

SAPTHAGIRI COLLEGE OF ENGINEERING

(Affiliated to Visvesvaraya Technological University, Belagavi & Approved by AICTE, New Delhi)

#14/5, Chikkasandra, Hesaraghatta Main Road, Bengaluru – 560057

ISO 9001, 14001 Certified Institute, Accredited by NAAC with A Grade

DEPARTMENT OF ECE

Program name	Program code	Name of the Course that include experiential learning through project work/field work/internship	Course code	Details of Experiential Learning through Projects/ Internship
FINAL YEAR				
ELECTRONICS & COMMUNICATION ENGINEERING	EC	Digital Image Processing	17EC72	Design Of Low Noise CMOS Differential Amplifier Using Cadence
ELECTRONICS & COMMUNICATION ENGINEERING	EC	Multimedia Communication	17EC741	Real Time Object Detection Using CNN
ELECTRONICS & COMMUNICATION ENGINEERING	EC	Advanced Communication Lab	17ECL76	Ultra-Violet Sterilization Robot For Disinfection
ELECTRONICS & COMMUNICATION ENGINEERING		VLSI Lab	17ECL77	A Novel Secured Electronic Voting Machine
ELECTRONICS & COMMUNICATION ENGINEERING	EC	Project Work Phase-I + Project workSeminar	17ECP78	Automatic Chocolate Vending Machine
ELECTRONICS & COMMUNICATION ENGINEERING	EC	Machine learning	17EC834	Home Automation Using Smart Mirror
ELECTRONICS & COMMUNICATION ENGINEERING	EC	Internship/Professional Practice	17EC84	Implementation Of Speech Enhancement Algorithms Using FPGA (ANN)
ELECTRONICS & COMMUNICATION ENGINEERING	EC	Project Work	17ECP85	Application Of Deep Learning Techniques for the Study And Analysis Of CVD's
ELECTRONICS & COMMUNICATION ENGINEERING	EC	Seminar	17ECS86	Smart Road Divider For Traffic Control
ELECTRONICS & COMMUNICATION ENGINEERING	EC			Leaf Disease Treatment For Using Locomotive Robot With Deep Learning
ELECTRONICS & COMMUNICATION ENGINEERING	EC			IOT Based Hydroponic Farming System
ELECTRONICS & COMMUNICATION ENGINEERING	EC			Design Of High Gain CMOS Operational Amplifier Using 90nm Technology For Biomedical Monitoring Application
ELECTRONICS & COMMUNICATION ENGINEERING	EC			Automation Detection And Notification Of Patholes And Humps On Roads To A Drivers
ELECTRONICS & COMMUNICATION ENGINEERING	EC			An FPGA Based Vending Machine For IC
ELECTRONICS & COMMUNICATION ENGINEERING	EC			3 Bit Flash ADC In 180nm Technology Using Cadence
ELECTRONICS & COMMUNICATION ENGINEERING	EC			Child Recuse System In Borewell System
ELECTRONICS & COMMUNICATION ENGINEERING	EC			Smart Lawn Mower Using Solar
ELECTRONICS & COMMUNICATION ENGINEERING	EC			Intelligent Car Parking System
ELECTRONICS & COMMUNICATION ENGINEERING	EC			Attendance Monitoring Using Real Time Recognition In Image Processing
ELECTRONICS & COMMUNICATION ENGINEERING	EC			Design And Implementation Of High Speed 16 Bit Wallence Tree Multiplier Based On Symmetric Stacking Counter

