



|| JAI SRI GURUDEV ||
Sri AdichunchanagiriShikshana Trust (R)
SJB INSTITUTE OF TECHNOLOGY
BGS Health & Education City, Kengeri, Bangalore – 60.



DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

COURSE OUTCOMES AND CO-PO-PSO ARTICULATION MATRIX

BATCH 2019-23

SUBJECT NAME	Basic Electronics	SUBJECT CODE	18ELN14/24
CO STATEMENTS			
CO1	Describe the operation of diodes, BJT and FET. Describe general operating principles of SCR's and its application		
CO2	Design and explain the construction of rectifiers, regulators, amplifiers and Oscillators.		
CO3	Explain the working and design different types of operational amplifiers.		
CO4	Explain the working and design of fixed voltage IC regulator using 7805 and Astable oscillator using timer IC 555. Understand the basic principle of operation of communication system and mobile phones.		
CO5	Recall and explain the different number system and their conversions. Construct simple combinational and sequential circuits using flipflops		

CO- PO-PSO MAPPING:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	2											2		
CO2	2	2	2										2		
CO3	2	2	2										2		
CO4	2		2										2		
CO5	2	2											2		


Head

Dept. of Electronics & Communication Engg
SJB Institute of Technology
Bengaluru-560060

COURSE OUTCOMES AND CO-PO-PSO ARTICULATION MATRIX BATCH 2019-23

SUBJECT NAME	Transform calculus, Fourier Series and Numerical Techniques	SUBJECT CODE	18MAT31
FACULTY NAME	Mrs. Chaitra A C		
	CO STATEMENTS		
CO1	Use Laplace transform and inverse Laplace transform in solving differential/ integral equation arising in network analysis, control systems and other fields of engineering.		
CO2	Demonstrate Fourier series to study the behaviour of periodic functions and their applications in system communications, digital signal processing and field theory.		
CO3	Make use of Fourier transform and Z-transform to illustrate discrete/continuous function arising in wave and heat propagation, signals and systems.		
CO4	Solve first and second order ordinary differential equations arising in engineering problems using single step and multistep numerical methods.		
CO5	Determine the externals of functional using calculus of variations and solve problems arising in dynamics of rigid bodies and vibrational analysis.		

CO- PO-PSO MAPPING:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2													
CO2	3	2													
CO3	3	2													
CO4	3	2													
CO5	3	2													


Head

Dept. of Electronics & Communication Engg
SJB Institute of Technology
Bengaluru-560060

COURSE OUTCOMES AND CO-PO-PSO ARTICULATION MATRIX BATCH 2019-23

SUBJECT NAME	Network Theory	SUBJECT CODE	18EC32
FACULTY NAME	Dr. Vijayakumar T/ Dr. Anitha P		
	CO STATEMENTS		
CO1	Distinguish the networks and discuss various circuit analysis techniques.		
CO2	Analyze the circuit parameters during switching transients and apply Laplace transform to solve the given network		
CO3	Apply network theorems to solve a given network.		
CO4	Evaluate the frequency response for resonant circuits and the network parameters for two port networks		

CO- PO-PSO MAPPING:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	2	1										1		
CO2	1	2	1										1		
CO3	1	2	1										1		
CO4	2	2	1										1		

COURSE OUTCOMES AND CO-PO-PSO ARTICULATION MATRIX BATCH 2019-23

SUBJECT NAME	Electronic Devices	SUBJECT CODE	18EC33
FACULTY NAME	Dr. Vijayakumar T /Mr. Bhaskar B		
	CO STATEMENTS		
CO1	Understand the principles of semiconductor physics		
CO2	Understand the principles and characteristics of different types of semiconductor devices		
CO3	Understand the fabrication process of semiconductor devices		
CO4	Utilize the mathematical models of semiconductor junctions and MOS transistors for circuits and systems		

CO- PO-PSO MAPPING:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	1										2		
CO2	3	2	1										2		
CO3	3	2	1										2		
CO4	3	2	1										2		


Head

Dept. of Electronics & Communication Engg
SJB Institute of Technology
Bengaluru-560060

COURSE OUTCOMES AND CO-PO-PSO ARTICULATION MATRIX BATCH 2019-23

SUBJECT NAME	Digital System Design	SUBJECT CODE	18EC34
FACULTY NAME	Dr. K V Mahendra Prashanth / Dr. Ravikumar A V		
	CO STATEMENTS		
CO1	Demonstrate the concept of combinational, sequential logic circuits and PLD		
CO2	Design combinational logic circuits		
CO3	Design the sequential circuits using SR, JK, D, T flip flops and Mealy & Moore machines		
CO4	Design applications of combinational and sequential circuits.		

