
8	-	8		
Month: Jan 2025			Month: August 2024	Month: August 2024
Lectures	Practicals	Total	2) Interfacing of Input Output Devices	Output devices: LED, Relay, Opto-coupler, LCD, Seven Segment Display, Seven Segment Display (multiplexing mode), DC Motor, Stepper Motor; Input devices: Switch, thumb wheel switch,
8	-	8		
Month : Feb 2025			Month : Sept 2024	Month : Sept 2024
Lectures	Practicals	Total	3) ADC, DAC Interfacing	Interface ADC 0804, ADC 0808/0809, ADC MAX1112, DAC 0808 (Triangular wave, Ramp, Staircase)
8	-	8		
Month :March 2025			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	4) Sensor Interfacing	Reed sensor, smoke sensor, PIR sensor, Temperature sensor (LM 35, PT-100), Humidity sensor (SY HS 230), Light sensor (LDR), Moisture/rain sensor, Gas sensor (MQ series), Ultrasonic module
4	-	4		


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Annual Teaching Plan

Name of the teacher: **Dr. C. B. Patil**

Programme: B.Sc. III Semester- VI

Subject: Electronics

Course Title: **Practicals**

Month : Dec 2024			Module/Unit:	Sub-units planned
Lectures	Practicals	Total		
12	32	42	1) Embedded Systems Design Practicals: Group A : (Instrumentation-II) 8. Function generator using IC 8038 9. Instrumentation amplifier using OPAMP 10. Study of active filter : Low and High Pass 11. Study of active filter : Band Pass 12. Study of V to F and F to V using VCO & Project work	What is embedded system, embedded system basic blocks, embedded system hardware and software, embedded system characteristics, embedded system applications
Month: Jan 2025			Module/Unit:	Sub-units planned
Lectures	Practicals	Total		
12	32	42	2) Introduction to AVR microcontroller Practicals: GROUP B: Power Electronics 6. SCR firing by UJT 7. AC Voltage controller 8. Speed Control of DC Motor. 9. Phase Shift control of SCR 10. Design of Single phase full wave controlled rectifier 11. To study the simulation of single phase half wave controlled rectifier with R & RL load using MATLAB - Simulink/Scilab 12. To study the simulation of single phase full wave controlled bridge rectifier with R load using MATLAB - Simulink/Scilab & Project work	Overview of AVR family, ATmega8 pin configuration & function of each pin. AVR Microcontroller architecture, status register, Special function registers, SRAM, ROM & EEPROM space, On-Chip peripherals
Month : Feb 2025			Module/Unit:	Sub-units planned
Lectures	Practicals	Total		
12	32	42	3) AVR Programming in C Practicals: GROUP D: AVR 1. Interfacing of Switches and LED with Arduino/AVR microcontroller. 2. LCD Interfacing with Arduino/AVR microcontroller. 3. Stepper Motor Interfacing with Arduino/AVR microcontroller. 4. Interface temperature sensor LM35 with Arduino board and display temperature on LCD. 5. Interface temperature sensor and Humidity Sensor (DHT11) with	AVR Data types, AVR I/O port programming, Timer programming, Input capture and Wave Generator, PWM programming, External Interrupt programming, ADC programming, Serial Port programming



			Arduino/AVR board and display temperature and humidity values on LCD. 6. Accelerometer Sensor Interfacing with Arduino/AVR microcontroller. Project work	
Month : March 2025			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	4) Peripheral Interfacing and Embedded System GROUP D: IoT 7. Study the fundamental of IOT Architecture, Arduino and necessary software and create the thingspeak account 8. Interface Bluetooth with Arduino and send the sensor data to smartphone through Bluetooth 9. Interface Bluetooth with Arduino and receive the data from smartphone through Bluetooth to turn LED ON/OFF 10. Interface wifi module with Arduino to upload sensor data to thingspeak cloud 11. Interface wifi module with Arduino to retrieve data from thingspeak cloud 12. Interface GSM module with Arduino to upload sensor data to thingspeak cloud 13. Read the sensor data and upload the data to thingspeak cloud using NodeMCU 14. Study and implement MQTT protocol using Arduino 15. IoT Application Case study: Home Automation	Interfacing of Switches, Relays, LEDs, seven segment display, 16x2 LCD Interfacing, Stepper interfacing Designing of an Embedded System: DC Motor speed control using PWM technique, Measurement of Temperature of an environment using sensor LM35, Dual channel Digital Voltmeter. (Block diagram, Schematic and Flowchart is only necessary)
6	16	22		


