

Vivekanand College, Kolhapur
(An Empowered Autonomous Institute)

Department of Electronics

Academic Year: 2026-27

Annual Teaching Plan

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

Programme: B.Sc. II Semester- III

Subject: Electronics

Course Code: 2MIN03ELE31

Course Name: **Principles of Electronics Communication**

Month : July 2026			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Unit 1: Electronic communication 1. To study Amplitude Modulator and demodulator 2. To study FM modulator 3. Study of ASK Modulator 4. Study of PSK Modulator	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
8	32	40		
Month : August 2026			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Unit 2: Amplitude Modulation (AM) and Demodulation 5. Study of FSK Modulator 6. Arithmetic instructions programming using 8051 7. Logical instructions programming using 8051 8. Boolean/Bit manipulation instructions	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)
8	32	40		
Month : September 2026			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Unit 3: Frequency Modulation (FM) and Demodulation 9. Code conversion programming using 8051 10. Study of timers of 8051 in mode 1 11. Study of timers of 8051 in mode 2 12. Study of Serial programming of 8051	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).
8	32	40		
Month : October 2026			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Unit 4: Digital Modulation Techniques 13. Study of Timer Interrupts programming of 8051 14. Revision of A and B group Practical experiment.	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 Quadrature Shift Keying (BPSK and QPSK).
8	32	40		

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Academic Year: 2026-27

Annual Teaching Plan

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

Programme: B.Sc. II Semester- IV

Course Code: 2MIN03ELE41

Subject: Electronics

Course Name: **Fundamentals of Operational Amplifier**

Month : December 2026			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Unit 1: Basics of Operational Amplifier: Study of Op-Amp as Inverting and Non-Inverting amplifier 2. Study of Op-Amp as adder and Subtractor 3. Study of Op-Amp as Schmitt trigger. 4. Study of phase shift oscillator using Op-Amp.	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.
8	32	40		
Month : January 2027			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Unit 2: Linear Applications 5. Study of Wein bridge oscillator using Op-Amp 6. Study of Op-Amp as Square wave generator 7. Study of Op-Amp as precision rectifier.	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
8	32	40		
Month : February 2027			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Unit 3: Non-linear Applications 8. Study of Timers in 8051 Microcontroller. 9. LED, Switch and Relay interfacing to 8051 10. LCD Interfacing with 8051 Microcontroller. 11. DC motor interfacing to 8051	Differentiator and Integrator, Basic Comparators, Applications of comparator as zero crossing detectors, level detector, Schmitt triggers, Half wave Precision rectifiers, Peak detectors
8	32	40		
Month : March 2027			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Unit 4: Oscillators: 12. Stepper Motor interfacing to 8051 microcontroller. 13. DAC0808 interfacing to 8051microcontroller. 14. ADC0804 interfacing to 8051microcontroller. 15. Serial communication with PC using 8051	Oscillator principles, types of oscillators- Phase shift oscillator, Wien - bridge oscillator, Triangular wave generator, Square wave generator, Saw tooth wave generator.
8	32	40		


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Annual Teaching Plan

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

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

Course Code: **2DSC03ELE53**

Subject: **Electronics**

Course Title: **Antenna and Wave Propagation**

Month : July 2026			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 2026			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 2026			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 2026			Module/Unit:	Sub-units planned
Lectures	Practicals	Total		
12	16	28	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.

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Annual Teaching Plan

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

Programme: B.Sc. III Semester- VI

Course Code: **2DSE03ELE61**

Subject: Electronics

Course Title: **Internet of Things (IoT)**

Month : December 2026			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Unit 1: IoT Introduction & Concepts 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	IoT Architecture, Physical & Logical IoT design, Basics IoT Enabling, Technologies, IoT Stack, IoT Applications
12	16	28		
Month: January 2027			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Unit 2: Sensors & Actuators 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 load. 12. To study the simulation of single phase HWCW with R load. Project work	Sensors & Actuators Sensor working, Sensor Characteristics, Types of sensors and working principle, Sensors used in IoT.
12	16	28		
Month : February 2027			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Unit 3: Wireless Technologies for IoT 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 with Arduino Project work	Wireless Technologies for IoT Overview of Wireless Sensor Networks, IEEE standards for IoT, Overview of Wireless Modems (RF, GSM/GPRS, Bluetooth, Wi-Fi etc.), Node MCU and ESP32 IoT Protocol : Overview, MQTT, COAP, http/https , 6LowPAN
12	16	28		



Month : March 2027			Module/Unit:	Sub-units planned
Lectures	Practicals	Total		
12	16	28	Unit 4: Cloud platforms for IoT GROUP D: (IoT) 18. Study the fundamental of IoT Architecture, Arduino and necessary software 19. Interface Bluetooth with Arduino & send the sensor data to smartphone through Bluetooth 20. Interface Bluetooth with Arduino and receive the data from smartphone through Bluetooth to turn LED ON/OFF 21. Interface Wi-Fi module with Arduino to upload sensor data. 22. Interface GSM module with Arduino to upload sensor data 23. Study and implement MQTT protocol using Arduino 24. IoT Application Case study: Home Automation Project work	IoT dashboards, Introduction to various cloud platforms, Device and data management from Cloud Platforms, Uploading data from hardware platforms to cloud Applications: Home Automation, Smart Cities etc.