CO- PO-PSO MAPPING:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2												2		
CO2	3												2		
CO3	3												1		
CO4	3	2											1		


Head

Dept. of Electronics & Communication Engg.
SJB Institute of Technology
Bengaluru-560060

COURSE OUTCOMES AND CO-PO-PSO ARTICULATION MATRIX BATCH 2019-23

SUBJECT NAME	Computer Organization & Architecture	SUBJECT CODE	18EC35
FACULTY NAME	Dr. Komala M / Mrs. Uma S		
	CO STATEMENTS		
CO1	Understand the basic Organization of computer, operational functional units and processor performance and analyze different instructions and addressing modes.		
CO2	Identifying the input output devices and utilization of interrupts , controlling devices and memory		
CO3	Understand, analyze and design the various memory systems		
CO4	Analyzing the execution of complete instructions through hardwired and micro programmed Control		

CO- PO-PSO MAPPING:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	2	2										2	2	
CO2	3	2											2		
CO3	3	2	3										2		
CO4	2	2	1										2	1	

COURSE OUTCOMES AND CO-PO-PSO ARTICULATION MATRIX BATCH 2019-23

SUBJECT NAME	Power Electronics & Instrumentation	SUBJECT CODE	18EC36
FACULTY NAME	Dr. K R Rekha / Dr. D N Chandrappa		
	CO STATEMENTS		
CO1	Build and test circuits using power electronic devices.		
CO2	Analyze and design controlled rectifier, DC to DC converters, DC to AC inverters and SMPS.		
CO3	Define instrument errors and develop circuits for multirange Ammeters, Voltmeters and Bridges to measure passive component values and frequency		
CO4	Describe the principle of operation of Digital instruments and PLCs		
CO5	Use Instrumentation amplifier for measuring physical parameters and transducer		

CO- PO-PSO MAPPING:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	2											2		
CO2	2	3											2		
CO3	2	2											2		
CO4	2	2											2		
CO5	2	2											2		

COURSE OUTCOMES AND CO-PO-PSO ARTICULATION MATRIX BATCH 2019-23

SUBJECT NAME	Electronic Devices & Instrumentation Laboratory	SUBJECT CODE	18ECL37
FACULTY NAME	Dr. T Vijaykumar & Mrs. Uma S (A1), Ms. Geethanajli (A2), Mrs. Nithya S (A3) Mr. Bhaskar B & Dr. K Somashekar		
	CO STATEMENTS		
CO1	Understand the characteristics of various electronic devices and measurement of parameter		
CO2	Design and test simple electronic circuits		
CO3	Use of circuit simulation software for the implementation and characterization of electronic circuits and devices		

CO- PO-PSO MAPPING:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2		2									2		
CO2	2	2	3	3									2		
CO3	2	2		2	3								2		

COURSE OUTCOMES AND CO-PO-PSO ARTICULATION MATRIX BATCH 2019-23

SUBJECT NAME	Digital System Design Laboratory	SUBJECT CODE	18ECL38
FACULTY NAME	Dr. Shilpa K G, Dr. K R Rekha(A1), Mrs. Anushree (A2), Mrs. Jyothi H (A3) Dr. Ravikumar A V & Mrs. Anushree		
	CO STATEMENTS		
CO1	Demonstrate the truth table of various expressions and combination circuits using logic gates.		
CO2	Design and test various combination circuits such as adders, subtractors, comparators, mux and demuxer.		
CO3	Construct flip flop using universal gates.		
CO4	Explain operation of counter and shift registers.		
CO5	Simulate serial adder and binary multiplier.		