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Department of Electronics

Academic Year: 2024-25

Annual Teaching Plan

Name of the teacher: **Mr. P. R. Bagade**


Programme: **B.Sc. II Semester- III**

Subject: **Electronics**

Course Code: **DSC03ELE31**

Course Name: **Electronic Communication System**

Month : July 2024			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Unit 1: Electronic Communication Practicals Group A:	Introduction to communication – means and modes, Block diagram of an electronic communication system, Electromagnetic communication spectrum, band designations and usage, Concepts of bandwidth, gain, attenuation, Channels and base-band signals. Concept of Noise, signal-to-noise (S/N) ratio.
8	32	40	1. To study Amplitude Modulator and demodulator 2. To study FM modulator 3. Pulse Amplitude Modulation (PAM) 4. To study Pulse Width Modulation 5. To study ASK Modulator	
Month: August 2024			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Unit 2: Analog Modulation- Demodulation Practicals Group A :	Need, Amplitude Modulation, Mathematical expression, modulation index, frequency spectrum and AM power, Classification of AM, Concept of DSB, SSB generation, Amplitude Demodulation, Phase Modulation (concept only), FM : modulation index & frequency spectrum, equivalence between FM and AM, Generation of FM using VCO, Slope detector, FM Super heterodyne radio receiver
8	32	40	6. To study PSK Modulator 7. To study FSK Modulator 8. To study PCM 9. To study PPM 10. Study of Tuned Amplifier Practicals Group B: 1. Addition of Two 8 Bit Numbers 2. Subtraction of Two 8 Bit Numbers 3. Multiplication of Two 8 Bit Num.	
Month : September 2024			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Unit 3: Analog Pulse Modulation Practicals Group B :	Unit 3: Channel capacity, Sampling theorem, PAM, PWM, & PPM. Modulation and detection technique for PAM.
8	32	40	4. Division of Two 8 Bit Numbers 5. Program to transfer the memory block using 8085 6. Exchange the memory blocks	
Month : October 2024			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Unit 4: Digital Pulse Modulation:	Need for digital transmission, PCM: Sampling, Quantization and Encoding. ASK, FSK, PSK. Phase Shift Keying (BPSK and QPSK)
8	32	40	7. Ascending and descending 8. To find even and odd numbers using 8085 9. To find total number of even and 10. Odd numbers in an array using 8085 11. Programs for masking and to find parity of given number	


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Department of Electronics

Academic Year: 2024-25

Annual Teaching Plan

Name of the teacher: **Mr. P. R. Bagade**

Programme: **B.Sc. II Semester- IV**

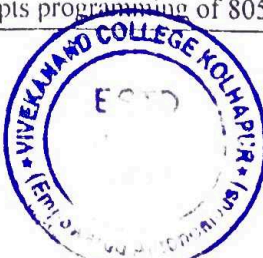
Subject: **Electronics**


Course Code: **DSC03ELE41**

Course Name: **Operational Amplifier and Applications**

Month : January 2025			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Unit 1: Operational Amplifier Practical's Group B (Op-Amp) :	Transistor dc amplifier, Emitter coupled Differential amplifier, parameters of Differential amplifier (Ad, Ac, and CMRR), & configurations of differential amplifier. Introduction to op-amp, block diagram of op-amp, electrical parameters of op-amp, offset balancing technique of op-amp, study of IC 741.
8	32	40	1. To design Op-Amp as Inverting and Non-Inverting amplifier 2. Op-Amp as adder and Subtractor . 3. Op-Amp as integrator and differentiator 4. To study Op-Amp as Schmitt trigger. 5. To study Op-Amp as comparator 6. To design phase shift oscillator using Op-Amp	
Month: February 2025			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Unit 2: Applications of Op-amp Practical's Group B (Op-Amp):	Virtual ground concept, Linear Applications: Op-amp as inverting and non- inverting amplifier, Voltage follower, Op-amp as adder and Subtractor, Non-Linear Applications: Differentiator and Integrator
8	32	40	7. To design Wein bridge oscillator using Op-Amp 8. To study Op-Amp as triangular wave generator 9. Op-Amp as Square wave generator 10. Op-Amp as precision rectifier. 11. Op-Amp as peak detector	
Month : March 2025			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Unit 3: Oscillators Practical's Group D:	Unit 3: Phase shift oscillator, Wien –bridge oscillator, Triangular wave generator, Square wave generator, Saw tooth wave generator.
8	32	40	1. Arithmetic instruction programming 2. Logical instruction programming 3. Bit manipulation instruction 4. Code conversion using 8051 5. Timers of 8051 in mode 1 6. Study of timers of 8051 in mode 2	
Month : April 2025			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Unit 4: Comparators and Rectifiers Practical's Group D:	Basic comparator, Zero crossing detector, Schmitt trigger ,Peak detector, Clippers (positive and negative) and Clampers (positive and negative) Precision rectifiers: Op-amp as precision rectifiers
8	32	40	7. Study of counters of 8051 8. Study of Serial programming 9. Study of Timer Interrupts programming of 8051 10. Study of Serial communication Interrupts programming of 8051 11. Study of External hardware Interrupts programming of 8051	


