Vivekanand College, Kolhapur (Autonomous)

Department of Electronics

Academic Year: 2022-23

Annual Teaching Plan

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

Programme: B.Sc. I Semester- II

Subject: ElectronicsCourse Title: **DSC-1005B Section- I Analog Electronics-II**

Month: Jane 2023			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	1) Bipolar Junction Transistor:	BJT: Structure, Working of transistor. Transistor configurations: CB, CE and CC, characteristics of transistor in CE and CB configurations, Current gains α and β, dc load line and Q point
10	0	10		
			2) Unipolar Devices:	JFET: Construction, working and I-V characteristics MOSFET: Construction, working and I-V characteristics , UJT: introduction, structure and characteristics.
Month : Feb 2023			Module/Unit:	Sub-units planned
10	0	10	3) Amplifiers:	Transistor biasing - Fixed Bias and Voltage Divider Bias, Class A, B, AB and C Amplifiers, Single stage CE amplifier, Cascaded Amplifiers: Two stage RC, LC, TC and DC Coupled Amplifiers ,Concept of Differential amplifier and its advantages.
Month:March 2023			Module/Unit:	Sub-units planned
10	0	10	4) Feedback Amplifier and Oscillators:	negative and positive feedback, Oscillators: Barkhausen criterion for sustained oscillations, Phase shift, Wein Bridge, Hartley and Colpitt's oscillator ,UJT as relaxation oscillator

Dr. C. B. Patil

Dr. C. B. Patil

Head

Department of Electronics

Vivekanand College, Kolhapur.

411

Vivekanand College, Kolhapur (Autonomous)

Department of Electronics
Academic Year: 2022-23

Annual Teaching Plan

Name of the teacher: **Dr. C. B. Patil**
Programme: B.Sc. II   Semester- III
Subject: ElectronicsCourse Title: **DSC-1005C Section-IIMicroprocessor 8085**

Month : August 2022			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	1) Microcomputer Organization:2) Architecture of 8085 Microprocessor:	1) Components of microcomputer, RAM (SDRAM,DRAM) , ROM Memory Interfacing and Memory Map
12	32	44		
			Practicals Group A: 1. To design an Amplitude Modulator using Transistor/ Op-amp 2. To study envelope detector for demodulation of AM signal 3. To study FM - Generator / Detector 4. To study AM Transmitter / Receiver 5. To study FM Transmitter /Receiver	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
Month: September 2022			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	3) Instruction Set of 8085 Microprocessor : **Practicals Group A:** 6. To study Time Division Multiplexing (TDM) 7. To study Pulse Amplitude Modulation (PAM)8. To study Pulse Width Modulation (PWM) 9. To study Pulse Position Modulation (PPM) 10. To study ASK modulator	3) classification of Instruction Set, Addressing modes , Instruction set: Data transfer, Arithmetic, logical, branch and control instructions
12	32	44		
Month : Oct 2022			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	4) Programming with 8085 Microprocessor: **Practicals Group A:** 11. To study PSK modulator 12. To study FSK modulator **Practicals Group B:** 1. Addition and subtraction of numbers using direct addressing mode 2. Addition and subtraction of numbers using indirect addressing mode 3. Multiplication by repeated addition 3. Multiplication by repeated addition	4) Programs of Addition (8 and 16 bit), Subtraction, Multiplication,Division, Block Transfer and Exchange, Masking, ascending and descending order, Time delay generation using register and register pair, Detection of odd and even numbers.
12	32	44		

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Vivekanand College, Kolhapur (Autonomous)

Department of Electronics
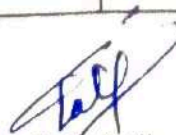### Academic Year: 2022-23

Annual Teaching Plan

Name of the teacher: **Dr. C. B. Patil**
Programme: B.Sc. III   Semester- V
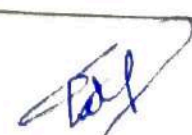Subject: Electronics
Course Title: **DSC-1005E1Section – II 8051 Microcontroller Interfacing and Embedded C**

<table>
<tr><td colspan="3">Month : August 2022</td><td>Module/Unit:</td><td>Sub-units planned</td></tr>
<tr><td>Lectures</td><td>Practicals</td><td>Total</td><td rowspan="2">1) Introduction to embedded C
2) Real World Interfacing of 8051</td><td rowspan="2">1) Data types, operators and loops, I/O programming, Accessing SFR, Logical operation. Data conversion programs, Accessing ROM space, programming for Time delay generation (using timer), external interrupts</td></tr>
<tr><td>12</td><td>40</td><td>52</td></tr>
<tr><td colspan="3"></td><td>Practicals:
Group A : (LIC & PLC)
1. Instrumentation amplifier using OPAMP
2. Precision rectifier using OPAMP
3. Log amplifier using OPAMP
Project work</td><td>2) Interfacing to output devices – LED, Relay, LCD, seven segment display, DC Motor, Stepper Motor.Interfacing to input devices – Switch, 4X4 matrix keyboard, opto-coupler, thumb wheel switch. Interfacing of DAC0808 and ADC0804.</td></tr>
<tr><td colspan="3">Month:September 2022</td><td>Module/Unit:</td><td>Sub-units planned</td></tr>
<tr><td>Lectures</td><td>Practicals</td><td>Total</td><td rowspan="2">3) Serial communication in 8051

Practicals:
Group A : (LIC & PLC)
4. Study of active filter : Low and High pass
5. Study of active filter : band pass
6. Study of V to F and F to V using PLL.
Project work</td><td rowspan="2">3) RS-232 standard and IC MAX–232, Concept of Baud rate, SBUF register, SCON register, programming for data transmission and reception.</td></tr>
<tr><td>12</td><td>40</td><td>52</td></tr>
<tr><td colspan="3">Month : Oct 2022</td><td>Module/Unit:</td><td>Sub-units planned</td></tr>
<tr><td>Lectures</td><td>Practicals</td><td>Total</td><td rowspan="2">4) Applications of 8051

