

Vijaya College, RV Road, Bengaluru-560004

Department of Electronics

NAAC criteria-1: CURRICULAR ASPECTS for the academic year 2024-2025

1. Academic Planner with unitisation of the Entire Syllabus (on hourly basis)
(NEP Syllabus for 1st and 3rd and 5th Semester)

Name of the Department	Electronics	Subject Title	Teacher
Semester	I	Electronics Devices and Circuits	
Week/Month & Date (Preferably)	Day	Portions Planned for 1 hour	
4th week of JUL		Network Theorems: KCL & KVL	HJT
		Number systems – types, Binary, Octal and Hexadecimal	MSB
		Bipolar Junction Transistor-Construction, principle & working of NPN transistor, Terminology	SMM
		Combinational logic circuit, Half Adder, Full Adder	SMM
1 st week of AUG		Superposition theorem	MSB
		Inter conversion of the Binary number into Decimal and vice versa.	MSB
		Half Subtractor, Full Subtractor	SMM
		Transistor Configurations – CE, CB, CC .	HJT
2 nd week of AUG		Thevenin's, Norton's theorems	MSB
		Inter conversion of the Octal number system to Decimal and vice versa and numerical problems	MSB
		characteristics in CE mode	HJT
		4-bit parallel binary adder	SMM
3 rd week of AUG		Maximum Power Transfer and Reciprocity Theorems- statement and steps, numerical problems.	MSB
		Inter conversion of the Hex and decimal num into Decimal and vice versa - numerical problems	MSB
		2- bit magnitude comparator	HJT

	leakage currents, Current gains α , β and γ and their inter-relations numerical problems.	SMM
4 th week of AUG	Arithmetic operations on Binary numbers –addition	MSB
	dc load line and Q point. Transistor as a switch.	MSB
	Voltage regulator using Zener diode – circuit diagram and explanation for load and line regulation,	HJT
	Norton’s theorem statement and steps. Numerical problems .Viva questions	SMM
1 st week of SEP	Arithmetic operations on Binary numbers –addition	MSB
	numerical problems on load regulation	MSB
	Transistor biasing – need for biasing, DC load line, Q point, thermal runaway, stability and stability factor. Numerical problems and viva questions	HJT
	decimal to BCD priority encoder (74147)	SMM
2 nd week of SEP	Hexadecimal numbers – arithmetic operations addition	MSB
	Types of biasing– Fixed bias(base bias) without and with R_E , collector to base bias Problems.	MSB
	Numerical problems and disadvantages of Zener diode regulator.	HJT
	DC analysis of RC circuits	SMM
3 rd week of SEP	Arithmetic operations on Hexadecimal numbers continued	MSB
	Voltage regulator using transistor – circuit diagram and working	MSB
	voltage divider bias and emitter bias ($+V_{CC}$ and $-V_{EE}$ bias) –circuit diagrams and their working	HJT
	Problems on reciprocity theorem.	SMM
4 th week of SEP	Arithmetic operations on Binary numbers – subtraction	MSB
	Q point expressions for voltage divider biasing only with numerical problems	MSB
	Problems on voltage regulators	HJT
	maximum power transfer theorem-Analysis, numerical problems.	SMM
1 st week of OCT	AC analysis of RLC series and parallel Resonant Circuits.	MSB

	Arithmetic operations on Binary and Hexa decimal numbers - addition	MSB
	Arithmetic operations on Binary and Hexa decimal numbers - subtraction	MSB
	Decoder: 2:4 decoder using AND gates	SMM
2 nd week of OCT	RC Transient analysis	MSB
	Complement Subtraction operations on Binary numbers - 2's complement	MSB
	Small Signal amplifier, CE amplifier –operation Analysis using re model	HJT
	Expressions for current, voltage gain and input/ output impedances	HJT
3 rd week of OCT	Series RC circuit excited by DCsource-charging& discharging of a capacitor through resistor- circuit diagram and qualitative study,charge	MSB
	Numerical problems on transient RC circuit.	SMM
	Types of codes, Positional and non positional. BCD, 2421 codes etc.	MSB
	Common collector amplifier, advantages, GBW analysis, darlington pair	HJT
4 th week of OCT	Transient analysis of RL circuits , growth and decay of current-derivation.	MSB
	XS-3 and Gray codes, self-complement property, ASCII, EBCDIC codes	MSB
	problems on transient response of RC and RL circuits.	SMM
	RC and RL series circuits excited by ac, Impedance, Phase and voltage relations-numerical problems	MSB
1 st week of NOV	RLC series and parallel ac circuits, Impedance, Phase and voltage relations, frequency, bandwidth, q factor- numerical problems	MSB
	Boolean equations and logic operators	SMM
	Gray code, error checking and correction codes	HJT
	Decoder: 2:4 decoder using AND gates,	SMM
2 nd week of NOV	AND, OR, NOT Boolean law- Universal property of NOR and NAND gates.	MSB
	De Morgan's Theorems	MSB