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Annual Teaching Plan

Name of the teacher: **Mr. P. R. Bagade**

Programme: B.Sc. II Semester- III


Subject: Electronics

Course Code: MIN03ELE31 Course Name: **Principles of Electronics Communication**

Month :	Module/Unit:	Sub-units planned
July 2024 Lectures: 8	Unit 1: Electronic communication	Introduction to communication – means and modes, Block diagram of an electronic communication system, Electromagnetic communication spectrum, band designations and usage, Concepts of bandwidth, gain, attenuation, Channels and base-band signals, Concept of Noise: Definition, Types of noise (External noise, internal noise), signal-to-noise (S/N) ratio
Month: August 2024 Lectures: 8	Unit 2: Amplitude Modulation (AM) and Demodulation	Introduction to modulation, Need for modulation, Amplitude Modulation (AM): Mathematical expression, modulation index, frequency spectrum and AM power, Classification of AM, Concept of DSB, SSB generation, Amplitude Demodulation (diode detector)
Month : September 2024 Lectures: 8	Unit 3: Frequency Modulation (FM) and Demodulation	Principles of Frequency modulations, modulation index, frequency spectrum, Generation of FM using VCO, FM Demodulation: (Slope detector), equivalence between FM and AM, phase modulators (Concept only).
Month : October 2024 Lectures: 8	Unit 4: Digital Modulation Techniques	Need for digital transmission, Pulse Code Modulation: Sampling, Quantization and Encoding. Digital Modulation Techniques: Amplitude Shift Keying (ASK), Frequency Shift Keying (FSK), Phase Shift Keying (PSK), and Phase Shift Keying (BPSK and QPSK).


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Name of the teacher: **Mr. P. R. Bagade**


Programme: B.Sc. II Semester- IV

Subject: Electronics

Course Code: MIN03ELE41 Course Name: **Fundamentals of Operational Amplifier**

Month :	Module/Unit:	Sub-units planned
December 2024		
Lectures: 8	Unit 1: Basics of Operational Amplifier:	Transistor dc amplifier, Emitter coupled Differential amplifier, configurations of differential amplifier. Introduction to op-amp: Op-amp symbol, terminals, packages and specifications, Block diagram of opamp, Open loop & closed loop configurations, Electrical parameters of op-amp, offset balancing technique of op-amp, study of IC 741.
Month:	Module/Unit:	Sub-units planned
January 2025		
Lectures: 8	Unit 2: Linear Applications	Virtual ground concept. Op-amp as inverting and non-inverting amplifier, Voltage follower, Op-amp as adder and Subtractor, Voltage to current & current to voltage converters
Month :	Module/Unit:	Sub-units planned
February 2025		
Lectures: 8	Unit 3: Non-linear Applications	Differentiator and Integrator, Basic Comparators, Applications of comparator as zero crossing detectors, level detector, Schmitt triggers, Half wave Precision rectifiers, Peak detectors
Month :	Module/Unit:	Sub-units planned
March 2025		
Lectures: 8	Unit 4: Oscillators:	Oscillator principles, types of oscillators-Phase shift oscillator, Wien – bridge oscillator, Triangular wave generator, Square wave generator, Saw tooth wave generator.