ELECTRONICS & COMMUNICATION ENGINEERING	EC			An Approach Towards Reduced Switch 7-Level Multilevel Inverter By PWM Method
ELECTRONICS & COMMUNICATION ENGINEERING	EC			Novel Method Of Fast Charging Of Electric Vehicle Using Vienna Rectifiers
ELECTRONICS & COMMUNICATION ENGINEERING	EC			IOT Based Automatic Smart Cradle For Infants
ELECTRONICS & COMMUNICATION ENGINEERING	EC			Fingerprint Online Attendance System Using Iot
ELECTRONICS & COMMUNICATION ENGINEERING	EC			Charging Station For Electric Vehicle Using Solar And Wind With IOT
ELECTRONICS & COMMUNICATION ENGINEERING	EC			Vedic Mathematics
ELECTRONICS & COMMUNICATION ENGINEERING	EC			Eco Friendly Hybrid Electric Vehicle (Change Of Project)
ELECTRONICS & COMMUNICATION ENGINEERING	EC			Smart Notice Board For College Using STM32 Microcontroller
ELECTRONICS & COMMUNICATION ENGINEERING	EC			Smart Helmet
THIRD YEAR				
Program name	Program code	Name of the Course that include experiential learning through project work/field work/internship	Course code	Details of Experiential Learning through Projects/ Internship
ELECTRONICS & COMMUNICATION ENGINEERING	EC	Technological Innovation Management and Entrepreneurship	18ES51	IR Home Automation
ELECTRONICS & COMMUNICATION ENGINEERING	EC	Digital Signal Processing	18EC52	Car Parking System Using Arduino
ELECTRONICS & COMMUNICATION ENGINEERING	EC	Principles of Communication System	18EC53	Currency Converter Using Python
ELECTRONICS & COMMUNICATION ENGINEERING	EC	Information Theory & Coding	18EC54	Voice Controlled Robot Using Arduino Uno
ELECTRONICS & COMMUNICATION ENGINEERING	EC	Electromagnetic waves	18EC55	IOT Based Temperature Control And Monitoring System
ELECTRONICS & COMMUNICATION ENGINEERING	EC	Verilog HDL	18EC56	Billing System Using Python
ELECTRONICS & COMMUNICATION ENGINEERING	EC	DSP Lab	18ECL57	Fake News Detection Using Python And Machine Learning
ELECTRONICS & COMMUNICATION ENGINEERING	EC	HDL Lab	18ECL58	Face Shape Detection Using Python And Cnn
ELECTRONICS & COMMUNICATION ENGINEERING	EC	Digital Communication	18EC61	Wireless Noticeboard Using Bluetooth Module
ELECTRONICS & COMMUNICATION ENGINEERING	EC	Embedded Systems	18EC62	Currency Converter Using Python
ELECTRONICS & COMMUNICATION ENGINEERING	EC	Microwave & Antennas	18EC63	Weather Forecasting Using Python
ELECTRONICS & COMMUNICATION ENGINEERING	EC			Smart Irrigation System
ELECTRONICS & COMMUNICATION ENGINEERING	EC	Python Programming	18EC646	Covid 19 Heat Map Using Python
ELECTRONICS & COMMUNICATION ENGINEERING	EC	Embedded Controller Lab	18EC66	Real Time Weather Application Using Python
ELECTRONICS & COMMUNICATION ENGINEERING	EC	Communication Lab	18ECL67	Django Ecommerce Website (Framework)
ELECTRONICS & COMMUNICATION ENGINEERING	EC	Mini Projects	18ECL68	Password Door Lock Using Arduino
ELECTRONICS & COMMUNICATION ENGINEERING	EC			Image Processing Using Open Cv
ELECTRONICS & COMMUNICATION ENGINEERING	EC			Bidirectional Visitor Counter
ELECTRONICS & COMMUNICATION ENGINEERING	EC			Optical Communication

ELECTRONICS & COMMUNICATION ENGINEERING	EC		Four Lane Traffic Control System Using Arduino
ELECTRONICS & COMMUNICATION ENGINEERING	EC		Home Automation Using Arduino Uno And Bluetooth
ELECTRONICS & COMMUNICATION ENGINEERING	EC		Hand Number Sign Recognition Using Python
ELECTRONICS & COMMUNICATION ENGINEERING	EC		Qr And Barcode Scanner /Reader
ELECTRONICS & COMMUNICATION ENGINEERING	EC		Conversion Of Text To Speech And Speech To Text Using Python
ELECTRONICS & COMMUNICATION ENGINEERING	EC		Ultrasonic Distance Measurement Using Simulation
ELECTRONICS & COMMUNICATION ENGINEERING	EC		Real Time Chat Application
ELECTRONICS & COMMUNICATION ENGINEERING	EC		Typing Speed Test Using Python
ELECTRONICS & COMMUNICATION ENGINEERING	EC		Colour Detection Using Python
ELECTRONICS & COMMUNICATION ENGINEERING	EC		Home Automation Using Arduino And Bluetooth
ELECTRONICS & COMMUNICATION ENGINEERING	EC		Automatic Car Wiper Using Arduino And Rain Sensor
ELECTRONICS & COMMUNICATION ENGINEERING	EC		Three Way Traffic Light Control System
ELECTRONICS & COMMUNICATION ENGINEERING	EC		Banking Application Using Java
ELECTRONICS & COMMUNICATION ENGINEERING	EC		Virtual Assistant Using Python
ELECTRONICS & COMMUNICATION ENGINEERING	EC		Elevator With Load Limit Detection
ELECTRONICS & COMMUNICATION ENGINEERING	EC		Pathfinder Using Python
ELECTRONICS & COMMUNICATION ENGINEERING	EC		Arduino Controlled Dc Motor Driver
ELECTRONICS & COMMUNICATION ENGINEERING	EC		Graphical Implementation Of Helicopter