	Boolean algebra and simplifications- Minterm, Maxterm, SSOP, SPOS, Simplification of Boolean expressions,	MSB
	LED 7 Segment display construction and operation	SMM
3 rd week of NOV	Derived logic gates, Universal property, simplifications	MSB
	Revision on network theorems and transient response of passive components	MSB
	Multiplexer: 4:1 multiplexer, 1:4-De-multiplexer (logic diagram and truth table of each).	HJT
	K-Map for 3 and 4 variables.	SMM
	Revision on network theorems and transient response of passive components and network theorems	MSB
	theory paper test 1	HJT
4 th week of NOV	Revision on network theorems and transient response of passive components	MSB
	Previous year question papers solved along with model papers	HJT
	Previous year question papers solved along with model papers	SMM
	Open book theory paper test	MSB

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2. Academic Planner with unitisation of the Entire Syllabus (on hourly basis)
(NEP Syllabus for 1st and 3rd and 5th Semester)

Name of the Department	Electronics	Subject Title	Teacher
Semester	III	DIGITAL DESIGN USING VERILOG AND 'C' PROGRAMMING	
Week/Month & Date (Preferably)	Day	Portions Planned for 1 hour	
1 st week of Oct	UNIT 1 Introduction to C Programming Introduction to C Programming C Programming: Introduction, Importance of C.		MSB
2 nd week of Oct	Character set.		MSB
	Tokens, keywords, identifier, constants		MSB
	Basic data types, variables: declaration & assigning values. Structure of C program		SMM
	Unit test1		MSB
3 rd week of Oct	Arithmetic operators, relational operators.		MSB
	Logical operators, assignment operators,		MSB
	Increment and decrement operators		MSB
	conditional operators,		SMM
4 th week of Oct	bitwise operators, expressions and evaluation of expressions, type cast operator		MSB
	Implicit conversions, precedence of operators		MSB
	Input output statement – printf(), scanf() and getch(), and math library functions.		MSB

1 st week of Nov		
	Decision making, branching, and looping: if, if-else, else-if, switch statement, break	JV
	For loop, while loop and do loop. string related library functions	JV
	Lab programs corresponding to arrays (Matrix programs)	JV
	Format, Integers, reals and strings.	JV
	UNIT.2 Names used as pointers, pointers used as arrays, pointers and text strings, pointers as function parameters.	JV
	Arrays: Basics of arrays, declaration, accessing elements, storing elements, two-dimensional and multi-dimensional arrays	SMM
2 nd and 3 rd week of Nov	Functions: Defining functions, function arguments and passing, returning values from functions, example programs.	MSB
	Pointers. pointer declaration, assigning values to pointer and arithmetic	MSB
	Structures: Structure type declarations, structure declarations, referencing structure members, referencing whole structures, initialization of structures, structure bit fields	SMM
4 th week of Nov	Unit 3 Introduction to Verilog A Brief History of HDL, Structure of HDL Module, Comparison of VHDL and Verilog Introduction to Simulation and Synthesis Tools, Test Benches. Language Elements- Keywords, Identifiers, Comments, format, Integers, reals and strings. Logic Values, Data Types-net types, undeclared nets, scalars and vector nets.	MSB
	Register type, Parameters. Verilog: Module, Delays, brief description -	MSB
1 st week of Dec	Data flow style, behavioral style,	MSB