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Name of the teacher: **Mr. P. R. Bagade**

Programme: B.Sc. III Semester-V

Course Code: DSE-1005E3

Subject: Electronics

Course Title : Antenna and Wave Propagation

Month : July 2024			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Unit 1: Antenna Theory GROUP A :(Instrumentation-I) 1. Design of multi-range ammeter, voltmeter, conversion of ammeter voltmeter 2. Study of temperature sensor RTD 3. Automatic Porch light control using LDR and relay 4. Measurement of displacement -LVDT 5. ON/OFF Temperature controller 6. Study of Actuator (Solenoid) 7. Study of solid state relay & Project work	Antenna as an element of wireless communication system, Antenna radiation mechanism, current distribution on thin wire antenna. Types of Antennas, Fundamentals of EMFT: Maxwell's equations and their applications to antennas.
12	16	28		
Month: : August 2024			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Unit 2: Antenna Parameters GROUP B: (Antenna) 8. Study of simple dipole $\lambda/2$ antenna 9. Study of folded dipole $\lambda/2$ antenna 10. Study of simple dipole $\lambda/4$ antenna 11. Study of Yagi-Uda with 3 and 5 element simple dipole antenna. & Project work	Radiation pattern, Main Lobe and Side Lobes, Half-power beam width, Radiation intensity, Antenna efficiency, Directivity, Gain, effective area, effective length, Bandwidth, Polarization, input impedance, radiation eff.
12	16	28		
Month : September 2024			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Unit 3: Radiating wire Structures GROUP C: (Microcontroller 8051 & PLC) 12. Study of Timers in 8051 μC 13. Study of LED, Switch and Relay interfacing to 8051 μC 14. LCD Interfacing with 8051 μC 15. DC motor interfacing to 8051 16. Stepper Motor interfacing to 8051 17. DAC0808 interfacing to 8051 18. ADC0804 interfacing to 8051 μC 19. Serial communication with PC using 8051 μC Project work	Monopole, Dipole, Folded dipole, Yagi-Uda, Loop & Bi-conical broadband Antenna, Microstrip Antennas: Basics and its characteristics, feeding methods, design of rectangular, Concept of smart antenna: Concept, benefits, Fixed weight & Adaptive beamforming basics.
12	16	28		

Month : October 2024			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Unit 4: Radio Wave Propagation GROUP C: (PLC) 20.Study of PLC Simulator (TriLOGI Software) hardware and implementing Boolean function 21.Programming with PLC for sequential logic RS-FF,JK-FF 22.Programming with PLC for sequential logic T-FF,D-FF 23.Study of PLC timers and counters Project work	Different Modes of Wave Propagation, Structure of atmosphere, Ground wave, Space Wave propagation. Sky Wave Propagation - Introduction, Structure of Ionosphere, Refraction and Reflection of Sky Waves by Ionosphere, Ray Path, Critical Frequency, MUF, Virtual Height and Skip Distance, Relation between MUF and skip Distance, Multi-hop Propagation.
12	16	28		

P.R.B.

Mr. P. R. Bagade



C.B.P.

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Annual Teaching Plan

Name of the teacher: **Mr. P. R. Bagade**

Programme: B.Sc. III Semester- VI

Subject: Electronics

Course Code: **DSF-1005F3**

Course Title: **Power Electronics**

Month : January 2025			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Unit 1: Power semiconductor devices GROUP C: (Instrumentation-II) 1. Function generator using IC 8038 2. Instrumentation amplifier using OPAMP 3. Study of active filter : Low and High Pass 4. Study of active filter : Band Pass 5. Study of V to F and F to V using VCO & Project work	Definition, Need- semiconductor power devices, classification of power semiconductor devices, Power diode: structure, operation, conductivity modulation, I-V characteristics, Reverse recovery effect, series and parallel connection of diode, Power transistor: structure, operation, effect of drift layer. specifications, Power MOSFET : MOSFET structure, characteristics, operation and drive circuits
12	16	28		
Month: February 20245			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Unit 2: Thyristors GROUP B: (Power Electronics) 6. SCR firing by UJT 7. AC Voltage controller 8. Speed Control of DC Motor. 9. Phase Shift control of SCR 10. Design of Single phase full wave controlled rectifier 11. To study the simulation of single phase HWCW with R & RL load using 12. To study the simulation of single phase full wave controlled bridge rectifier with R load. Project work	Types of Thyristors, Structure of SCR, SCR Characteristics, two transistor analogy - Methods of turning ON and turning OFF, dv/dt and di/dt protection, gate protection circuits Diac and Triac: Basic structure, working and V-I characteristic.
12	16	28		
Month : March 2025			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Unit 3: Controlled Rectifiers Practicals: GROUP D: (AVR) 13. Interfacing of Switches and LED with Arduino. 14. LCD Interfacing with Arduino 15. Stepper Motor Interfacing with Arduino 16. Interface temperature sensor LM35 with Arduino board 17. Interface temp. sensor & Humidity Sensor (DHT11) with Arduino 18. Accelerometer Sensor Interfacing with Arduino.	Basics of single and three phase supply phase and line voltage waveforms, SCR as a static switch, phase controlled rectification, single phase half wave, full wave, bridge rectifiers with resistive & inductive loads.
12	16	28		