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

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

Subject: Electronics Course Title: **3DSC03ELE12 : Digital Electronics-I**

: 3DSC03ELE19 : DSC Lab-I

Month :			Module/Unit:	Sub-units planned
July 2026				
Lectures	Practical	Total	Lecture: Unit 1: Number System, Binary Codes and Binary Arithmetic Practical's: Group A	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	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	
Month: August 2026			Module/Unit:	Sub-units planned
Lectures	Practical	Total	Lectures : Unit 2: Logic Gates, Boolean algebra:	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	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)	
Month: September 2026			Module/Unit:	Sub-units planned
Lectures	Practical	Total	Unit 3: Logic Families	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	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	
Month : October 2026			Module/Unit:	Sub-units planned
Lectures	Practical	Total	Unit 4: Combinational circuits:	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	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	


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Annual Teaching Plan

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

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

Subject: Electronics Course code: Name: **3DSC03ELE22: Digital Electronics-II**

: 3DSC03ELE29 : DSC Lab-II

Month: December 2026			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Unit 1: Sequential Circuit Practical: Group B 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	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		
Month : January 2027			Module/Unit:	Sub-units planned
Lectures	Practical	Total	Unit 2: Shift registers and counters Practical: 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.	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		
Month : February 2027			Module/Unit:	Sub-units planned
Lectures	Practical	Total	Unit 3: Data Converters Practical: 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	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		

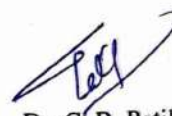


Month: March 2027			Module/Unit:	Sub-units planned
Lectures	Practical	Total		
8	32	40	Unit 4: Study of Timer IC555 Practical: 1. Design and study of 4 bit digital to analog converter using R-2R ladder network. 2. Design and study of an Astable Multivibrator using IC 555Timer. 3. Design and study of a Monostable Multivibrator using IC555Timer. 4. Design and study of a Bistable Multivibrator using IC555Timer.	IC5 55 timer: Introduction, Block diagram, Astable, Monostable and Bistable multivibrator circuits. Applications of IC555: PWM, square wave generator and FSK



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Annual Teaching Plan

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

Programme: B.Sc. II Semester- IV (MAJOR)

Subject: Electronics Course Title: **2DSC03ELE42: Microcontroller 8051**

2DSC03ELE49 (DSC-Electronics Lab-4)

Month : December 2026			Module/Unit:	Sub-units planned
Lectures	Practical	Total	Lecture: Unit 1: Introduction to 8051 Microcontroller Practical's:	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	32	40	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 reference and non-zero reference)	
Month: January 2026			Module/Unit:	Sub-units planned
Lectures	Practical	Total	Lectures : Unit 2: Architecture of 8085 Microprocessor Practicals:	Instruction Set of 8051, Classification of instruction sets, Addressing modes. Instruction set of 8051: Data transfer, Arithmetic, logical, Jump, Call, Boolean instructions.
8	32	40	1. To design phase shift oscillator using Op-Amp. 2. To design Wein bridge oscillator using Op-Amp 3. To study Op-Amp as triangular wave generator To study Op-Amp as Square wave generator 4. To study Op-Amp as precision rectifier	
Month: February 2026			Module/Unit:	Sub-units planned
Lectures	Practical	Total	Unit 3: 8051 Timer Programming : 8085 Practical's:	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	32	40	1. To study Op-Amp as peak detector Arithmetic instruction 2. Arithmetic instruction programming using 8051 3. Logical instruction programming using 8051 4. Boolean/Bit manipulation instruction programming using 8051 5. Code conversion using 8051	
Month : March 2026			Module/Unit:	Sub-units planned
Lectures	Practical	Total	Unit 4: 8051 Serial and Interrupt Programming	Programs for Addition (8 and 16 bit), Subtraction, Multiplication, Division, Block Transfer and Exchange, Masking of a number, arrange the numbers in ascending and descending order to find odd and even numbers, to find parity of given number, Time delay generation using single register and register pair.
8	32	40		



			Practical's: 1. Study of counters of 8051 2. Study of Serial programming of 8051 3. Study of Timer Interrupts programming of 8051 4. Study of Serial communication Interrupts programming of 8051 5. Study of External hardware Interrupts programming of 8051	
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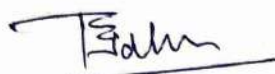
Programme: **B.Sc. II Semester- III (MAJOR)**

Subject: Electronics Course Title: **2DSC03ELE32: Microprocessor 8085**

2DSC03ELE39 (DSC-Electronics Lab-3)

Month : July 2026			Module/Unit:	Sub-units planned
Lectures	Practical	Total	Lecture: Unit 1: Microcomputer Organization Practical's: 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	Microcomputer Organization: Basic components of microcomputer (CPU, Program memory, Data memory, input and output ports), idea of RAM (SDRAM, DRAM), Types of ROM, Memory Organization & addressing: Memory Interfacing, Memory Map
8	32	40		
Month: August 2026			Module/Unit:	Sub-units planned
Lectures	Practical	Total	Lectures : Unit 2: Architecture of 8085 Microprocessor Practical's: 5. To study PSK Modulator 6. To study FSK Modulator 7. To study PCM 8. To study PPM 9. To Study of Tuned Amplifier	Architecture of 8085 Microprocessor: Salient 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	32	40		
Month: September 2026			Module/Unit:	Sub-units planned
Lectures	Practical	Total	Unit 3: Instruction set of Microprocessor 8085 Practicals: 1. Addition of Two 8 Bit Numbers using 8085 2. Subtraction of Two 8 Bit Numbers using 8085 3. Multiplication of Two 8 Bit Numbers using 8085 4. Division of Two 8 Bit Numbers using 8085 5. Program to transfer the memory block using 8085	Instruction format, Addressing modes of Instructions, classification of Instruction Set Data transfer (including stacks), Arithmetic, logical, branch and control Instructions
8	32	40		
Month : October 2026			Module/Unit:	Sub-units planned
Lectures	Practical	Total	Unit 4: Programming with 8085	Programs for Addition (8 and 16