	structural style, mixed design style, simulating design	MSB
	Gate level modeling - Introduction, built in Primitive Gates, multiple input gates	SMM
2 nd week of Dec	Data flow Modeling: Continuous assignment	MSB
	Class test on chapter 1	MSB
	Class test on chapter 2	SMM
3 rd week of Dec	Class test on chapter 3	MSB
	Unit 4 Data flow Modeling and Behavioral ; Modeling, introduction	MSB
	Data flow Modeling: Continuous assignment	MSB
	Net declaration assignments, delays, net delays and examples.	SMM
3 rd week of Dec	Behavioral Modeling	MSB
	Conditional statement, loop statement, procedural continuous assignment, Illustrative Examples	MSB
		MSB
4 th week of Dec	Solving previous year question papers	MSB
	Comparing structure variables, array of structures, arrays within structures.	MSB
	Solving previous year question papers	MSB
	Structures within structures, structures and function.	SMM
1 st week of Jan	Solving previous year question papers	MSB
	Department level test	MSB
	Solving previous year question papers	MSB
		SMM
	Revision on C programming and lab programs	SMM

1 st week of Jan	Solving previous year question papers	SMM
	Revision on C programming and lab programs	MSB
	Solving previous year question papers	MSB
	Solving previous year question papers	SMM
	Revision on C programming and lab programs	MSB
	Solving previous year question papers	MSB

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3. Academic Planner with unitisation of the Entire Syllabus (on hourly basis)
(NEP Syllabus for 1st and 3rd and 5th Semester)

Name of the Department	Electronics	Subject Title	Teacher
Semester	V	Paper 5 COMMUNICATION-II	
Week/Month & Date (Preferably)	Day	Portions Planned for 1 hour	
1 st week of Oct	1	UNIT 1.Microwave Devices: RF/Microwaves, EM spectrum, Wavelength and frequency.	HJT
	2	Rectangular waveguides, circular waveguides, microwave cavities	HJT
	3	Microwave hybrid circuits, directional couplers, circulators and isolators	SMM
2 nd week of Oct	1	GUNN diode, READ diode	HJT
	2	IMPATT diode, BARITT diode	HJT
	3	PIN diodes, Schottky barrier diodes	SMM

3 rd week of Oct	1	Multi cavity Klystron,	HJT
	2	Magnetron,	SMM
	3	Block diagram of Microwave communication and working, Applications.	HJT
4 th week of Oct	1	Unit 2. Digital Communication: Block diagram of digital transmission and reception, Bit Rate and Baud. , ,	SMM
	2	Amplitude Shift Keying (ASK), Frequency Shift Keying (FSK),	HJT
	3	Phase Shift Keying (PSK), Binary Phase Shift Keying (BPSK)	HJT
1 st week of Nov	1	Quadrature Phase Shift Keying (QPSK),	SMM
	2	8PSK, 16PSK, 64PSK - definition and waveforms for each.	HJT
	3	Quadrature amplitude modulation (QAM): 16 QAM	HJT
2 nd week of Nov	1	64 QAM - definition and waveforms for each.	SMM
	2	Advantage and disadvantages of digital transmission,	HJT
	3	Characteristics of data transmission circuits – Shannon limit for information capacity	HJT
3 rd week of Nov	1	Bandwidth requirements, data transmission speed,	HJT
	2	noise, cross talk, echo suppressors	SMM
	3	distortion and equalizer, MODEM– modes and classification	HJT
4 th week of Nov	1	UNIT3. Cellular Communication: Concept of cellular mobile communication	SMM
	2	Cell and cell splitting, frequency bands used in cellular communication	HJT
	3	Absolute RF channel numbers (ARFCN), frequency reuse	SMM
	1	Roaming and hand off,	HJT

5 th week of Nov	2	Authentication of the SIM card of the subscribers, IMEI number, concept of data encryption.	SMM
	3	Multiplexing, FDMA, WCDMA, TDMA, OFDMA, GSM- Qualitative analysis.	HJT
1 st week of Dec	1	Bluetooth, Zigbee, Wi-Fi, MIMO	SMM
	2	LTE, 5G technology and CV2X- qualitative analysis.	HJT
	3	Simplified block diagram of cellular phone handset. Wireless channel characteristics.	SMM
2 nd week of Dec	1	Unit 4 Computer Networks: Introduction to Networks, Categories of Networks, Layered tasks, OSI Model, Layers in OSI model, networks.	SMM
	2	TCP/IP Suite, Addressing, Switching, Telephone and cable networks for data transmission, Telephone networks	HJT
	3	Dial up modem, DSL, Cable TV for data transmission. Wired LAN	SMM
3 rd week of Dec	1	Ethernet, IEEE standards, Standard Ethernet. Changes in the standards	HJT
	2	Fast Ethernet, Gigabit Ethernet, Wireless LAN IEEE 802.11a/b/g/n, Connecting LANs.	SMM
	3	Department level test	HJT
4 th week of Dec	1	Open book exam.	SMM
	2	Text book questions solutions	SMM
	3	Numerical problems on data transmission speed	SMM
1 st week of Jan	1	Revision of chapter1	HJT
	2	Revision of chapter2.	SMM
	3	Revision and model paper2 solving.	HJT
1 st week of Jan	1	Revision and model paper2 solving.	HJT