			Project work	
Month : April 2025			Module/Unit:	Sub-units planned
Lectures	Practicals	Total		
12	16	28	Unit 4: Power Systems Practicals: GROUP D: (IoT) 19. Study the fundamental of IoT Architecture, Arduino and necessary software 20. Interface Bluetooth with Arduino & send the sensor data to smartphone through Bluetooth 21. Interface Bluetooth with Arduino and receive the data from smartphone through Bluetooth to turn LED ON/OFF 22. Interface Wi-Fi module with Arduino to upload sensor data. 23. Interface GSM module with Arduino to upload sensor data 24. Study and implement MQTT protocol using Arduino 25. IoT Application Case study: Home Automation Project work	Power Supplies: Switch mode power supply (DC): flyback, forward, half bridge and full bridge converters. Uninterrupted power supply (UPS), Electronic Ballast, Power factor correction.

Y.P.B.

Mr. P.R. Bagade

C.B.P.

Dr. C. B. Patil
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DEPARTMENT OF ELECTRONICS
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Vivekanand College, Kolhapur (Empowered Autonomous)

Department of Electronics

Academic Year: 2024-25

Teaching Plan

Name of the teacher: Mr. N. P. Mote

Programme: B.Sc. Part-I, Semester- I

Practical B.Sc. Part-III, Semester V

Subject: Electronics

Course Title: Analog Electronics -I

Month : July 2024			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	UNIT 1: Basic Circuit Elements T.Y. Practicals: GROUP A : 1. Instrumentation amplifier using OPAMP 2. Precision rectifier using OPAMP 3. Log amplifier using OPAMP 4. Study of active filter : Low and High pass 5. Study of active filter : band pass	Study of basic circuit elements and passive components: Resistor, Capacitor, Inductor, Transformer, Relays, Switches
08	48	56		
Month: August 2024			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	UNIT 2: Circuit Analysis: UNIT 3: PN Junction Diode: Practicals: GROUP B : 1. SCR firing by UJT 2. AC Voltage controller 3. Speed Control of DC Motor. 4. Study of ON/OFF Temp controller (LM35/AD590) 5. Phase Shift control of SCR	Concept of Voltage and Current Sources, Internal resistance, Kirchhoff's Current Law, Kirchhoff's Voltage Law, Mesh Analysis, Node Analysis, Principle of Duality, Superposition Theorem, Thevenin's Theorem, Norton's Theorem, Maximum Power Transfer Theorem, Millman's Theorem, Construction of PN junction, Formation of Depletion Layer, Barrier potential, Forward and Reverse bias, Diode Equation and I-V characteristics,
08	48	56		
Month : September 2024			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	UNIT 4: DC Power Supply Practicals: GROUP C: 1. Arithmetic and logical operations using 8051 microcontroller. 2. Switch and Relay interfacing to 8051 microcontroller. 3. DC motor interfacing to 8051 microcontroller.	Zener diode, Zener and Avalanche breakdown, Zener diode specifications. Photo diode. Light Emitting Diode (LED): construction and working, 7-segment display and it's applications. Need of Power Supply, Block diagram of DC regulated power supply, Rectifiers: Half wave, Full wave rectifiers (center tapped and bridge):- Circuit diagrams, working and waveforms, ripple factor, PIV, efficiency and
08	48	56		



			4. Study of Timers in 8051 Microcontroller. 5. Stepper Motor interfacing to 8051 microcontroller.	TUF. Filter-Shunt capacitor filter, Series inductor filter, π - filter. Regulation:
Month : October 2024			Module/Unit:	Sub-units planned
Lectures	Practicals	Total		
08	48	56	UNIT 4: DC Power Supply	Concept of Line and load regulation, Zener diode as voltage regulator, Three pin IC regulators: Block diagram, Specifications and applications. Fixed and Variable voltage IC regulator (IC 78xx, 79xx and LM317). Concept of SMPS..