Practicals:
Group A : (LIC & PLC)
7. Study of PLC Simulator and implementing Boolean function
8. Programming with PLC for sequential logic RS -FF,JK-FF,T-FF,D-FF
9. Study of PLC timers and counters in PLC
Project work</td><td rowspan="2">4) i) Gate Emulator (Logic Gate study using microcontroller) ii) Water level controller iii) speed control of DC motor iv) Temperature measurement using LM35, ADC0804, LCD. v)Bluetooth module interfacing. Vi) Speed control of Stepper Motor</td></tr>
<tr><td>12</td><td>40</td><td>52</td></tr>
</table>

Dr. C. B. Patil

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413

Vivekanand College, Kolhapur (Autonomous)

Department of Electronics
Academic Year: 2022-23

Annual Teaching Plan

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

Programme: B.Sc. II   Semester- IV

Subject: ElectronicsCourse Title: **DSC-1005D Section-II Microcontroller 8051**

Month : Jan 2023			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	1) Introduction to 8051microcontroller: 2) Instruction Set of 8051:	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.
12	32	44		
			Practicals Group B: 4. Division by repeated subtraction 5. Addition of 16-bit Numbers. 6. Use of CALL and RETURN Instruction. 7. Block data handling	2) Addressing modes . Instruction set of 8051: data transfer, arithmetic, Logical, Jump, call, Boolean instructions
Month: Feb 2023			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	3) Timers, Serial port and Interrupts(Assembly)programming of 8051: **Practicals Group C:** 1. Arithmetic operation using 8051 2. Logical operations using 8051 3.Study of timers of 8051 in mode 1 and mode 2 4.Study of interfacing of LED to 8051 microcontroller. 5.Study of interfacing of LED array	3) Timers in 8051,Timer Registers, modes and Programming of timers, Serial ports: Serial port of 8051, modes, Registers Serial port, Serial port programming., Interrupt: Interrupt in 8051, Interrupt registers, Programming with interrupt
12	32	44		
Month : March2023			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	4) Interfacing of Devices with 8051: **Practicals Group C:** 6.Study of rotate instruction 7.Study of interfacing of 7-segment display 8. Study of interfacing Multiplexed7-segment display. 9. Study of interfacing of stepper motor. 10. Study of interfacing of D.C motor.	4) Introduction to embedded C, Data types in C, SFR accessing , I/O programming, logical operations in C. Program to generate square wave on port pin, Interfacing of LED, Opto-coupler, Switch, Relay, DC motor and Stepper motor
12	32	44		

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Vivekanand College, Kolhapur (Autonomous)

Department of Electronics

Academic Year: 2022-23

Annual Teaching Plan

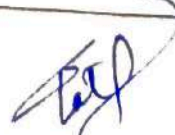Name of the teacher: **Dr. C. B. Patil**

Programme: B.Sc. III   Semester- VI

Subject: Electronics

Course Title: **Practicals**

Month : January 2023			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	**Practicals:** **Group C: (Microcontroller 8051 & FPGA)**	
0	40	40	1. Arithmetic and logical operations using 8051microcontroller. 2. Switch and Relay interfacing to 8051 microcontroller 3. DC motor interfacing to 8051microcontroller 4. Study of Timers in 8051 Microcontroller 5. Stepper Motor interfacing to 8051 microcontroller 6. DAC0808 interfacing to 8051microcontroller **Project work**	
Month: Feb 2023			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	**Practicals:** **Group C: (Microcontroller 8051 &FPGA)**7. ADC0804 interfacing to 8051microcontroller. 8. Serial communication with PC using 8051microcontroller. 9. Write VHDL code to realize basic and derived logic gates. 10. Write VHDL code to realize Half adder, Full Adder using basic and derived gates. 11. Write VHDL code to realize Half subtractor and Full Subtractor using basic and derived gates **Project work**	.
0	40	40		
Month : March 2023				Sub-units planned
Lectures	Practicals	Total	**Practicals:** **Group C: (Microcontroller 8051 &FPGA)**12. Design and simulation of a 4 bit Adder using VHDL. 13. Write VHDL code to realize Multiplexer (4x1) and Demultiplexer(1x4) using logic gates. 14. Write VHDL code to realize Decoder and Encoder using logic gates. 15. Write VHDL code to realize Clocked D, JK and T Flip flops (with Reset inputs) 16. Write VHDL code to realize 3-bit Ripple counter **Project work**	
0	40	40		

Dr. C. B. Patil

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415

Vivekanand College, Kolhapur (Autonomous)

Department of Electronics

Academic Year: 2022-23

Annual Teaching Plan

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

Programme: B.Sc. II Semester- III

Subject: Electronics Course Title: DSC-1005C Section-I Electronics Communication

Month : August 2022			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Unit 1:Electronic Communication 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 5. To study ASK Modulator 6. To study PSK Modulator 7. To study FSK Modulator 8. To study PCM	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
12	32	44		
Month: September 2022			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Unit 2: Analog Modulation-Demodulation Practicals Group A: 9. To study PPM 10. Study of Tuned Amplifier **Practicals Group B:** 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 (Zero and non-zero reference) 6. To design phase shift oscillator using Op-Amp.	Introduction to modulation, Need, Amplitude Modulation, Mathematical expression, modulation index, frequency spectrum and AM power, Classification of AM, Concept of DSB, SSB generation, Amplitude Demodulation (diode detector), Phase Modulation (PM)(concept only),FM, modulation index & frequency spectrum, equivalence between FM and AM, Generation of FM using VCO, Slope detector, Block diagram and working of FM Super heterodyne radio receiver
12	32	44		
Month : October 2022			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Unit 3: Analog Pulse Modulation Unit 4: Digital Pulse Modulation: Practicals Group B: 7. To design Wein bridge oscillator using Op-Amp 8. To study Op-Amp as triangular wave generator 9. To study Op-Amp as Square wave generator 10. Op-Amp as precision rectifier. 11. Op-Amp as peak detector	Unit 3: Channel capacity, Sampling theorem, PAM, PWM, & PPM. Unit 4: Need for digital transmission, PCM, ASK, FSK, PSK.
12	32	44		

Mr. P. R. Bagade

Dr. C. B. Patil
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Vivekanand College, Kolhapur.