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4. Academic Planner with unitisation of the Entire Syllabus (on hourly basis) (NEP Syllabus for 1st and 3rd and 5th Semester)

Name of the Department	Electronics	Subject Title --Embedded Controllers	Teacher
Semester	V	Paper 6	
Week/Month & Date (Preferably)	Day	Portions Planned for 1 hour	
1 st week of Oct	1	UNIT1. Introduction to Microprocessors and Microcontrollers.	MSB
	2	Microprocessor Architecture- Harvard and Van-Neumann Architecture	MSB
	3	CISC and RISC processors and their architectures.	MSB
2 nd week of Oct	1	Difference between microprocessor and microcontroller	MSB
	2	Introduction to Embedded Systems, Examples of Embedded Systems,	MSB
	3	Design Parameters of Embedded Systems, Embedded	MSB
3 rd week of Oct	1	Software Development Tools: Integrated Development Environment(IDE).	MSB
	2	Editor, Assemblers, Compilers, linker, loader.	MSB
	3	Instruction Set Simulator(ISS)	MSB
4 th week of Oct	1	Debugging Tools and Techniques, Emulators.	MSB
	2	8051 Microcontroller: Architecture, Registers	MSB
	3	Pin diagram, I/O ports functions,	MSB
1 st week of Nov	1	Internal Memory organization	MSB
	2	External Memory (ROM & RAM) interfacing	MSB
	3		MSB

2 nd week of Nov	1	UNIT2. Instruction set and Interfacing of 8051.	MSB
	2	Instruction set.	MSB
3 rd week of Nov	3	Addressing Modes	MSB
	1	Simple Assembly language program examples to use the instructions of 8051	MSB
	2	Stack and Subroutine instructions.	MSB
4 th week of Nov	3	Assembly language Illustrative programs	MSB
	1	Timer/counter	MSB
	2	Serial communication	MSB
5 th week of Nov	3	Interrupts and interfacing of 8051.	MSB
	1	UNIT3 PIC18 Microcontrollers: Overview of the PIC microcontroller family.	JV
	2	Architecture and features of 18F458,	JV
1 st week of Dec	3	Memory organization, Data memory organization,	JV
	1	EEPROM, flash memory, Special Function Registers	JV
	2	Program Counter, Configuration registers, Stack memory	JV
2 nd week of Dec	3	Interrupts, I/O ports, Timers, USART, Capture/Compare/PWM (CCP)	JV
	1	Modules, MSSP Serial Port, CAN module	JV
	2	ADC, Special features of the CPU, Oscillator sources.	JV
3 rd week of Dec	3	Clock source switching, Instruction set. Watchdog Timer.	JV
	1	UNIT4. Hardware interfacing and Microcontroller Programming in C: Data types and time delays, Data Serialization in C.	JV

	2	Program ROM allocation, Data RAM allocation, I/O Programming	JV
	3	Timer programming, Automatic Stack operations,	JV
4 th week of Dec	1	Programmer access to the Stack, serial port programming,	JV
	2	Interrupt programming, generation of Introduction to Communication Protocols – RS 232, I2C, USB, USART, SPI, CAN, and IrDA	JV
	3	PWM signal PWM Motor Control with CCP. Interfacing to 8051 and PIC: Switch, LED, seven segment LED, Keyboard, LCD	JV
1 st week of Jan	1	External ADC, DAC interfacing, Stepper motor, DC motor interfacing, Real time clock (RTC) and serial ADC.	JV
	2	Erasing and Writing Flash & EEPROM Memories For Data Storage. Sensor Interfacing and Signal Conditioning Standard.	JV
	3	Department level test	MSB
2 nd week of Jan	1	Revision of unit 1 and 2	MSB
	2	Revision of unit 3 and 4	JV
	3	Model question papers discussion	MSB