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Department of Electronics

Academic Year: 2024-25

Teaching Plan

Name of the teacher: Mr. N. P. Mote

Programme: B.Sc. Part-I, Semester- II

Practical's B.Sc. Part-III

Subject: Electronics

Course Title: Analog Electronics -II

Month : January 2024			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	UNIT 1: Bipolar Junction Transistor Practicals: GROUP B : Group D: 1. Interfacing of Switches and LED with Arduino/AVR microcontroller. 2. LCD Interfacing with Arduino/AVR microcontroller. 3. Stepper Motor Interfacing with Arduino/AVR microcontroller.	BJT: Introduction, Structure, Working of transistor. Transistor configurations: CB, CE and CC configurations, characteristics of transistor in CE and CB configurations, Regions of operation (active, cut off and saturation), Current gains α and β . Relations between α and β , dc load line and Q point (Operating point), Significance of Q-point.
08	48	56		
Month: February 2024			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	UNIT 2: Unipolar Devices 4. Interface temperature sensor LM35 with Arduino board and display temperature on LCD. 5. Interface temperature sensor Humidity Sensor (DHT11) with Arduino/AVR board and display temperature and humidity values on LCD. 6. Accelerometer Sensor Interfacing with Arduino/AVR microcontroller.	JFET: Construction, working and I-V characteristics (output and transfer), MOSFET: Construction, working and I-V characteristics (output and transfer). UJT: introduction, structure and characteristics.
08	48	56		
Month : March 2024			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	UNIT 3: Amplifiers: Practicals: GROUP B: 1. Arithmetic Operation using uP8085 – I. 2. Arithmetic Operation using uP8085 – II. 3. Block transfer using uP8085.	Zener diode, Zener and Avalanche breakdown, Zener diode specifications. Photo diode. Light Emitting Diode (LED): construction and working, 7-segment display and it's applications. Need of transistor Biasing, Transistor biasing and Stabilization circuits- Fixed Bias and Voltage Divider Bias. Thermal runaway, stability and stability factor S_n , Class A, B, AB and C Amplifiers (Comparative Study on the basis of Q point), Single stage CE amplifier: Current gain, Voltage gain, Power gain, input and output resistances, frequency Response. Cascaded Amplifiers: Two stage RC, LC, TC
08	48	56		



				and DC Coupled Amplifiers and their Frequency Responses, Concept of Differential amplifier and its advantages
Month : April 2024			Module/Unit:	Sub-units planned
Lectures	Practicals	Total		
08	48	56	UNIT 4: Feedback Amplifier and Oscillators: 1. Study of temperature sensor RTD and Thermister 2. Function generator using IC 8038 3. Automatic Porch light control using LDR and relay.	Concept of feedback, negative and positive feedback, advantages of negative feedback (Qualitative only). Oscillators: Barkhausen criterion for sustained oscillations. Phase shift, Wein Bridge, Hartley and Colpitt's oscillator .UJT as relaxation oscillator.