416

Vivekanand College, Kolhapur (Autonomous)

Department of Electronics
Academic Year: 2022-23
Annual Teaching Plan

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

Programme: B.Sc. II   Semester- IV

Subject: Electronics Course Title: DSC-1005D Section-I Operational Amplifier

Month : January 2023			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Unit 1: **Introduction to Operational Amplifier**	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.
12	32	44	Practicals Group C (8085) : 1. Addition of Two 8 Bit Numbers 2. Subtraction of Two 8 Bit Numbers 3. Multiplication of Two 8 Bit Num. 4. Division of Two 8 Bit Numbers 5. Program to transfer the memory block using 8085 6. Program to exchange the memory blocks using 8085 7. To arrange the given number in ascending and descending	
Month: February 2023			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Unit 2: **Applications of 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
12	32	44	Practicals Group C: 8. Programs to find even and odd numbers using 8085 9. To find total number of even and odd numbers in an array using 8085 10. Programs for masking and to find parity of given number using 8085 **Practicals Group D (8051):** 1. Arithmetic instruction programming 2. Logical instruction programming 3. Boolean/Bit manipulation instruction programming using 8051 4. Code conversion using 8051 5. Study of timers of 8051 in mode 1	
Month : March 2023			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Unit 3: **Oscillators** Unit 4: **Comparators and Rectifiers**	Unit 3: Phase shift oscillator, Wien –bridge oscillator, Triangular wave generator, Square wave generator, Saw tooth wave generator. Unit 4: 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.
12	32	44	Practicals Group D: 6 Study of timers of 8051 in mode 2 7. Study of counters of 8051 8 Study of Serial programming of 8051 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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Vivekanand College, Kolhapur (Autonomous)

Department of Electronics
Academic Year: 2022-23
Annual Teaching Plan

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

Programme: B.Sc. III Semester-V

Subject: Electronics   Course Title: DSE-1005E2 Section – II Antenna and Wave Propagation

Month : August 2022			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Unit 1: **Antenna Theory**	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	20	32	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)	
			Unit 2: **Antenna Parameters** GROUP A:(**Instrumentation-I & II**) 7.Study of solid state relay 8. Function generator using IC 8038 9.Instrumentation amplifier using OP-AMP 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	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 efficiency.
Month: September 2022			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Unit 3: **Radiating wire Structures** GROUP B: (Antenna and Power Electronics) 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	Monopole, Dipole, Folded dipole, Yagi-Uda Antenna, Loop antenna and Bi-conical broadband Antenna, Microstrip Antennas: Basics of Microstrip Antennas and its characteristics, feeding methods, design of rectangular, Concept of smart antenna: Concept and benefits of smart antennas, Fixed weight beamforming basics, Adaptive beamforming
12	20	32		
Month : October 2022			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Unit 4:	Different Modes of Wave

412

12	20	32	**Radio Wave Propagation** GROUP B: (Antenna and 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 MATLAB 12.To study the simulation of single phase FW controlled bridge rectifier with R load using MATLAB	Propagation, Structure of atmosphere, Ground wave propagation, 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

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Vivekanand College, Kolhapur.

Vivekanand College, Kolhapur (Autonomous)
Department of Electronics
Academic Year: 2022-23
Annual Teaching Plan

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

Programme: B.Sc. III   Semester- VI

Course Title: DSE-1005F2 Section – I Power Electronics

Month : January 2023			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Unit 1: **Power semiconductor devices**	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. Switching characteristics, specifications, Power MOSFET : MOSFET structure, characteristics, operation and drive circuits
12	20	32	GROUP C: (Microcontroller 8051 & PLC) 1. Study of Timers in 8051 Microcontroller. 2. LED, Switch and Relay interfacing to 8051 microcontroller. 3. LCD Interfacing with8051 Microcontroller. 4. DC motor interfacing to 8051microcontroller. 5. Stepper Motor interfacing to 8051 microcontroller. 6. DAC0808 interfacing to 8051microcontroller. 7.ADC0804 interfacing to 8051microcontroller	
			Unit 2: **Thyristors** GROUP C: (Microcontroller 8051 & PLC) 8.Serial communication with PC using 8051microcontroller 9.Study of PLC Simulator (TriLOGI	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

419

			Software)/hardware and implementing Boolean function 10. Programming with PLC for sequential logic RS-FF,JK-FF 11. Programming with PLC for sequential logic T-FF,D-FF 12. Study of PLC timers and counters in PLC	Diac and Triac: Basic structure, working and V-I characteristic..
Month: February 2023			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Unit 3:	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	20	32	**Controlled Rectifiers** GROUP D: (AVR and IoT) 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 temp. sensor and Humidity Sensor (DHT11) with Arduino/AVR board and display temp. & humidity values on LCD. 6. Accelerometer Sensor Interfacing with Arduino/AVR microcontroller. 7. Study the fundamental of IOT Architecture, Arduino and necessary software and create the thingspeak account	
Month : March 2023			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Unit 4: **Power Systems**	Power Supplies: Switch mode power supply (DC): flyback, forward, half bridge and full bridge converters. Uninterrupted power supply (UPS), Electronic Ballast, power factor correction.
12	20	32	GROUP D: (AVR and IoT) 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	

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Vivekanand College, Kolhapur

420

Vivekanand College, Kolhapur (Autonomous)

Department of Electronics
Academic Year. 2022-23
Annual Teaching Plan

Name of the teacher: **Mr. P. R. Bagade**
Programme: B.Sc. II   Semester- III
Subject: Electronics   Course Title: **SEC 1: Skill Enhancement Experiments**

Month : January 2023			Experiments
Lectures	Practicals	Total	1. Introduction to circuit simulation software
0	12	12	2. Designing of Printed circuit board (PCB) using Software 3. Development of Printed circuit board (PCB)
Month: February 2023			Sub-units planned
0	12	12	4. Soldering techniques: Assemble electronic circuit 5. Temperature Controller using IC 741 /Microcontroller8051
Month : March 2023			Sub-units planned
0	12	12	6. Designing of Variable Power Supply using LM 317.