8	32	40	Microprocessor Practicals: 1. Program to exchange the memory blocks using 8085 2. To arrange the given number in ascending and descending order using 8085 3. Programs to find even and odd numbers using 8085 4. To find total number. of even and odd number in an array using 8085 5. Programs for masking and to find parity of given number using 8085	bit), Subtraction, Multiplication, Division, Block Transfer and Exchange, Masking of a number, arrange the numbers in ascending and descending order to find odd and even numbers, to find parity of given number, Time delay generation using single register and register pair.
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- शिक्षणमहर्षी डॉ. बापूजी साळुंखे

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Department of Electronics

Academic Year: 2026-2027

Teaching Plan

Name of the teacher: Nishad Manmohan Kumbhare

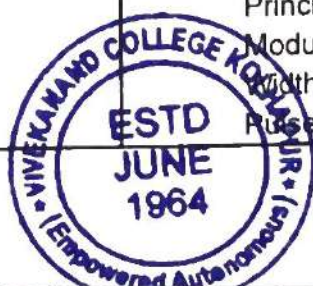
Programme: B.Sc. II Semester - III

Subject: Electronics Course Title: DSC-V: 2DSC03ELE31: Analog and Digital Communication

DSC-PR-III: 2DSC03ELE39: DSC-Electronics Lab-3

VSC-PR-II: 2VSC03ELE39: PCB Designing Lab

Month	Lectures	Practical	Total	Units and Subunits	Practicals
July 2026	8	32	40	1. Electronic communication Basic blocks in a communication system: transmitter, channel and receiver, types/classification of communication systems, Electromagnetic spectrum, Concepts of bandwidth, gain, attenuation, and Channel. Concept of Noise: Types of noise (External noise, internal noise), signal-to-noise (S/N) ratio.	Lab 1. To study Amplitude Modulator and demodulator Lab 2. To study FM modulator VSC 1. Introduction to PCB designing module of Proteus VSC 2. Create schematic and PCB layout for fixed 5/6/9/12 V power supply
Aug. 2026	8	32	40	2. Analog Modulation - Demodulation Introduction to modulation, Need for modulation, Amplitude Modulation and Demodulation: Basic concepts, Mathematical expression, modulation index, bandwidth, voltage distribution and power calculations, Classification of AM, Concept of DSB, SSB generation, Amplitude demodulation (diode detector). Angle Modulation - Frequency and Phase modulation, Frequency Modulation (FM): frequency spectrum, frequency deviation, modulation index, Frequency modulator using VCO, FM demodulator (Slope detector), Comparison between FM and AM. Block diagram and working of FM Super heterodyne radio receiver.	Lab 1. To study Pulse Amplitude Modulation (PAM) Lab 2. To study Pulse Width Modulation (PWM) Lab 3. To study ASK Modulator VSC 1. Create schematic and PCB layout for Dual +5/9/12/15 V power supply VSC 2. Create schematic and PCB layout for Variable 1.25 - 37 V power supply VSC 3. Create schematic and PCB layout for Astable Multivibrator using IC 555
Sept. 2026	8	32	40	3. Analog Pulse Modulation Channel capacity, Sampling theorem, Basic Principles- Pulse Amplitude Modulation (PAM), Pulse Width Modulation (PWM), Pulse Position Modulation	Lab 1. To study PSK Modulator Lab 2. To study FSK Modulator Lab 3. To study PCM VSC 1. Create schematic and PCB layout for Monostable



				(PPM), Modulation and detection technique for PAM.	Multivibrator using IC 555 VSC 2. Create schematic and PCB layout for Inverting/Non-Inverting Amplifier using IC 741 VSC 3. Create schematic and PCB layout for Schmitt Trigger using IC 741
Oct. 2026	8	32	40	4. Digital Pulse Modulation\ Need for digital transmission, Pulse Code Modulation, Digital Carrier Modulation Techniques, Sampling, Quantization and Encoding. Concept of Amplitude Shift Keying (ASK), Frequency Shift Keying (FSK), Phase Shift Keying (PSK), and Phase Shift Keying (BPSK and QPSK).	Lab 1. To study PPM Lab 2. Study of Tuned Amplifier VSC 1. Create schematic and PCB layout for Function Generator using IC8038 VSC 2. Create schematic and PCB layout for BCD to 7-segment Decoder using IC 7447 VSC 3. Development of Printed Circuit Board-I (Layout printing, etching, Drilling)
Nov. 2026	8	32	40	Revision	Revision VSC 1. Development of Printed Circuit Board-II (component mounting, soldering and Testing)


(Nishad M. Kumbhare)




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- शिक्षणमहर्षी डॉ. बापूजी साळुंखे