CO- PO-PSO MAPPING:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	2	2										2		
CO2	3	3	3										2		
CO3		2	2										2		
CO4			3									3	2		
CO5		2	3		3							3	2		

COURSE OUTCOMES AND CO-PO-PSO ARTICULATION MATRIX BATCH 2019-23

FACULTY NAME	Mrs Chaitra A C / Dr. Varun
CO STATEMENTS	
CO1	Use the concepts of analytic function and complex potentials to solve the problems arising in electromagnetic field theory
CO2	Utilize conformal transformation and complex integral arising in aerofoil theory, fluid flow visualization and image processing
CO3	Apply discrete and continuous probability distributions in analysing the probability models arising in engineering field.
CO4	Make use of correlation and regression analysis to fit a suitable mathematical model for the statistical data.
CO5	Construct joint probability distributions and demonstrate the validity of testing the hypothesis.

CO- PO-PSO MAPPING:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	2											2		
CO2	2	2											2		
CO3	2	2											2		
CO4	2	2											2		
CO5	2	2											2		

COURSE OUTCOMES AND CO-PO-PSO ARTICULATION MATRIX BATCH 2019-23

SUBJECT NAME	Analog Circuits	SUBJECT CODE	18EC42
FACULTY NAME	Dr. K R Rekha / Ms. Geethanjali N		
CO1	Understand the characteristics of BJT and FETs		
CO2	Analyze and design controlled rectifier and understand the principle and characteristics of different types of semiconductor devices		
CO3	Design sinusoidal and non-sinusoidal oscillator		
CO4	Understand the functioning of linear ICs		
CO5	Design of linear IC based circuits		

CO- PO-PSO MAPPING:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	2											2		
CO2	2	2											2		
CO3	2	2											2		
CO4	2	2											2		
CO5	2	2											2		

COURSE OUTCOMES AND CO-PO-PSO ARTICULATION MATRIX BATCH 2019-23

SUBJECT NAME	Control Systems	SUBJECT CODE	18EC43
FACULTY NAME	Mrs. Latha S / Dr. Mahantesh K		
	CO STATEMENTS		
CO1	Understand and develop the mathematical model of mechanical, electrical systems		
CO2	Determine transfer function for a given control system using block diagram reduction techniques and signal flow graph method.		
CO3	Determine the time domain specifications for first and second order systems.		
CO4	Analyze the stability of a system using Routh-Hurwit Criterion, Root-locus technique, Nyquist and bode plots.		
CO5	Develop a control system model in continuous and discrete time using state variable techniques		

CO- PO-PSO MAPPING:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	2	2										2		
CO2	2	2	2										2		
CO3	2	2	2										2		
CO4	2	2	2										2		
CO5	2	2	2										2		

COURSE OUTCOMES AND CO-PO-PSO ARTICULATION MATRIX BATCH 2019-23

SUBJECT NAME	Engineering Statistics & Linear Algebra	SUBJECT CODE	18EC44
FACULTY NAME	Mr. Bhaskar B		
	CO STATEMENTS		
CO1	Understand Single and Multiple Random Variables, and their extension to Random Processes.		
CO2	Compute the quantitative parameters for the functions of single and Multiple Random Variables and Processes.		
CO3	Familiarize with the concept of Vector spaces and orthogonality with qualitative insight into applications.		
CO4	Compute the quantitative parameters for Matrices and Linear Transformations.		

CO- PO-PSO MAPPING:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	1	-	-	-	-	-	-	-	1	2	2	-	1
CO2	3	2	2	-	-	-	-	-	-	-	1	2	2	-	1
CO3	3	2	1	-	2	-	-	-	-	-	2	2	2	-	1
CO4	3	1	2	-	2	-	-	-	-	-	2	2	2	-	1

COURSE OUTCOMES AND CO-PO-PSO ARTICULATION MATRIX BATCH 2019-23

SUBJECT NAME	Signals & Systems	SUBJECT CODE	18EC45
FACULTY NAME	Mrs. Latha S / Mr. Rahul Rai		
	CO STATEMENTS		
CO1	Understand & analyze the different types of signals and systems.		
CO2	Determine the various properties of continuous and discrete time systems.		
CO3	Comprehend the knowledge of LTI systems and compute the response of a Continuous and Discrete LTI system using convolution.		
CO4	Determine the spectral characteristics of continuous and discrete time signal using Fourier analysis.		
CO5	Apply the knowledge of Z-transforms to analyse discrete systems in frequency domain.		