Mr. P. R. Bagade

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Vivekanand College, Kolhapur (Autonomous)

Department of Electronics
Academic Year: 2022-23

Annual Teaching Plan

Name of the teacher: **Mr. N. P. Mote**
Programme: B.Sc. II   Semester- III
Subject: Electronics   Course Title: **Practicals**

Month : August 2022			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	**Practicals Group A:** 1. To design an Amplitude Modulator using Transistor/ Op-amp 2. To study envelope detector for demodulation of AM signal 3. To study FM - Generator / Detector	
0	16	16		
Month: September 2022			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	**Practicals Group A:** 6. To study Time Division Multiplexing (TDM) 7. To study Pulse Amplitude Modulation (PAM)	
0	16	16		
Month : October 2022			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	**Practicals Group A:** 11. To study PSK modulator 12. To study FSK modulator	
0	16	16		

Mr. N. P. Mote

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Vivekanand College, Kolhapur.

422

Vivekanand College, Kolhapur (Autonomous)

Department of Electronics
Academic Year: 2022-23

Annual Teaching Plan

Name of the teacher: **Mr. N. P. Mote**
Programme: B.Sc. II   Semester- IV
Subject: Electronics   Course Title: **Practicals**

Month : January 2023			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	**Practicals Group B:** 4. Division by repeated subtraction 5. Addition of 16-bit Numbers.	
0	16	16		
Month: : February 2023			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	**Practicals Group C:** 1. Arithmetic operation using 8051 2. Logical operations using 8051 3.Study of timers of 8051 in mode 1 and mode 2	
0	16	16		
Month : March 2023			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	**Practicals Group C:** 6.Study of rotate instruction 7.Study of interfacing of 7-segment display	
0	16	16		
Month : April 2023			Module/Unit:	Sub-units planned
0	16	16	**Practicals Group C:** 6.Study of Op Amp inverting and Non inverting 7.Study of Op Amp adder and Subtractor	

Mr. N. P. Mote

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Vivekanand College, Kolhapur (Autonomous)

Department of Electronics
Academic Year: 2022-23

Annual Teaching Plan

Name of the teacher: **Mr. N. P. Mote**
Programme: B.Sc. III   Semester- V
Subject: Electronics **Course Title: DSC-1005E2 Instrumentation**

Month : August 2022			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	2) Transducers and Sensors **Practicals:** **Group A : (LIC & PLC)** 1. Instrumentation amplifier using OPAMP 2. Precision rectifier using OPAMP 3. Log amplifier using OPAMP **Project work**	2) Classification &of Selection criterion Transducers, Thermistor, RTD, Thermocouple, Strain gauge,LVDT, Capacitive transducer (microphone), Opto-electric transducer – LDR,Photo diode, PIR , Loud speaker, Piezoelectric transducer, Proximity sensorInductive, capacitive.
8	40	48		
Month: September 2022			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	3) Signal Conditioning and Data Acquisition System: **Practicals:** **Group A : (LIC & PLC)** 4. Study of active filter : Low and High pass 5. Study of active filter : band pass 6. Study of V to F and F to V using PLL. **Project work**	3) Introduction, Sample and Hold circuit, Thermister Wheatstone bridgeamplifier, Instrumentation amplifier, Attenuator, Introduction to DataAcquisition System (DAS), Single channel & multi-channel DAS. Data logger.
8	40	48		
Month : October 2022			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	4) Digital Instruments: **Practicals:** **Group A : (LIC & PLC)** 7. Study of PLC Simulator and implementing Boolean function 8. Programming with PLC for sequential logic RS -FF,JK-FF,T-FF,D-FF 9. Study of PLC timers and counters in PLC **Project work**	4) Introduction to digital instrument, Advantages of Digital instruments, Digital Tachometer, Digital Capacitance meter, Digital Phase Meter, DigitalFrequency Meter. Digital Multi-meter
8	40	48		

Mr. N. P. Mote

Dr. C. B. Patil
Head
Department of Electronics
Vivekanand College, Kolhapur.

Vivekanand College, Kolhapur (Autonomous)
Department of Electronics
Academic Year: 2022-23
Annual Teaching Plan

Name of the teacher: **Mr. N. P. Mote**
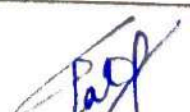Programme: B.Sc. III   Semester- VI
Subject: Electronics
Course Title: **Practicals**

Month : January 2023			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	**Practicals:** **Group C: (Microcontroller 8051 & FPGA)**	
0	40	40	1. Arithmetic and logical operations using 8051microcontroller. 2. Switch and Relay interfacing to 8051 microcontroller 3. DC motor interfacing to 8051microcontroller 4. Study of Timers in 8051 Microcontroller 5. Stepper Motor interfacing to 8051 microcontroller 6. DAC0808 interfacing to 8051microcontroller **Project work**	
Month: February 2023			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	**Practicals:** **Group C: (Microcontroller 8051 &FPGA)**7. ADC0804 interfacing to 8051microcontroller.	.
0	40	40	8. Serial communication with PC using 8051microcontroller. 9. Write VHDL code to realize basic and derived logic gates. 10. Write VHDL code to realize Half adder, Full Adder using basic and derived gates. 11. Write VHDL code to realize Half subtractor and Full Subtractor using basic and derived gates **Project work**	
Month : March 2023			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	**Practicals:** **Group C: (Microcontroller 8051 &FPGA**	
0	40	40	)12. Design and simulation of a 4 bit Adder using VHDL. 13. Write VHDL code to realize Multiplexer (4x1) and Demultiplexer(1x4) using logic gates. 14. Write VHDL code to realize Decoder and Encoder using logic gates.	
Month : April 2023			Module/Unit:	Sub-units planned
0	40	40	15. Write VHDL code to realize Clocked D, JK and T Flip flops (with Reset inputs) 16. Write VHDL code to realize 3-bit Ripple counter **Project work**	