SECOND YEAR

Program name	Program code	Name of the Course that include experiential learning through project work/field work/internship	Course code	Details of Experiential Learning through Projects/ Internship
ELECTRONICS & COMMUNICATION ENGINEERING	EC	Network Theory	18EC32	AUTOMATIC SWITCH OFF CIRCUIT FOR HOME APPLICATIONS
ELECTRONICS & COMMUNICATION ENGINEERING	EC	Electronics Devices	18EC33	TOUCHLESS DOORBELL BASED ON IR SENSOR AND PHOTODIODE
ELECTRONICS & COMMUNICATION ENGINEERING	EC	Digital System Design	18EC34	AUTOMATIC STREET LIGHT CONTROL USING LDR
ELECTRONICS & COMMUNICATION ENGINEERING	EC	Electronic Devices and Instrumentation Lab	18ECL37	WATER PUMP USING DC MOTOR
ELECTRONICS & COMMUNICATION ENGINEERING	EC	Digital System Design Lab	18ECL38	RAIN WATER ALARM USING IC 555 TIMER
ELECTRONICS & COMMUNICATION ENGINEERING	EC	Analog Circuits	18EC42	AUTO WATER DISPENSER
ELECTRONICS & COMMUNICATION ENGINEERING	EC	Microcontroller	18EC46	METAL DETECTOR CIRCUIT USING 555 TIMER
ELECTRONICS & COMMUNICATION ENGINEERING	EC	Microcontroller Lab	18ECL47	ULTRASONIC OBSTACLE DETECTOR
ELECTRONICS & COMMUNICATION ENGINEERING	EC	Analog Circuits Lab	18ECL48	AUTOMATIC STREET LIGHT CONTROL USING LDR
ELECTRONICS & COMMUNICATION ENGINEERING	EC			LIGHT FIDELITY
ELECTRONICS & COMMUNICATION ENGINEERING	EC			LIGHT SENSOR
ELECTRONICS & COMMUNICATION ENGINEERING	EC			TOUCH SENSOR DOOR BELL
ELECTRONICS & COMMUNICATION ENGINEERING	EC			TOUCH SENSOR DOOR BELL