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Academic Year: 2026-2027

Teaching Plan

Name of the teacher: Nishad Manmohan Kumbhare

Programme: B.Sc. II Semester - III

Subject: Electronics Course Title: MIN-VI: 2MIN03ELE32: Architecture of 8051 Microcontroller

MIN-PR-III: 2MIN03ELE39: MIN-Electronics lab-3

Month	Lectures	Practical	Total	Units and Subunits	Practicals
July 2026	8	32	40	1. Fundamental of 8051 Microcontroller Organization of Microcomputer System, Comparison between microprocessor and microcontroller, Salient features of 8051family, Block diagram of 8051, Pin description of 8051, RAM and ROM structures of 8051, SFR's and GPR's in 8051, PSW register, Clock and Reset circuits	Lab 1. Study of Amplitude Modulator and demodulator Lab 2. Study of FM modulator using VCO/ IC 8038 Lab 3. Arithmetic instructions programming using 8051 Lab 4. Logical instructions programming using 8051
Aug. 2026	8	32	40	2. Instruction Set of 8051 Microcontroller Classification of instruction sets, Addressing modes. Instruction set of 8051: Data transfer, Arithmetic, Logical, Jump, Call, Boolean instructions. I/O Port Programming	Lab 1. Study of ASK Modulator Lab 2. Study of PSK Modulator Lab 3. Boolean/Bit manipulation instructions programming using 8051 Lab 4. Code conversion programming using 8051
Sept. 2026	8	32	40	3. Timers and Counters Programming in Assembly: Timers and Counters Programming in Assembly : Timer Registers, Programming Timers with mode 1 and mode 2, Programming Counters	Lab 1. Study of Timer Interrupts programming of 8051 Revision
Oct. 2026	8	32	40	4. Serial Port and Interrupt Programming in Assembly: Basics of Serial communication, 8051 to RS232, Serial port programming Interrupts: 8051 Interrupts, Interrupt registers, Programming Timer Interrupts, External hardware interrupts and Serial Communication Interrupts	Revision
Nov. 2026	8	32	40	Revision	Revision

(Nishad M. Kumbhare)



(Prof. Dr. C. B. Patil)

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Shri Swami Vivekanand Shikshan Santha Kolhapur's
Vivekanand College, Kolhapur (Empowered Autonomous Institute)

Department of Electronics

Academic Year: 2026-2027

Teaching Plan

Name of the teacher: Nishad Manmohan Kumbhare

Programme: B.Sc. II Semester - IV

Subject: Electronics Course Title: DSC-VII: 2DSC03ELE41: Linear Integrated Circuits
DSC-PR-IV: 2DSC03ELE49: DSC-Electronics Lab-4
VSC-PR-III: 2VSC03ELE49: Arduino Programming Lab

Month	Lectures	Practical	Total	Units and Subunits	Practicals
Nov 2026	8	32	40	1. Introduction to Operational Amplifier Transistor dc amplifier, Differential amplifier, configurations of differential amplifier. Introduction to op-amp: Op-amp symbol, terminals, packages and specifications, Block diagram of op-amp, Open loop & closed loop configurations.	Lab 1. To design Op-Amp as Inverting and Non-Inverting amplifier Lab 2. To study Op-Amp as adder and Subtractor Lab 3. To study Op-Amp as integrator and differentiator Lab 4. To study Op-Amp as Schmitt trigger. VSC 1. Introduction to Arduino Board and Arduino IDE VSC 2. Interfacing of LED and switch with Arduino
Dec. 2026	8	32	40	1. Introduction to Operational Amplifier Op amp parameters: Input & output offset voltages, Input Bias current, slew rate, input and output impedance, CMRR, PSRR, and Thermal drift. Offset balancing technique of op-amp, Study of IC 741.	Lab 1. To study Op-Amp as comparator (Zero reference and non-zero reference) Lab 2. To design phase shift oscillator using Op-Amp Lab 3. To design Wein bridge oscillator using Op-Amp Lab 4. To study Op-Amp as triangular wave generator VSC 1. Interfacing of Relay with Arduino
Jan. 2027	8	32	40	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.	Lab 1. To study Op-Amp as Square wave generator Lab 2. To study Op-Amp as a precision rectifier. Lab 3. To study Op-Amp as peak detector VSC 1. Interfacing of LCD (16X2) with Arduino VSC 2. Interfacing of temperature and humidity sensor (DHT11) with Arduino
Feb. 2027	8	32	40	3. Oscillators Oscillator principles, types of oscillators, Phase shift oscillator, Wien – bridge oscillator, Triangular wave generator, Astable Multivibrator, Monostable Multivibrator.	Lab 1. Arithmetic instruction programming using 8051 Lab 2. Logical instruction programming using 8051 Lab 3. Boolean/Bit manipulation instruction programming using 8051 Lab 4. Code conversion using 8051 VSC 1. Interfacing of stepper motor with Arduino VSC 2. Interfacing of DC motor with Arduino
Mar. 2027	8	32	40	4. Comparators and Receivers:	Lab 1. Study of timers of 8051 in mode 1



				Basic comparator, Zero crossing detector, Regenerative comparator (Schmitt trigger), Peak detector, Clippers (positive and negative) and Clampers (positive and negative) Precision rectifiers: Op-amp as precision rectifiers (half wave), sample and hold circuit.	Lab 2. Study of timers of 8051 in mode 2 Lab 3. Study of counters of 8051 Lab 4. Study of Serial programming of 8051 VSC 1. Interfacing of IR sensor with Arduino VSC 2. Interfacing of Ultrasonic sensor with Arduino
Apr. 2027				Revision	Lab 1. Study of Timer Interrupts programming of 8051 Lab 2. Study of Serial communication Interrupts programming of 8051 Lab 3. Study of External hardware Interrupts programming of 8051