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Department of Electronics

Academic Year: 2024-25

Annual Teaching Plan

Name of the teacher: **Dr. P. S. Jadhav**

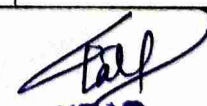
Programme: B.Sc. I Semester- I

Subject: Electronics Course Title: **2DSCELE12 : Digital Electronics-I**

Month : July 2024			Module/Unit:	Sub-units planned
Lectures	Practical	Total	Lecture: Unit 1: Number System, Binary Codes and Binary Arithmetic Practical's: Group A 1. To familiarize with basic electronic components (R, C, L, diodes, transistors), Digital Multimeter, Function Generator, power supplies and Oscilloscope etc. 2. Measurement of Amplitude, Frequency & Phase difference using Oscilloscope. 3. Verification of Thevenin's Theorem. 4. Verification of Kirchhoff's Laws	Decimal, Binary, Octal and Hexadecimal number systems and their inter conversions. BCD code. ASCII code, Gray Code, Excess-3 Code, Binary Arithmetic: Addition, Subtraction by 1's complement and 2's complement method, Representation of signed and unsigned numbers
8	32	40		
Month: August 2024			Module/Unit:	Sub-units planned
Lectures	Practical	Total	Lectures : Unit 2: Logic Gates, Boolean algebra: Practicals: 1. Verification of Norton's Theorem. 2. Verification of Superposition Theorem. 3. Study of the I-V Characteristics of P-N junction Diodes. 4. Study of Half wave and Full wave rectifier (centre tapped transformer/bridge)	Study of logic Gates: OR, AND, NOT, NOR, NAND, XOR, XNOR, Universal Gates, Boolean identities and Law's. Fundamental, theorems of Boolean algebra. Standard representation of logic functions (SOP and POS), Minimization Techniques (Karnaugh map minimization up to 4 variables for SOP). Arithmetic Circuits: Binary Addition. Half and Full Adder. Half and Full Subtractor, 4-bit binary Adder/Subtractor.
8	32	40		
Month: September 2024			Module/Unit:	Sub-units planned
Lectures	Practical	Total	Unit 3: Logic Families Practicals: 1. Study of the breakdown Characteristics of Zener Diode 2. Study of Logic Gates 3. Study of Universal NAND Gate 4. Study of Universal NOR Gate 5. Study of De-Morgans Theorems	Logic Families: Types of Logic Families, Characteristics of Logic Families, TTL NAND gate, TTL NOR gate, TTL NOT gate, Concept of Tristate Logic, MOS Technology, CMOS: NOR, NAND and NOT gates, Comparison of TTL and CMOS logic families
8	32	40		
Month : October 2024			Module/Unit:	Sub-units planned
Lectures	Practical	Total	Unit 4: Combinational circuits: Practicals: 1. Study of Half Adder and Full Adder 2. Study of Half and Full Subtractor 3. Study of BCD to seven segment Decoder 4. Study of Encoder 5. Study of Multiplexer (4:1) and De multiplexer (1:4) using IC	Multiplexers: - 2 to 1, 4 to 1 and 8 to 1. Demultiplexer: - 1 to 2, 1 to 4, 1 to 8. Encoder: concept of encoder, Decimal to BCD Encoder. Basic Binary decoders: 2 to 4 line, 3 to 8 line and 4 to 16 line, BCD to decimal decoder, Study of BCD to seven-segment decoder driver IC 7447.
8	32	40		


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Department of Electronics

Academic Year: 2024-25

Annual Teaching Plan

Name of the teacher: **Dr. P. S. Jadhav**


Programme: **B.Sc. I Semester- II**

Subject: Electronics Course code: Name: **2DSCELE22: Digital Electronics-II**

Month: December 2024			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Unit 1: Sequential Circuit Practical: Group B	Concept of Flip-flop, RS, D and JK Flip-Flops Concept of Clock, Level and Edge Triggered RS, D, JK FF, Preset and Clear operations. Race-around conditions in JK Flip-Flop, Master-slave JK Flip-Flop, T-Flip-flop.
8	32	40	<ol style="list-style-type: none"> 1. Study of I-V Characteristics of JFET 2. Study of Input, Output and transfer Characteristics of CE configuration of BJT 3. Study of Voltage divider bias circuit for CE mode 4. Transistor as a switch 5. Design of a Single Stage CE amplifier of given gain 	
Month : January 2025			Module/Unit:	Sub-units planned
Lectures	Practical	Total	Unit 2: Shift registers and counters Practical:	Concept of register, Left shift and Right Shift operations, Types of shift registers: SISO, SIPO, PISO & PIPO (only up to 4 bits). Counters: classification of counters, Asynchronous counters: 3 bit ripple counter, Decade Counter. Synchronous Counter: 3 bit and decade synchronous counter. Ring Counter and Johnson Counter .Applications of Counters.
8	32	40	<ol style="list-style-type: none"> 1. Study of the RC Phase Shift Oscillator 2. Study of the Wein Bridge Oscillator 3. Study the Colpitt's oscillator 4. Study the Hartley oscillator 5. Building and testing of RS Flip-Flop using NAND/NOR gate. 	
Month : February 2025			Module/Unit:	Sub-units planned
Lectures	Practical	Total	Unit 3: Data Converters Practical:	4 bit binary weighted and R-2R ladder network DAC: circuit and working. DAC Characteristics: Accuracy and Resolution. ADC: Flash, Counter type, successive approximation ADC, ADC Characteristics
8	32	40	<ol style="list-style-type: none"> 1. Building and testing D and JK Flip-Flop using IC 2. Construction and study of Shift Register (serial-in and serial-out) using D-type/JK Flip-Flop ICs 3. Study of 3-bit Asynchronous counter 4. Study of 3-bit Flash ADC 	



Month: March 2025			Module/Unit:	Sub-units planned
Lectures	Practical	Total		
8	32	40	Unit 4: Study of Timer IC555	IC5 55 timer: Introduction, Block diagram, Astable, Monostable and Bistable multivibrator circuits. Applications of IC555: PWM, square wave generator and FSK
			Practical: 1. Design and study of 4 bit digital to analog converter using R-2R ladder network. 2. Design and study of an Astable Multivibrator using IC 555Timer. 3. Design and study of a Monostable Multivibrator using IC555Timer. 4. Design and study of a Bistable Multivibrator using IC555Timer.	