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Vivekanand College, Kolhapur (Autonomous)

Department of Electronics

Academic Year: 2022-23

Annual Teaching Plan

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

Programme: B.Sc. II   Semester- IV

Subject: Electronics   Course Title: **SEC 2: Skill Enhancement Experiments**

Month : February 2023			Experiments
Lectures	Practicals	Total	6. Build Regulated Power Supply using IC 7805
0	12	12	7.Build Dual Power Supply using IC 7809 and IC 7909
Month: March 2023			Sub-units planned
0	12	12	8. Assemble Electric Board with switches, sockets and Miniature circuit Breaker(MCB) and measure Voltage, Current and Power for given device 9. Study and fault finding of: Fan /Iron/ Mixer/Cell phone Charger
Month : April 2023			Sub-units planned
0	12	12	10. Build Lighting system using LED, Solar Panel and Chargeable Battery

Mr. N. P. Mote

Dr. C. B. Patil

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Vivekanand College, Kolhapur.

Vivekanand College, Kolhapur (Autonomous)

Department of Electronics
Academic Year: 2022-23

Annual Teaching Plan

Name of the teacher: **Dr. Milind S. Patil**
Programme: B.Sc. II   Semester- III
Subject: Electronics   Course Title: **Practicals**

Month : August 2022			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	**Practicals Group A:**	
0	16	16	4. To study AM Transmitter / Receiver 5. To study FM Transmitter /Receiver	
Month: September 2022			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	**Practicals Group A:**	
0	16	16	8. To study Pulse Width Modulation (PWM) 9. To study Pulse Position Modulation (PPM)	
Month : October 2022			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	**Practicals Group A:** 10. To study ASK modulator **Practicals Group B:** 1. Addition and subtraction of numbers using direct addressing mode	
0	16	16		
Month : November 2022			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	**Practicals Group B:** 2. Addition and subtraction of numbers using indirect addressing mode 3. Multiplication by repeated addition 3. Multiplication by repeated addition	
0	16	16		

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427

Vivekanand College, Kolhapur (Autonomous)

Department of Electronics

Academic Year: 2022-23

Annual Teaching Plan

Name of the teacher: **Dr. Milind S. Patil**

Programme: B.Sc. II   Semester- IV

Subject: Electronics Course Title: **Practicals**

Month : January 2023			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	**Practicals Group B:** 6. Use of CALL and RETURN Instruction. 7. Block data handling	
0	16	16		
Month: Feb 2023			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	**Practicals Group C:** 4. Study of interfacing of LED to 8051 microcontroller. 5.Study of interfacing of LED array	
0	16	16		
Month : March 2023			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	**Practicals Group C:** 8. Study of interfacing Multiplexed 7-segment display 9. Study of interfacing of stepper motor	
0	16	16		
Month : April 2023			Module/Unit:	Sub-units planned
Lectures	Practicals	Total		
0	16	16	**Practicals Group C:** 10. Study of interfacing of D.C motor	

Dr. Milind S. Patil

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Vivekanand College, Kolhapur.

Vivekanand College, Kolhapur (Autonomous)

Department of Electronics
Academic Year: 2022-23

Annual Teaching Plan

Name of the teacher: **Dr. Milind S. Patil**
Programme: B.Sc. II   Semester- IV
Subject: Electronics   Course Title: **Practicals**

Month : January 2023			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	**Practicals Group B:** 6. Use of CALL and RETURN Instruction. 7. Block data handling	
0	16	16		
Month: Feb 2023			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	**Practicals Group C:** 4. Study of interfacing of LED to 8051 microcontroller. 5.Study of interfacing of LED array	
0	16	16		
Month : March 2023			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	**Practicals Group C:** 8. Study of interfacing Multiplexed 7-segment display 9. Study of interfacing of stepper motor	
0	16	16		
Month : April 2023			Module/Unit:	Sub-units planned
Lectures	Practicals	Total		
0	16	16	**Practicals Group C:** 10. Study of interfacing of D.C motor	

Dr. Milind S. Patil

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Vivekanand College, Kolhapur (Autonomous)

Department of Electronics

Academic Year: 2022-23

Annual Teaching Plan

Name of the teacher: **Dr. Milind S. Patil**

Programme: B.Sc. III   Semester- VI

Subject: Electronics   Course Title: **SEC 4:Embedded System Design using Arduino**

Month : January 2023			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	3) DisplayInterfacing	Interfacing Arduino to LED's-blinking single LED, blinking multiple LED's, 7 segment display
6	0	6		
Month:February 2023			Module/Unit:	Sub-units planned
6	0	6	3) DisplayInterfacing	traffic light, LED flashes, LED dot matrix, Interfacing to LCD's- Basic LCD control, display a message on LCD display
Month : March 2023			Module/Unit:	Sub-units planned
6	0	6	4) Interfacing sensors:	Sensors- Definition, Types. Interfacing Arduino to different sensors- light sensor, temperature sensor, humidity sensor,
Month : April 2023			Module/Unit:	Sub-units planned
6	0	6	4) Interfacing sensors:	pressure sensor sound sensor, distance ranging sensor, water/detector sensor, smoke, gas, alcohol sensor, ultrasonic range finder.