CO- PO-PSO MAPPING:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2											3	2	
CO2	3	2											3	2	
CO3	3	2											3	2	
CO4	3	2											3	2	
CO5	3	2											3	2	

COURSE OUTCOMES AND CO-PO-PSO ARTICULATION MATRIX BATCH 2019-23

SUBJECT NAME	Microcontroller	SUBJECT CODE	18EC46
FACULTY NAME	Dr. Ravikumar A V/ Mrs. Pushpalatha G		
	CO STATEMENTS		
CO1	Familiarize the basic architecture of 8051 microcontroller		
CO2	Analyze Assembly level programs using 8051 microcontroller Instruction set.		
CO3	Understand the Interrupt system, operation of Timers/counters and serial port of 8051		
CO4	Program the 8051 microcontroller using Assembly Level and C Language		
CO5	Interface peripheral devices using 8051 I/O ports.		

CO- PO-PSO MAPPING:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	-	-	-	-	-	-	-	-	-	1	2	-	-
CO2	3	2	-	-	-	-	-	-	-	-	-	-	2	-	-
CO3	3	2	-	-	-	-	-	-	-	-	-	-	2	-	-
CO4	3	2	-	-	1	-	-	-	-	-	-	-	2	-	-
CO5	3	2	1	-	1	-	-	-	-	-	-	-	2	-	-

COURSE OUTCOMES AND CO-PO-PSO ARTICULATION MATRIX BATCH 2019-23

SUBJECT NAME	Microcontroller Lab	SUBJECT CODE	18ECL47
FACULTY NAME	Mr. Rahul Rai, Dr. Ravikumar A V (A2 & A3), Dr. Mahantesh K (A1) Mrs. Uma S & Mrs. Divyashree Y V		
	CO STATEMENTS		
CO1	Demonstrate ability to handle data transfer, arithmetic operations, counters and Boolean and logical instructions using assembly language programming		
CO2	Understand and design of experiments demonstrating the usage of call and return instructions, code conversion, delay programs and serial port programs		
CO3	Interface different input and output devices to 8051 and control them using Assembly language programs		
CO4	Interface the serial devices to 8051 and do the serial transfer using C programming.		

CO- PO-PSO MAPPING:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	2			2								2		
CO2	2	2			2								2		
CO3	2	2	2		2				1				2		
CO4	2	2	2		2				1				2		

COURSE OUTCOMES AND CO-PO-PSO ARTICULATION MATRIX BATCH 2019-23

SUBJECT NAME	Analog Circuits Lab	SUBJECT CODE	18ECL48
FACULTY NAME	Dr. Anitha P & Mr. Darshan B D Dr. T Vijaykumar & Ms. Geethanjali N		
	CO STATEMENTS		
CO1	Design analog circuits using BJT/FET and evaluate their performance.		
CO2	Design analog circuits using OPAMPs for different applications		
CO3	Simulate and analyze analog circuits for different electronic applications.		

CO- PO-PSO MAPPING:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	2	3	3									2		
CO2	2	2	3	3									2		
CO3	2	3	1	2	3								2		

COURSE OUTCOMES AND CO-PO-PSO ARTICULATION MATRIX BATCH 2019-23

SUBJECT NAME	Technological Innovation Management and Entrepreneurship	SUBJECT CODE	18ES51
FACULTY NAME	Dr. Sunitha Y N		
	CO STATEMENTS		
CO1	Understand the fundamental concepts of Management and Entrepreneurship and opportunities to setup a business		
CO2	Describe the functions of Managers, Entrepreneurs, and their social responsibilities		
CO3	Understand the components in developing a business plan		
CO4	Awareness about various sources of funding and institutions supporting entrepreneurs and social responsibilities of entrepreneurs		
CO5	Understand the business plan and its model, project design and project report preparation		

CO- PO-PSO MAPPING:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	2													2
CO2	2	2													2
CO3	2	2					2								2
CO4	2	2							2						2
CO5	2	2					2								2

COURSE OUTCOMES AND CO-PO-PSO ARTICULATION MATRIX BATCH 2019-23

SUBJECT NAME	Digital Signal Processing	SUBJECT CODE	18EC52
FACULTY NAME	Mr. Rahul R Rai / Dr. M Lakshminarayana		
	CO STATEMENTS		
CO1	Compute DFT of real and complex discrete time signals and determine response of LTI systems using time domain and DFT techniques.		
CO2	Computation of DFT using FFT algorithms and linear filtering approach.		
CO3	Design and realize FIR and IIR digital filters		
CO4	Understand the DSP processor architecture.		