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Department of Electronics

Academic Year: 2024-25

Annual Teaching Plan

Name of the teacher: **Mr. G. B. Jirage**

Programme: B.Sc. I Semester- I

Subject: Electronics Course Title: 20EC03PHS12 Physical Science-I (Domestic Electrical Wiring-I)

Month : Aug 2024			Module/Unit:	Sub-units planned
Lectures	Practicals	Total		
0	32	32		
Month: Sept 2024			Module/Unit:	Sub-units planned
Lectures	Practicals	Total		
0	32	32		
			7) Verification of equivalent capacitance in series and parallel combination 8) Study of transformer 9) Verification of ohm's law 10) Verification of Kirchoff's	



			laws(KCL and KVL)	
Month : Oct 2024			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	11) To study measurement of voltage, current and power in RL and RLC Circuit 12) Measurement of energy using single phase Energy meter.	
0	32	32		


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Department of Electronics

Academic Year: 2024-25

Annual Teaching Plan

Name of the teacher: **Mr. G. B. Jirage**

Programme: B.Sc. I Semester- II

Subject: Electronics Course Title: 2OEC03PHS22 Physical Science-I (Domestic Electrical Wiring-II)


Month : Dec 2024			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	1. Measurement of resistance to earth using an electrical equipment (Megger) 2. To make different joints on wire (straight joint, T-joint, Britannia joint)	
0	32	32		
Month:Jan 2024			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	3. To Study types of switches and holders 4. To wire up a circuit with one lamp controlled by one switch 5. To wire up a circuit with two lamp controlled by one switch	
0	32	32		
Month : Feb 2025			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	6.To wire up a circuit with	



0	32	32	<p>two lamp controlled by two switch</p> <p>7. To wire up a circuit to control three lamps by using one SP switch</p> <p>8. To wire up a circuit to control one lamp from two place using two way switches (staircase wiring)</p> <p>9. To study Godown wiring</p>	
Month :March 2025			Module/Unit:	Sub-units planned
Lectures	Lectures	Lectures		
0	32	32	<p>10. To study fuses, MCBs and importance of Earthing</p> <p>11. To study circuit of SMPS</p> <p>12. To study circuit of UPS</p>	


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Vivekanand College, Kolhapur (Autonomous)

Department of Electronics

Academic Year: 2024-25

Annual Teaching Plan

Name of the teacher: **Mr. G. B. Jirage**

Programme: B.Sc. III Semester- V

Subject: Electronics, Course Title: Industrial Process Control and PLC programming

Month : July 2024			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Unit 1: Introduction of control system	1) Significance Transfer Function, Types and order of transfer function (Open loop and Close loop transfer system), Block diagram of Control System and reduction rules, Basic elements of control system, open loop controlsystem, closed loop control system, control system terminology, manually controlled closed loop systems, automatic controlled closed loop systems, comparison closed-loop system and open-loop control, feed-forward control system, adaptive control system, classification of control system. ON-OFF controller, proportional control, PI controller, PD controller and PID control. Introduction to Fuzzy Controller
12	0	12		
Month: August 2023			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Unit 2: Components of Control System Unit 3 :Introduction to PLC Practicals:	2) Op-amp as a zero crossing detector, non-inverting comparator, inverting comparator, two position control using op-amp, proportional controller, integral controller using Op-amp , derivative controller, PI controller, PID controller. Programmable logic controller (PLC) basics: Definition, overview of PLC systems, block diagram of PLC, input/output modules, power supplies, isolators, features like scan time, system scale, user interface. Modular PLC and Redundant PLC and Applications. Industrial Communication Buses: RS485, Profibus .Distributed control system, DCS components/block diagram, SCADA, adaptive control system.
12	0	12		
Month : September 2024				Sub-units planned
Lectures	Practicals	Total	Unit 4 :Ladder	4) Basic components: fuse, pushbutton,



12	0	12	Programming basics	selector switches, limit switches, indicators, relay, timedelay relays functions and symbols. General PLC programming procedures, programming on-off inputs/ outputs.
Month : October 2024				
Lectures	Practicals	Total	Unit 4 :Ladder Programming basics	Auxiliary commands and functions: PLC Basic Functions: Register basics, timer Functions, counter functions. Ladder Programming: Programs for Boolean Logic and flip-flops, counters, timers, flasher. Application program Bottle Filling plant, elevator control, washing machine control.
12	0	12		


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