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429

			8. Function generator using IC 8038 **Project work**	
Month:March2023			Module/Unit:	Sub-units planned
12	40	52	5) Designing of an Embedded System:	5) DC Motor speed control using PWM technique, Measurement of Temperature of an environment using sensor LM35, Dual channel Digital Voltmeter.
Month: April 2023			Module/Unit:	Sub-units planned
			Practicals: **Group D : (AVR and Instrumentation)** 9. Automatic Porch light control using LDR and relay. 10. Study of the characteristics of Resistance Temperature Detector (RTD) 11. To study transducer (Thermistor/ Thermocouple) **Project work**	

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430

Vivekanand College, Kolhapur (Autonomous)

Department of Electronics

Academic Year: 2022-23

Annual Teaching Plan

Name of the teacher: **Dr. Milind S. Patil**

Programme: B.Sc. III   Semester- VI

Subject: Electronics   Course Title: **DSE1005 F1 Section IIAdvanced Microcontroller**

Month: January 2023			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	1) Embedded Systems Design: 2) Introduction to AVR microcontroller:	1) What is embedded system, embedded system basic blocks, embedded system hardware and software, embedded system characteristics, embedded system applications.
12	40	52		
			Practicals: **Group D : (AVR and Instrumentation)** 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. **Project work**	2) 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 : February2023			Module/Unit:	Sub-units planned
12	40	52	3) AVR programming in C:	3) 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.
			4) Peripheral interfacing and embedded system:	4) Interfacing of Switches, Relays, LEDs, seven segment display 16x2 LCD Interfacing, Stepper interfacing.
			Practicals: **Group D : (AVR and Instrumentation)** 5. Interface temperature sensorHumidity Sensor (DHT11) with Arduino/AVR board and display temperature and humidity values on LCD. 6. Accelerometer Sensor Interfacing with Arduino/AVR microcontroller. 7. Study of temperature sensor RTD and Thermister.	

43|

Vivekanand College, Kolhapur (Autonomous)

Department of Electronics
Academic Year: 2022-23

Annual Teaching Plan

Name of the teacher: **Dr. MilindS. Patil**
Programme: B.Sc. III   Semester- V
Subject: Electronics
Course Title: **DSC-1005E1 Section – IFundamentals of Instrumentation and8051 Microcontroller Interfacing**

Month : August 2022			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	1) Measurements, Instrument & Calibration: **Practicals:**	1) Basics of Measurements:
4	40	44	**Group B : (Antenna and Power Electronics)** 1. Study of simple dipole λ/2 antenna 2. Study of folded dipole λ/2 antenna 3. Study of simple dipole λ/4 antenna 4. Study of Yagi-Uda with 3 and 5 element simple dipole antenna 5. Study of SCR characteristics (static) **Project work**	Accuracy, Precision, resolution, reliability, repeatability, validity, Errors and their analysis, Standards of measurement.
Month:September2022			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	1) Measurements, Instrument & Calibration: **Practicals:**	1) Instrument: Static and Dynamic characteristics of
4	40	44	**Group B : (Antenna and Power Electronics)** 6. Study of AC / DC Timer 7. SCR firing by UJT 8. AC Voltage controller 9. Speed Control of DC Motor. 10. Study of ON/OFF Temperature controller (LM34/LM35/AD590) 11. Phase Shift control of SCR **Project work**	instruments, dead zone,hysteresis, threshold, resolution, input & output impedance, loading effects.
Month : October 2022			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	**Practicals:** **Group B : (Antenna and Power Electronics)**	Calibration of instruments and Standards
4	40	44	12. Study of Introduction to MATLAB/Scilab 13. To study the simulation of single phase half wave controlled rectifier with R & RL-load using MATLAB - simulink/Scilab 14. To study the simulation of single phase half controlled bridge rectifier with R using MATLAB - simulink/Scilab	
Month : November 2022			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	**Practicals:**15. Amplitude Modulation-Modulation & Demodulation using MATLAB & Simulink/Scilab	
4	40	44	16. Sampling Theorem using MATLAB & Simulink/Scilab **Project work**	

Dr. Milind S. Patil

Dr. C. B. Patil
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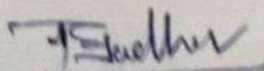## Department of Electronics
Academic Year: 2022-23
Annual Teaching Plan

Name of the teacher: **Dr. P. S. Jadhav**
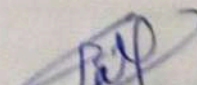Programme: B.Sc. I Semester- I
Subject: Electronics Course Title: **DSC-1005A   Section-II: Digital Electronics-I**

Month : August 2022			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.	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
10	40	50		

Month: September 2022			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.	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 4variables for SOP).Arithmetic Circuits: Binary Addition. Half and Full Adder. Half and Full Subtractor, 4-bit binary Adder/Subtractor.
10	40	50		

Month: October 2022			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 Half wave rectifier 3. Study of Full wave rectifier	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
10	40	50		

Month : November 2022			Module/Unit:	Sub-units planned
Lectures	Practical	Total	Unit 4:Combinational circuits: Practicals: 1. Study of Logic Gates. 2. Study of Universal Gates using fundamental gates. 3. Study of De-Morgans Theorems.	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.
10	40	50		

Dr. P. S. Jadhav

Dr. C. B. Patil
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Vivekanand College, Kolhapur (Autonomous)

Department of Electronics
Academic Year: 2022-23

Annual Teaching Plan

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

Programme: B.Sc. I Semester- II

Subject: Electronics Course Title: **DSC-1005B Section- II Digital Electronics-II**

Month: January 2023			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Unit 1: Sequential Circuit Practical: Group B 1. Study of Half Adder and Full Adder 2. Study of Multiplexer (4:1) and Demultiplexer (1:4) 3. Study of I-V Characteristics of JFET. 4. Study of Input and Output Characteristics of CE configuration of BJT	Concept of Flip-flop, RS, D and JK Flip-Flops Concept of Clock, Level and Edge Triggered RS, D, JK FF
6	40	46		

Month : February 2023			Module/Unit:	Sub-units planned
Lectures	Practical	Total	Unit 1:Sequential Circuit Practical: 1. Wein Bridge Oscillator. 2. Study of the Colpitt's oscillator 3. Study of the Hartley oscillator. 4. Building and testing of RS Flip-Flop using NAND/NOR gate	Preset and Clear operations. Race-around conditions in JK Flip-Flop, Master-slave JK Flip-Flop, T-Flip-flop.
6	40	46		

March 2023			Module/Unit:	Sub-units planned
Lectures	Practical	Total		
6	40	46	Unit 2: Shift registers and counters Practical: 1. Building and testing D and JK Flip-Flop using IC 2. Design and study of an Astable Multivibrator using IC 555 Timer. 3. Design and study of a Monostable Multivibrator using IC 555 Timer	Concept of register, Left shift and Right Shift operations, Types of shift registers: SISO, SIPO, PISO & PIPO (only up to 4 bits).