CO- PO-PSO MAPPING:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2											3	2	
CO2	3	2											3	2	
CO3	3	3	1										3	2	
CO4	3	2	1										3	2	

COURSE OUTCOMES AND CO-PO-PSO ARTICULATION MATRIX BATCH 2019-23

SUBJECT NAME	Principles of Communication Systems	SUBJECT CODE	18EC53
FACULTY NAME	Dr. Shilpa K Gowda		
	CO STATEMENTS		
CO1	Determine the performance of analog modulation schemes in time and frequency.		
CO2	Determine the performance of systems for generation and detection of modulated analog signal.		
CO3	Characterize the influence of channel on analog modulated signals		
CO4	Analyze and demonstrate the process of the use of digital formatting in multipliers, vocoders and video transmission		

CO- PO-PSO MAPPING:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	2			2								1		
CO2	2	2											2		
CO3	2	2											1		
CO4	2	2			2								1		


Head

Dept. of Electronics & Communication Engg
SJB Institute of Technology
Bengaluru-560060

COURSE OUTCOMES AND CO-PO-PSO ARTICULATION MATRIX BATCH 2019-23

SUBJECT NAME	Information Theory & Coding	SUBJECT CODE	18EC54
FACULTY NAME	Dr. Somashekar K / Mrs. Divyashree YV		
	CO STATEMENTS		
CO1	Ability to Apply the mathematical knowledge of probability to measure information in discrete message source.		
CO2	Apply source coding algorithms to ensure transmission of information of a discrete message source using minimum number of bits		
CO3	Ability to compute & analyze the capacity & efficiency of discrete and continuous time channels		
CO4	Design encoding and decoding techniques to ensure error free transmission of information of a discrete message source		

CO- PO-PSO MAPPING:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2											2		
CO2	3	3											2		
CO3	3	3											2		
CO4	3	3	2										2		

COURSE OUTCOMES AND CO-PO-PSO ARTICULATION MATRIX BATCH 2019-23

SUBJECT NAME	Electromagnetic Waves	SUBJECT CODE	18EC55
FACULTY NAME	Dr. Mahantesh K		
	CO STATEMENTS		
CO1	Evaluate problems on electric field due to point, linear, volume charges by applying conventional methods or by Gauss law.		
CO2	Determine potential and energy with respect to point charge and capacitance using Laplace equation.		
CO3	Calculate magnetic field, force, and potential energy with respect to magnetic materials.		
CO4	Apply Maxwell's equation for time varying fields, EM waves in free space and conductors.		
CO5	Evaluate power associated with EM waves using Poynting theorem.		

CO- PO-PSO MAPPING:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3												2		
CO2	2												2		
CO3	2												2		
CO4	3												2		
CO5	2												2		

COURSE OUTCOMES AND CO-PO-PSO ARTICULATION MATRIX BATCH 2019-23

SUBJECT NAME	Verilog HDL	SUBJECT CODE	18EC56
FACULTY NAME	Mrs. Latha S / Dr. Supreeth H S G		
	CO STATEMENTS		
CO1	Understand the usage of Verilog HDL in semiconductor technology and design flow of digital circuits		
CO2	Interpret the various constructs in logic synthesis and perform timing and delay simulation.		
CO3	Design and verify the functionality of digital circuit system using test benches.		
CO4	Develop Verilog programs in gate, dataflow (RTL), behavioral and switch modeling levels of abstraction.		
CO5	Analyze the programs more effectively using Verilog tasks, functions and directives.		

CO- PO-PSO MAPPING:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2											3		
CO2	3	2	2										2		
CO3	3	2		3	3								3		
CO4	3	3	2		3								3		
CO5	3	2			3								2		

COURSE OUTCOMES AND CO-PO-PSO ARTICULATION MATRIX BATCH 2019-23

SUBJECT NAME	Digital Signal Processing Laboratory	SUBJECT CODE	18ECL57
FACULTY NAME	Mr. Rahul Rai & Mrs. Sowmya B J Dr. M Lakshminarayana & Dr. Mahantesh K		
	CO STATEMENTS		
CO1	Apply the concepts of signal processing in time and frequency domain using simulation tool and DSP processor		
CO2	Analyse and verify the properties of discrete time signals & systems		
CO3	Design digital filters using a simulation tool and a DSP processor and verify the frequency and phase response for the given specifications		
CO4	Ability to work as an individual to design, implement and demonstrate signal/image processing methods using matlab tool		