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Department of Electronics

Academic Year: 2026-2027

Teaching Plan

Name of the teacher: Nishad Manmohan Kumbhare

Programme: B.Sc. II Semester - IV

Subject: Electronics Course Title: MIN-VIII: 2MIN03ELE42: 8051 Microcontroller Interfacing and Embedded C

Month	Lectures	Practical	Total	Units and Subunits	Practicals
Nov 2026	8	32	40	1. Introduction to Embedded C Data types in 8051 C, Time delay in 8051 C, I/O programming in 8051 C	Lab 1. 1. Study of Op-Amp as Inverting and Non-Inverting amplifier Lab 2. Study of Op-Amp as adder and Subtractor Lab 3. Study of Op-Amp as Schmitt trigger. Lab 4. Study of phase shift oscillator using Op-Amp.
Dec. 2026	8	32	40	1. Introduction to Embedded C Logical operations in 8051 C, Data conversion programs in 8051 C	Lab 1. Study of Wein bridge oscillator using Op-Amp Lab 2. Study of Op-Amp as Square wave generator Lab 3. Study of Op-Amp as precision rectifier.
Jan. 2027	8	32	40	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,	Lab 1. Study of Timers in 8051 Microcontroller. Lab 2. LED, Switch and Relay interfacing to 8051 microcontroller. Lab 3. LCD Interfacing with 8051 Microcontroller Lab 4. DC motor interfacing to 8051microcontroller.
Feb. 2027	8	32	40	3. ADC, DAC Interfacing Interface ADC 0804, ADC 0808/0809, ADC MAX1112, DAC 0808 (Triangular wave, Ramp, Staircase)	Lab 1. Stepper Motor interfacing to 8051 microcontroller. Lab 2. DAC0808 interfacing to 8051microcontroller. Lab 3. ADC0804 interfacing to 8051microcontroller
Mar. 2027	8	32	40	4. Sensor Interfacing Reed sensor, smoke sensor, PIR sensor, Temperature sensor (LM 35, Humidity sensor (SY HS 230), Light sensor (LDR), Moisture/rain sensor, Gas sensor (MQ series), Ultrasonic module	Lab 1. Serial communication with PC using 8051microcontroller

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Department of Electronics

Academic Year: 2026-2027

Teaching Plan

Name of the teacher: Nishad Manmohan Kumbhare

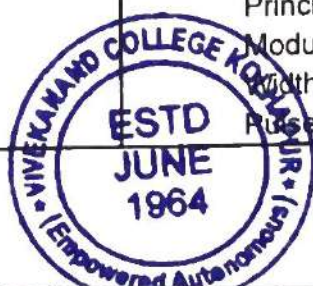
Programme: B.Sc. II Semester - III

Subject: Electronics Course Title: DSC-V: 2DSC03ELE31: Analog and Digital Communication

DSC-PR-III: 2DSC03ELE39: DSC-Electronics Lab-3

VSC-PR-II: 2VSC03ELE39: PCB Designing Lab

Month	Lectures	Practical	Total	Units and Subunits	Practicals
July 2026	8	32	40	1. Electronic communication Basic blocks in a communication system: transmitter, channel and receiver, types/classification of communication systems, Electromagnetic spectrum, Concepts of bandwidth, gain, attenuation, and Channel. Concept of Noise: Types of noise (External noise, internal noise), signal-to-noise (S/N) ratio.	Lab 1. To study Amplitude Modulator and demodulator Lab 2. To study FM modulator VSC 1. Introduction to PCB designing module of Proteus VSC 2. Create schematic and PCB layout for fixed 5/6/9/12 V power supply
Aug. 2026	8	32	40	2. Analog Modulation - Demodulation Introduction to modulation, Need for modulation, Amplitude Modulation and Demodulation: Basic concepts, Mathematical expression, modulation index, bandwidth, voltage distribution and power calculations, Classification of AM, Concept of DSB, SSB generation, Amplitude demodulation (diode detector). Angle Modulation - Frequency and Phase modulation, Frequency Modulation (FM): frequency spectrum, frequency deviation, modulation index, Frequency modulator using VCO, FM demodulator (Slope detector), Comparison between FM and AM. Block diagram and working of FM Super heterodyne radio receiver.	Lab 1. To study Pulse Amplitude Modulation (PAM) Lab 2. To study Pulse Width Modulation (PWM) Lab 3. To study ASK Modulator VSC 1. Create schematic and PCB layout for Dual +5/9/12/15 V power supply VSC 2. Create schematic and PCB layout for Variable 1.25 - 37 V power supply VSC 3. Create schematic and PCB layout for Astable Multivibrator using IC 555
Sept. 2026	8	32	40	3. Analog Pulse Modulation Channel capacity, Sampling theorem, Basic Principles- Pulse Amplitude Modulation (PAM), Pulse Width Modulation (PWM), Pulse Position Modulation	Lab 1. To study PSK Modulator Lab 2. To study FSK Modulator Lab 3. To study PCM VSC 1. Create schematic and PCB layout for Monostable