Month: April 2023			Module/Unit:	Sub-units planned
Lectures	Practical	Total		
6	40	46	Unit 2: Shift registers and counters Practical: 1. computer simulations: 2. Design clocked SR and JK Flip-Flops using Gates. 3. Design 4-bit asynchronous counter using Flip-Flop ICs	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.

Dr. P. S. Jadhav

434

Dr. C. B. Patil

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Department of Electronics
Academic Year: 2022-23
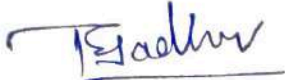
Annual Teaching Plan

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

Programme: B.Sc. III Semester-V

Subject: Electronics Course Title: **DSC-1005E** Section – I   **Linear Integrated Circuits**

Month : August 2022			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Unit 1: Operational Amplifier and Linear IC's	Transistor dc amplifier, Differential amplifier, Emitter coupled differential amplifier with its Operation, characteristics and parameters (I/O impedances, common mode and differential mode gain, CMRR), Dual input and single ended output configuration of differential amplifier. Method to improve CMRR (constant current bias and current mirror bias), Introduction to op-amp, block diagram of op-amp, offset balancing technique of op-amp, drift Parameters of op-amp, study of IC 741 and comparative study of IC's OP 07, LM324, AD620
12	0	12		
Month: September 2022			**Module/Unit:**	**Sub-units planned**
Lectures	Practicals	Total	Unit 2: Applications of Op-amp.	Virtual ground concept, Op-amp as inverting and non- inverting amplifier, summing amplifier (adder and Subtractor), V to I and I to V converter, voltage follower, bridge amplifier, Differentiator and integrator, log and antilog amplifier. Op-amp as comparator, regenerative comparator (Schmitt trigger), sine wave oscillators (phase shift and Wien -bridge), Triangular wave generator, square and pulse generator. Peak detector, clipping and clamping circuits
12	0	12		
Month: October 2022			**Module/Unit:**	**Sub-units planned**
Lectures	Practicals	Total	Unit 3: Precision Rectifier and Active filters	Precision rectifier, Op-amp as precision rectifier, Absolute value precision rectifier. Advantage of active filters over passive filters. Study of filter response (Butterworth, Chebyshev.) Different types of active filters. Study and design of low pass, high pass, band pass and band stop filters
12	0	12		
Month : November 2022			**Module/Unit:**	**Sub-units planned**
Lectures	Practicals	Total	Unit 4: Phase	Block diagram of PLL with functioning of each

12	0	12	Locked Loops (PLL)	block, calculation of capture range and lock range frequencies, application of PLL (frequency multiplier, FM modulator, frequency synthesizer and FSK) Study of IC565, IC8038. IC555 timer as variable duty cycle (10% to 90%), sequential timer, ramp generator.

Dr. P. S. Jadhav

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Vivekanand College, Kolhapur (Autonomous)

Department of Electronics

Academic Year: 2022-23

Annual Teaching Plan

Name of the teacher: **Dr. P. S. Jadhav**
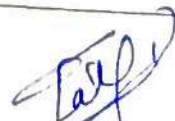
Programme: B.Sc. III Semester- VI

Subject: Electronics Course Title: **DSE-1005F2   Section- II FPGA& VHDL Programming**

Month: January 2023			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Unit 1: Introduction to Programmable Logic Devices	Evolution of Programmable logic devices, PAL, PLA and GAL. CPLD and FPGA architectures. Placement and routing. Logic Cell structure, Programmable interconnects, Logic blocks and I/O Ports. Clock distribution in FPGA
12	0	12		
			Unit: 2 Basics of VHDL	Introduction: Introduction to Computer-aided design tools for digital systems. Hardware description languages, introduction to VHDL, data objects
Month : February 2023			Module/Unit:	Sub-units planned
12	0	12	Unit 2: Basics of VHDL	classes and data types, operators, overloading, logical operators, Types of delays, Entity and Architecture declaration, Introduction to behavioral, dataflow and structural models
			Unit 3: VHDL Programming	VHDL statements: Assignment statements, sequential statements and process, conditional statements, case statement, Array and loops, resolution functions, packages and Libraries, concurrent statements.
Month: March 2023			Module/Unit:	Sub-units planned
12	0	12	Unit 3: VHDL Programming	Subprograms: Application of Functions and Procedures, Structural Modelling, Component declaration, structural layout and generics
Month: April 2023			Module/Unit:	Sub-units planned
12	0	12	Unit 4: Sequential and Combinational Circuit Design:	VHDL Models and Simulation of combinational circuits such as Multiplexers, Demultiplexers, encoders ,decoders, code converters, comparators, implementation of Boolean functions etc. Sequential Circuits Design: VHDL Models and Simulation of sequential Circuits, Shift Registers, counters etc.

Dr. P. S. Jadhav

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437

Vivekanand College, Kolhapur (Autonomous)
Department of Electronics
Academic Year: 2022-23

Annual Teaching Plan
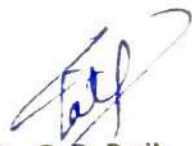
Name of the teacher: **Dr. P. S. Jadhav**
Programme: B.Sc. III   Semester- VI
Subject: Electronics   Course Title: **SEC 4: Introductions to Arduino and IoT**

Month : January 2023			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	1) Introduction to Arduino Board & Accessories :	The Arduino Platform, Block diagram, Architecture, Pin functions,
6	0	6		
Month : January 2023			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	1) Introduction to Arduino Board & Accessories	overview of main features such as I/O Ports, Timers, interrupts serial port, PWM, ADC etc.
6	0	6		
Month: April 2022			Module/Unit:	Sub-units planned
6	0	6	2) Display Interfacing:	Interfacing Arduino to LED's- blinking single LED, blinking multiple LED's, 7 segment display
Month: May 2022				
6	0	6	2) Display Interfacing:	Traffic light ,LED flashes ,LED dot matrix . Interfacing to LCD's- Basic LCD control, display a message on LCD screen.