CO- PO-PSO MAPPING:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3												3	2	
CO2		2											3	2	
CO3			3										3	2	
CO4				1	1				1	1	1	1	3	2	

COURSE OUTCOMES AND CO-PO-PSO ARTICULATION MATRIX BATCH 2019-23

SUBJECT NAME	HDL Laboratory	SUBJECT CODE	18ECL58
FACULTY NAME	Dr. Vijaykumar T & Mrs. Latha S Dr. Supreeth H S G & Mrs. Divyashree YV		
	CO STATEMENTS		
CO1	Write the Verilog/VHDL programs to simulate Combinational circuits in Dataflow, Behavioral and Gate level Abstractions.		
CO2	Describe sequential circuits like flip flops and counters in Behavioral description and obtain simulation waveforms.		
CO3	Synthesize Combinational and Sequential circuits on programmable ICs and test the hardware.		
CO4	Interface the hardware to the programmable chips and obtain the required output		

CO- PO-PSO MAPPING:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	2	2										2		
CO2	2	2	2										2		
CO3	2	2	2										2		
CO4	2	2	2										2		

COURSE OUTCOMES AND CO-PO-PSO ARTICULATION MATRIX BATCH 2019-23

SUBJECT NAME	Digital communication	SUBJECT CODE	18EC61
FACULTY NAME	Mrs. Jyothi H /Mrs. Supriya M		
	CO STATEMENTS		
CO1	Apply the concepts of bandpass sampling to well specified signals and channels.		
CO2	Analyse symbol processing at the transmitter and the performance parameters at the receiver under ideal and correpted bandlimited channels.		
CO3	Demonstrate bandpass signals subjected to corrupt and distorted symbols in a bandlimited channel, demodulated and estimated at receiver to meet specific performance criteria .		
CO4	Understand the spread spectrum techniques.		

CO- PO-PSO MAPPING:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	2	2										2	2	
CO2	2	3	2										2	2	
CO3	2	2	2										3	2	
CO4	3	2	3										2	3	

COURSE OUTCOMES AND CO-PO-PSO ARTICULATION MATRIX BATCH 2019-23

SUBJECT NAME	Embedded Systems	SUBJECT CODE	18EC62
FACULTY NAME	Dr. D N Chandrappa / Dr. K Somashekar		
	CO STATEMENTS		
CO1	Describe the architectural features and instruction set of 32-bit microcontroller ARM Cortex M3		
CO2	Apply the knowledge gained for Programming ARM Cortex M3 for different applications.		
CO3	Understand the basic hardware components and their selection method based on the characteristics and attributes of an embedded system.		
CO4	Develop the hardware software co-design and firmware design approaches.		
CO5	Explain the need of real time operating system for embedded system applications.		

CO- PO-PSO MAPPING:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	1											2		
CO2	2	2	1										1	1	
CO3	2												1		
CO4	2		1										1		
CO5	2	1											1		

COURSE OUTCOMES AND CO-PO-PSO ARTICULATION MATRIX BATCH 2019-23

SUBJECT NAME	Microwave & Antennas	SUBJECT CODE	18EC63
FACULTY NAME	Dr. Anitha P		
	CO STATEMENTS		
CO1	Understand and analyze the various parameters related to microwave transmission lines and waveguides		
CO2	Analyze the behavior of microwave devices using scattering parameters and Identify microwave devices for different applications.		
CO3	Apply the knowledge of electromagnetic theory to understand the basics of antenna theory.		
CO4	Analyze various antenna configurations according to the application.		

CO- PO-PSO MAPPING:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2													
CO2	2	3	1										2		
CO3	3	2													
CO4	2	3	1										2		

COURSE OUTCOMES AND CO-PO-PSO ARTICULATION MATRIX BATCH 2019-23

SUBJECT NAME	Python App. Programming	SUBJECT CODE	18EC646
FACULTY NAME	Dr. Supreeth H S G / Dr. Mahantesh K		
	CO STATEMENTS		
CO1	Examine Python syntax and semantics and be fluent in the use of Python flow control and functions.		
CO2	Demonstrate proficiency in handling Strings and File Systems.		
CO3	Create, run and manipulate Python Programs using core data structures like Lists, Dictionaries and use Regular Expressions.		
CO4	Interpret the concepts of Object-Oriented Programming as used in Python.		
CO5	Implement exemplary applications related to Network Programming, Web Services and Databases in Python.		