				(PPM), Modulation and detection technique for PAM.	Multivibrator using IC 555 VSC 2. Create schematic and PCB layout for Inverting/Non-Inverting Amplifier using IC 741 VSC 3. Create schematic and PCB layout for Schmitt Trigger using IC 741
Oct. 2026	8	32	40	4. Digital Pulse Modulation\ Need for digital transmission, Pulse Code Modulation, Digital Carrier Modulation Techniques, Sampling, Quantization and Encoding. Concept of Amplitude Shift Keying (ASK), Frequency Shift Keying (FSK), Phase Shift Keying (PSK), and Phase Shift Keying (BPSK and QPSK).	Lab 1. To study PPM Lab 2. Study of Tuned Amplifier VSC 1. Create schematic and PCB layout for Function Generator using IC8038 VSC 2. Create schematic and PCB layout for BCD to 7-segment Decoder using IC 7447 VSC 3. Development of Printed Circuit Board-I (Layout printing, etching, Drilling)
Nov. 2026	8	32	40	Revision	Revision VSC 1. Development of Printed Circuit Board-II (component mounting, soldering and Testing)


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Department of Electronics

Academic Year: 2026-2027

Teaching Plan

Name of the teacher: Nishad Manmohan Kumbhare

Programme: B.Sc. II Semester - III

Subject: Electronics Course Title: MIN-VI: 2MIN03ELE32: Architecture of 8051 Microcontroller

MIN-PR-III: 2MIN03ELE39: MIN-Electronics lab-3

Month	Lectures	Practical	Total	Units and Subunits	Practicals
July 2026	8	32	40	1. Fundamental of 8051 Microcontroller Organization of Microcomputer System, Comparison between microprocessor and microcontroller, Salient features of 8051family, Block diagram of 8051, Pin description of 8051, RAM and ROM structures of 8051, SFR's and GPR's in 8051, PSW register, Clock and Reset circuits	Lab 1. Study of Amplitude Modulator and demodulator Lab 2. Study of FM modulator using VCO/ IC 8038 Lab 3. Arithmetic instructions programming using 8051 Lab 4. Logical instructions programming using 8051
Aug. 2026	8	32	40	2. Instruction Set of 8051 Microcontroller Classification of instruction sets, Addressing modes. Instruction set of 8051: Data transfer, Arithmetic, Logical, Jump, Call, Boolean instructions. I/O Port Programming	Lab 1. Study of ASK Modulator Lab 2. Study of PSK Modulator Lab 3. Boolean/Bit manipulation instructions programming using 8051 Lab 4. Code conversion programming using 8051
Sept. 2026	8	32	40	3. Timers and Counters Programming in Assembly: Timers and Counters Programming in Assembly: Timer Registers, Programming Timers with mode 1 and mode 2, Programming Counters	Lab 1. Study of Timer Interrupts programming of 8051 Revision
Oct. 2026	8	32	40	4. Serial Port and Interrupt Programming in Assembly: Basics of Serial communication, 8051 to RS232, Serial port programming Interrupts: 8051 Interrupts, Interrupt registers, Programming Timer Interrupts, External hardware interrupts and Serial Communication Interrupts	Revision
Nov. 2026	8	32	40	Revision	Revision

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Department of Electronics
Academic Year: 2026-2027

Teaching Plan

Name of the teacher: Nishad Manmohan Kumbhare

Programme: B.Sc. II Semester - IV

Subject: Electronics Course Title: DSC-VII: 2DSC03ELE41: Linear Integrated Circuits
DSC-PR-IV: 2DSC03ELE49: DSC-Electronics Lab-4
VSC-PR-III: 2VSC03ELE49: Arduino Programming Lab

Month	Lectures	Practical	Total	Units and Subunits	Practicals
Nov 2026	8	32	40	1. Introduction to Operational Amplifier Transistor dc amplifier, Differential amplifier, configurations of differential amplifier. Introduction to op-amp: Op-amp symbol, terminals, packages and specifications, Block diagram of op-amp, Open loop & closed loop configurations.	Lab 1. To design Op-Amp as Inverting and Non-Inverting amplifier Lab 2. To study Op-Amp as adder and Subtractor Lab 3. To study Op-Amp as integrator and differentiator Lab 4. To study Op-Amp as Schmitt trigger. VSC 1. Introduction to Arduino Board and Arduino IDE VSC 2. Interfacing of LED and switch with Arduino
Dec. 2026	8	32	40	1. Introduction to Operational Amplifier Op amp parameters: Input & output offset voltages, Input Bias current, slew rate, input and output impedance, CMRR, PSRR, and Thermal drift. Offset balancing technique of op-amp, Study of IC 741.	Lab 1. To study Op-Amp as comparator (Zero reference and non-zero reference) Lab 2. To design phase shift oscillator using Op-Amp Lab 3. To design Wein bridge oscillator using Op-Amp Lab 4. To study Op-Amp as triangular wave generator VSC 1. Interfacing of Relay with Arduino
Jan. 2027	8	32	40	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.	Lab 1. To study Op-Amp as Square wave generator Lab 2. To study Op-Amp as a precision rectifier. Lab 3. To study Op-Amp as peak detector VSC 1. Interfacing of LCD (16X2) with Arduino VSC 2. Interfacing of temperature and humidity sensor (DHT11) with Arduino
Feb. 2027	8	32	40	3. Oscillators Oscillator principles, types of oscillators, Phase shift oscillator, Wien – bridge oscillator, Triangular wave generator, Astable Multivibrator, Monostable Multivibrator.	Lab 1. Arithmetic instruction programming using 8051 Lab 2. Logical instruction programming using 8051 Lab 3. Boolean/Bit manipulation instruction programming using 8051 Lab 4. Code conversion using 8051 VSC 1. Interfacing of stepper motor with Arduino VSC 2. Interfacing of DC motor with Arduino
Mar. 2027	8	32	40	4. Comparators and Receivers:	Lab 1. Study of timers of 8051 in mode 1