Dr. P. S. Jadhav

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438

Vivekanand College, Kolhapur (Autonomous)

Department of Electronics
Academic Year: 2022-23

Annual Teaching Plan

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

Programme: B.Sc. 1   Semester- I

Subject: Electronics Course Title: **DSC-1005A Section-I Analog Electronics-I**

Month : Aug 2022			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	1) Basic Circuit Elements **Practical's: Group- A**	Study of basic circuit elements and passive components: Resistor, Capacitor, Inductor, Transformer, Relays, Switches (working principle, circuit symbols, types, specifications and applications).
10	40	50	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. Verification of Norton's Theorem.	
Month: Sept 2022			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	2) Circuit Analysis Practicals: 4. Verification of Superposition Theorem.	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. (Numericals expected)
10	40	50	5. Study of the I-V Characteristics of P-N junction Diodes. 6. Study of the breakdown Characteristics of Zener Diode 7. Study of Half wave rectifier	
			3) PN Junction Diode	Construction of PN junction, Formation of Depletion Layer, Barrier potential, Forward and Reverse bias, Diode Equation and I-V characteristics, 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.

439

Month : Oct 2022			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	4) DC Power Supply Practicals: 8. Study of Full wave rectifier 9. Study of Logic Gates. 10. Study of Universal Gates using fundamental gates. 11. Study of De-Morgans Theorems	Need of Power Supply, Block diagram of DC regulated power supply, Rectifiers: Half wave, Full wave rectifiers (centre tapped and bridge):- Circuit diagrams, working and waveforms, ripple factor, PIV, efficiency and TUF. Filter-Shunt capacitor filter, Series inductor filter, π - filter. Regulation: 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.
10	40	50		

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440

Vivekanand College, Kolhapur (Autonomous)

Department of Electronics

Academic Year: 2022-23

Annual Teaching Plan

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

Programme: B.Sc. III   Semester- VI

Subject: ElectronicsCourse Title: **Practicals**

Month : January 2023			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Unit 1: Introduction of control system Unit 2:Components 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 andPID control. Introduction to Fuzzy Controller 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.
12	0	12		
Month:Feb2023			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Unit 3 :Introduction to PLC **Practicals:**	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 : March 2023				Sub-units planned
Lectures	Practicals	Total	Unit 4 :Ladder	4) Basic components: fuse, pushbutton,

441

Vivekanand College, Kolhapur (Autonomous)

Department of Electronics
Academic Year: 2022-23
Annual Teaching Plan

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

Programme: B.Sc. I Semester- II

Subject: Electronics Course :**DSC-1005B Section-II Digital Electronics-II**

Month: January 2023			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Unit 3: Data Converters **Practical:Group- B**	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
4	40	44	1. Study of Half Adder and Full Adder 2. Study of Multiplexer (4:1) and Demultiplexer (1:4) 3. Study of I-V Characteristics of JFET. 4. Study of Input and Output Characteristics of CE configuration of BJT	
Month : Feb 2023			Module/Unit:	Sub-units planned
Lectures	Practical	Total	Unit 4: Study of timer IC 555 Practical:	IC555 timer: Introduction, Block diagram,
4	40	44	5. Wein Bridge Oscillator. 6. Study of the Colpitt's oscillator 7. Study of the Hartley oscillator. 8. Building and testing of RS Flip-Flop using NAND/NOR gate	
Month: March 2023			Module/Unit:	Sub-units planned
Lectures	Practical	Total	Unit 4: Study of timer IC 555 Practical:	Astable, Monostable and Bistablemultivibrator circuits
4	40	44	9. Building and testing D and JK Flip-Flop using IC 10. Design and study of an AstableMultivibrator using IC 555 Timer. 11. Design and study of a MonostableMultivibrator using IC 555 Timer.	
Month: April 2023			Module/Unit:	Sub-units planned
Lectures	Practicals	Total		
4	40	44	12. computer simulations: 13. Design clocked SR and JK Flip-Flops using Gates. Design 4-bit asynchronous counter using Flip-Flop ICs	Applications of IC555: PWM, square wave generator and FSK

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442

Vivekanand College, Kolhapur (Autonomous)
Department of Electronics
Academic Year: 2021-22
Annual Teaching Plan

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

Programme: B.Sc. III   Semester- V

Subject: Electronics   Course Title: **SEC 3:Renewable Energy**

Month : November 2021			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	1)Introduction to Renewable Energy	Causes of Energy Scarcity, Solution to Energy Scarcity, Factors Affecting Energy Resource Development, Energy Resources and Classification, Renewable Energy – Worldwide Renewable Energy Availability, Renewable Energy in India.
12	0	12	2) Solar energy	Solar energy, its importance, storage of solar energy, solar pond, nonconvective solar pond, applications of solar pond and solar energy, solar water heater, flat plate collector, solar distillation, solar cooker, solar green houses, solar cell, absorption air conditioning. Need and characteristics of photovoltaic (PV) systems, PV models and equivalent circuits, and sun tracking systems
Month: December 2021				
12	0	12	3) Wind Energy harvesting:	Fundamentals of Wind energy, Wind Turbines and different electrical machines in wind turbines, Power electronic interfaces, and grid interconnection topologies.
			4) A. Ocean Energy:	Ocean Energy: Ocean Energy Potential against Wind and Solar, Wave Characteristics and Statistics, Wave Energy Devices.
Month : January 2022				
12	0	12	4)B. Geothermal Energy:	Geothermal Resources, Geothermal Technologies.
			4)C. Hydro Energy:	Hydropower resources, hydropower technologies, environmental impact of hydro power sources:
			5) Piezoelectric Energy harvesting:	Introduction, Physics and characteristics of piezoelectric effect, materials and mathematical description of piezoelectricity, Piezoelectric parameters and modeling piezoelectric generators, Piezoelectric energy harvesting applications, Human power

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443

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 : March 2023				
Lectures	Practical	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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444