CO- PO-PSO MAPPING:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	1													
CO2	1	2			1								1		
CO3	2	2	1										1		
CO4	2	1			2						2		1		
CO5	2	2			3						1		2		


Head

Dept. of Electronics & Communication Engg
SJB Institute of Technology
Bengaluru-560060

COURSE OUTCOMES AND CO-PO-PSO ARTICULATION MATRIX BATCH 2019-23

SUBJECT NAME	Digital System Design using Verilog	SUBJECT CODE	18EC644
FACULTY NAME	Mrs. Divyashree Y V		
	CO STATEMENTS		
CO1	Design embedded systems using microcontrollers, CPUs/DSPs, hard or soft processor cores.		
CO2	Design & Construct the combinational circuits using discrete gates and programmable logic devices.		
CO3	Describe Verilog model for sequential circuits and test pattern generation		
CO4	Explore the different types of semiconductor memories and their usage for specific chip design		
CO5	Design and synthesis of different types of processor and I/O controllers used in embedded system design		

CO- PO-PSO MAPPING:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	1	2										3		
CO2	2	3	3										3		
CO3	2	3	3										3	1	
CO4	2	2	3										3		
CO5	2	3	2										2		


Head

Dept. of Electronics & Communication Engg
SJB Institute of Technology
Bengaluru-560060

COURSE OUTCOMES AND CO-PO-PSO ARTICULATION MATRIX BATCH 2019-23

SUBJECT NAME	Embedded Systems Laboratory	SUBJECT CODE	18ECL66
FACULTY NAME	Dr. Supreeth H S G, Dr. Manjunath M, Dr. KSS(A1) Dr. Komala M & Mrs. Latha S		
	CO STATEMENTS		
CO1	Understand the Instruction set of 32-bit microcontroller. ARM Cortex M3 and the software tool required for Programming in Assembly & C Language		
CO2	Develop Assembly Language Programs using ARM Cortex-M3 for Different Applications		
CO3	Develop C Language Programs to Interface external device and input output with ARM Cortex M3		

CO- PO-PSO MAPPING:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2			3								3		
CO2	3		2	2	3				2	2			3	2	
CO3	3		2	2	3				2	2	2	2	3	2	

COURSE OUTCOMES AND CO-PO-PSO ARTICULATION MATRIX BATCH 2019-23

SUBJECT NAME	Communication Laboratory	SUBJECT CODE	18ECL67
FACULTY NAME	Mrs. Jyothi H & Mrs. Chetana R, Dr. Anitha P(A2), Mr. Darshan B D(A1) Dr. Shilpa KG, Mrs. Sowmya B J & Mrs. Supriya M		
	CO STATEMENTS		
CO1	Design and test the Analog, Digital modulation, and demodulation circuits.		
CO2	Determine the characteristics and response of microwave waveguide.		
CO3	Determine the characteristics of microstrip antennas and devices and compute the parameters associated with it.		
CO4	Simulate the digital modulation systems and compare the error performance of basic digital modulation schemes.		

CO- PO-PSO MAPPING:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	2	2	1					2	2		1	2		
CO2	2	2	2						2	2		1	2		
CO3	2	2	2						2			1	2	1	
CO4	2	2	2	1	3				2			1	2		

COURSE OUTCOMES AND CO-PO-PSO ARTICULATION MATRIX BATCH 2019-23

SUBJECT NAME	Mini – Project	SUBJECT CODE	18ECMP68
FACULTY NAME	Dr. Lakshminarayan & Nithya S		
	CO STATEMENTS		
CO1	Understand how to identify the challenges & issues in industry, society, and environment.		
CO2	Perform analysis and design methodologies with novelty to devise solution for the problem statement.		
CO3	Work in a team to achieve a common goal		
CO4	Communicate effectively and to present ideas clearly and coherently in both written and oral forms.		

CO- PO-PSO MAPPING:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3		2		1		1	2			1	2	1	
CO2	3	3	3	2	1				2		1	1	2	1	
CO3	2	2							3			1	2	1	
CO4								2	2	2		1	2	1	