				Basic comparator, Zero crossing detector, Regenerative comparator (Schmitt trigger), Peak detector, Clippers (positive and negative) and Clampers (positive and negative) Precision rectifiers: Op-amp as precision rectifiers (half wave), sample and hold circuit.	Lab 2. Study of timers of 8051 in mode 2 Lab 3. Study of counters of 8051 Lab 4. Study of Serial programming of 8051 VSC 1. Interfacing of IR sensor with Arduino VSC 2. Interfacing of Ultrasonic sensor with Arduino
Apr. 2027				Revision	Lab 1. Study of Timer Interrupts programming of 8051 Lab 2. Study of Serial communication Interrupts programming of 8051 Lab 3. Study of External hardware Interrupts programming of 8051



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Department of Electronics

Academic Year: 2026-2027

Teaching Plan

Name of the teacher: Nishad Manmohan Kumbhare

Programme: B.Sc. II Semester - IV

Subject: Electronics Course Title: MIN-VIII: 2MIN03ELE42: 8051 Microcontroller Interfacing and Embedded C

Month	Lectures	Practical	Total	Units and Subunits	Practicals
Nov 2026	8	32	40	1. Introduction to Embedded C Data types in 8051 C, Time delay in 8051 C, I/O programming in 8051 C	Lab 1. 1. Study of Op-Amp as Inverting and Non-Inverting amplifier Lab 2. Study of Op-Amp as adder and Subtractor Lab 3. Study of Op-Amp as Schmitt trigger. Lab 4. Study of phase shift oscillator using Op-Amp.
Dec. 2026	8	32	40	1. Introduction to Embedded C Logical operations in 8051 C, Data conversion programs in 8051 C	Lab 1. Study of Wein bridge oscillator using Op-Amp Lab 2. Study of Op-Amp as Square wave generator Lab 3. Study of Op-Amp as precision rectifier.
Jan. 2027	8	32	40	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,	Lab 1. Study of Timers in 8051 Microcontroller. Lab 2. LED, Switch and Relay interfacing to 8051 microcontroller. Lab 3. LCD Interfacing with 8051 Microcontroller Lab 4. DC motor interfacing to 8051microcontroller.
Feb. 2027	8	32	40	3. ADC, DAC Interfacing Interface ADC 0804, ADC 0808/0809, ADC MAX1112, DAC 0808 (Triangular wave, Ramp, Staircase)	Lab 1. Stepper Motor interfacing to 8051 microcontroller. Lab 2. DAC0808 interfacing to 8051microcontroller. Lab 3. ADC0804 interfacing to 8051microcontroller
Mar. 2027	8	32	40	4. Sensor Interfacing Reed sensor, smoke sensor, PIR sensor, Temperature sensor (LM 35, Humidity sensor (SY HS 230), Light sensor (LDR), Moisture/rain sensor, Gas sensor (MQ series), Ultrasonic module	Lab 1. Serial communication with PC using 8051microcontroller

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Vivekanand College, Kolhapur (Empowered Autonomous Institute)

Department of Electronics

Academic Year: 2026-027

Annual Teaching Plan

Name of the teacher: **Mr. R. A. Deshmukh**

Program: **B.Sc. III Semester-V**

Course Code: **2DSC03ELE51**

Subject: **Electronics**

Course Title: **FUNDAMENTALS OF INSTRUMENTATION**

Month: July 2026			Module / Unit	Sub-Units Planned
Lectures	Practical's	Total	Unit-1 Fundamental of Measurement	
8	32	40	Practical's: 1. Design of multi-range ammeter, voltmeter, conversion of ammeter into voltmeter	Introduction, Performance characteristics, Static and Dynamic characteristics of Instruments, Error: Type of Errors (Gross error, systematic error, and random error) Impedance loading and matching, Calibrations: Definition and classification, Standards of measurement: Definition and types of Standards
Month: August 2026			Module / Unit	Sub-Units Planned
Lectures	Practical's	Total	Unit-2: Basic Analog Measuring Instruments	
8	32	40	Practical's: 2. Study of temperature sensor RTD and Thermistor	DC galvanometer, PMMC and Moving Iron instruments, Voltmeter, Ammeter, RMS and True RMS concept, extending range of ammeter, Design of multi-range ammeter, extending range of voltmeter, Design of multi-range voltmeter, Series and shunt type ohmmeter, Single phase wattmeter: construction and working
Month: September 2026			Module / Unit	Sub-Units Planned
Lectures	Practical's	Total	Unit-3: Transducers	
8	32	40	Practical's: 3. Automatic Porch light control using LDR and relay	Definition, Classification of Transducers, Selection criterion for Transducers, Detail study of Transducers: Thermistor, RTD, Thermocouple, Semiconductor sensor (LM 35/AD590), Strain gauge, LVDT, Capacitive transducer (microphone), Opto-electric transducer – LDR, Photo diode, PIR, Ultrasonic sensor, Hall effect sensor, Loud Speaker, Piezoelectric transducer, Proximity sensor: Inductive, capacitive
Month: October 2026			Module / Unit	Sub-Units Planned
Lectures	Practical's	Total	Unit-4: Actuators	
8	32	40	Practical's: 4. Measurement of displacement using LVDT 5. Study of ON/OFF Temperature Controller (LM 34/LM 35/AD590)	Definition, Principle, types and selection of Actuators, linear, rotary, logical, and continuous Actuators, Electrical actuating systems: Solid-state switches, Relays, Solenoids, Electric Motors: Principle of operation, Electro-mechanical: Servo, DC motor, Stepper motor

R. A. Deshmukh

Mr. R. A. Deshmukh



C. B. Patil

Dr. C. B. Patil

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Vivekanand College, Kolhapur (Empowered Autonomous Institute)
Department of Electronics
Academic Year: 2026-027
Annual Teaching Plan

Name of the teacher: **Mr. R. A. Deshmukh**

Program: **B.Sc. III Semester-VI**

Course Code: **2DSC03ELE61**

Subject: **Electronics**

Course Title: **INDUSTRIAL INSTRUMENTATION**

Month: January 2027			Module / Unit	Sub-Units Planned
Lectures	Practical's	Total	Unit-1 Signal Conditioning-I	Introduction, Sample and Hold circuit, Thermistor, Wheatstone bridge amplifier, Instrumentation amplifier, Attenuator, Converter: V-I, I-V, V-F and F-V
8	32	40	Practical's: 1. Study of Actuators (Solenoid)	
Month: February 2027			Module / Unit	Sub-Units Planned
Lectures	Practical's	Total	Unit-2: Signal Conditioning-II	Introduction to Passive and active filter, Advantages 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
8	32	40	Practical's: 2. Study of solid-state relay	

Month: March 2027			Module / Unit	Sub-Units Planned
Lectures	Practical's	Total	Unit-3: Digital Instruments	Introduction to Data Acquisition System (DAS), Single channel & multi-channel DAS. Data logger, digital instruments like Digital Multimeter, Digital Tachometer, Digital Capacitance Meter, Digital Phase Meter, Digital Frequency Meter, Digital pH Meter.
8	32	40	Practical's: 3. Function generator using 8038 4. Instrumentation amplifier using OPAMP	
Month: April 2027			Module / Unit	Sub-Units Planned
Lectures	Practical's	Total	Unit 4: Application of Linear ICs	Block diagram of PLL with functioning of each block, calculation of capture range and lock range frequencies, application of PLL (frequency multiplier, FM modulator, frequency synthesizer and FSK), Study of IC 565, Study of function generator IC 8038, Study of VCO 556
8	32	40	Practical's: 5. Study of active filter: Low and High pass 6. Study of active filter: Band Pass 7. Study of V to F and F to V using VCO	

[Signature]

Mr. R. A. Deshmukh



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Vivekanand College, Kolhapur (Empowered Autonomous)

Department of Electronics

Academic Year: 2026-27

Teaching Plan

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

Programme: B.Sc. Part-I,

Subject: Electronics (Open Elective)

Semester- I

Course Title: Electric Wiring -I

Month : July 2026			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Practicals: 1) Study of electrical components 2) Identification of Different wires 3) Introduction of tools, Electrical materials, Symbols and abbreviation meter	
00	32	32		
Month: August 2026			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	4) Introduction to electrical safety precautions 5) To study meters(DC and AC meters, Multimeter, megger, Energy meter) 6) Verification of equivalent resistances in series and parallel connection	
00	32	32		
Month : Sept 2026			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Practicals: 7) Verification of equivalent capacitance in series and parallel combination 8) Study of transformer 9) Verification of ohm's law	
00	32	32		
Month : Oct 2026			Module/Unit:	Sub-units planned
Lectures	Practicals	Total		
00	32	32	10)Verification of Kirchoff's laws(KCL and KVL) 11)To study measurement of voltage, current and power in RL and RLC Circuit 12)Measurement of energy using single phase Energy	

Mr. G. B. Jirage



Dr. C. B. Patil

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Academic Year: 2026-27

Teaching Plan

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

Programme: B.Sc. Part-I,

Subject: Electronics (Open Elective)

Semester- II

Course Title: Electric Wiring -II

Month :dec 2026			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Practicals: 1. Measurement of resistance to earth using an electrical equipment (Megger) 2. To make different joints on wire (straight joint, T-joint, Britannia joint) 3. To Study types of switches and holders	
00	32	32		
Month: Jane 2027			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	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 6. To wire up a circuit with two lamp controlled by two switch	
00	32	32		
Month : Feb 2027			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Practicals: 7. To wire up a circuit to control three lamps by using one SP switch 8. To wire up a circuit to control one lamp from two place using two way switches (staircase wiring) 9. To study Godown wiring	
00	32	32		
Month : March 2027			Module/Unit:	Sub-units planned
Lectures	Practicals	Total		
00	32	32	10. To study fuses, MCBs and importance of Earthing 11. To study circuit of SMPS 12. To study circuit of UPS	

Mr. G. B. Jirage



Dr. C. B. Patil

HEAD
DEPARTMENT OF ELECTRONICS
VIVEKANAND COLLEGE, KOLHAPUR
(EMPOWERED AUTONOMOUS)