ELECTRONICS & COMMUNICATION ENGINEERING	EC		TOUCH SWITCH USING TRANSISTOR
ELECTRONICS & COMMUNICATION ENGINEERING	EC		AUTOMATIC STREET LIGHT SENSOR USING ARDUINO AND LDR
ELECTRONICS & COMMUNICATION ENGINEERING	EC		WATER LEVEL INDICATING ALARM
ELECTRONICS & COMMUNICATION ENGINEERING	EC		PLANT TOUCH DETECTOR
ELECTRONICS & COMMUNICATION ENGINEERING	EC		MEASURING CO2 CONCENTRATION IN AIR
ELECTRONICS & COMMUNICATION ENGINEERING	EC		MUSIC RHYTHM LED LIGHT
ELECTRONICS & COMMUNICATION ENGINEERING	EC		AUTOMATIC RAIN SENSING WIPER USING ARDUINO
ELECTRONICS & COMMUNICATION ENGINEERING	EC		AUTOMATIC STREET LIGHT CONTROL USING LDR
ELECTRONICS & COMMUNICATION ENGINEERING	EC		ARDUINO BASED OBSTACLE AVOIDANCE + VOICE CONTROLLED ROBOT
ELECTRONICS & COMMUNICATION ENGINEERING	EC		SMARTPHONE CONTROLLED RC CAR USING ARDUINO
ELECTRONICS & COMMUNICATION ENGINEERING	EC		HOME AUTOMATION USING VOICE COMMAND
ELECTRONICS & COMMUNICATION ENGINEERING	EC		MISSING PULSE DETECTOR USING 555 TIMER
ELECTRONICS & COMMUNICATION ENGINEERING	EC		TOUCH SENSORS USING 555 TIMER
ELECTRONICS & COMMUNICATION ENGINEERING	EC		AUTOMATIC IRRIGATION SYSTEM USING ARDUINO
ELECTRONICS & COMMUNICATION ENGINEERING	EC		LASER SECURITY SYSTEM USING ARDUINO
ELECTRONICS & COMMUNICATION ENGINEERING	EC		UNBIASED ELECTRONIC DICE WITH LEDs
ELECTRONICS & COMMUNICATION ENGINEERING	EC		SMOKE DETECTOR ALARM
ELECTRONICS & COMMUNICATION ENGINEERING	EC		RADAR USING ARDUINO
ELECTRONICS & COMMUNICATION ENGINEERING	EC		INFINITY MIRROR USING ARDUINO
ELECTRONICS & COMMUNICATION ENGINEERING	EC		INTRUDER ALARM
ELECTRONICS & COMMUNICATION ENGINEERING	EC		GAS LEAKAGE DETECTOR USING MQ-6 SENSOR
ELECTRONICS & COMMUNICATION ENGINEERING	EC		ELECTRONIC PIANO USING 555 TIMER
ELECTRONICS & COMMUNICATION ENGINEERING	EC		PERSISTENCE OF VISION DISPLAY
ELECTRONICS & COMMUNICATION ENGINEERING	EC		HEART RATE SENSOR USING ARDUINO
ELECTRONICS & COMMUNICATION ENGINEERING	EC		WIRELESS SWITCH CIRCUIT USING CD4027
ELECTRONICS & COMMUNICATION ENGINEERING	EC		TOUCH SENSORS USING 555 TIMER



HOD, ECE

Head of the Department
Electronics & Commu
Sapthagiri College of Eng
Bangalore-560 057.

B.E.: Electronics & Communication Engineering

VII SEMESTER

Sl. No	Course Code	Title	Teaching Department	Teaching Hours /Week		Examination				Credits
				Theory	Practical/ Drawing	Duration in hours	SEE Marks	CIE Marks	Total Marks	
1	17EC71	Microwave and Antennas	EC	04		03	60	40	100	4
2	17EC72	Digital Image Processing	EC	04		03	60	40	100	4
3	17EC73	Power Electronics	EC	04		03	60	40	100	4
4	17EC74X	Professional Elective-3	EC	03		03	60	40	100	3
5	17EC75X	Professional Elective-4	EC	03		03	60	40	100	3
6	17ECL76	Advanced Communication Lab	EC	01-Hour Instruction 02-Hour Practical		03	60	40	100	2
7	17ECL77	VLSI Lab	EC	01-Hour Instruction 02-Hour Practical		03	60	40	100	2
8	17ECP78	Project Work Phase-I + Project work Seminar	EC		03		-	100	100	2
TOTAL				Theory:18 hours Practical and Project: 09 hours		21	420	380	800	24

Professional Elective-3		Professional Elective-4	
17EC741	Multimedia Communication	17EC751	DSP Algorithms and Architecture
17EC742	Biomedical Signal Processing	17EC752	IOT and Wireless Sensor Networks
17EC743	Real Time Systems	17EC753	Pattern Recognition
17EC744	Cryptography	17EC754	Advanced Computer Architecture
17EC745	CAD for VLSI	17EC755	Satellite Communication

1. Project Phase – I and Project Seminar: Comprises of Literature Survey, Problem identification, Objectives and Methodology. CIE marks shall be based on the report covering Literature Survey, Problem identification, Objectives and Methodology and Seminar presentation skill.

B.E.: Electronics & Communication Engineering

VIII SEMESTER

Sl. No	Course Code	Title	Teaching Department	Teaching Hours /Week		Examination				Credits
				Theory	Practical/ Drawing	Duration in hours	SEE Marks	CIE Marks	Total Marks	
1	17EC81	Wireless Cellular and LTE 4G Broadband	EC	4	-	3	60	40	100	4
2	17EC82	Fiber Optics & Networks	EC	4	-	3	60	40	100	4
3	17EC83X	Professional Elective-5	EC	3	-	3	60	40	100	3
4	17EC84	Internship/Professional Practice	EC	Industry Oriented		3	50	50	100	2
5	17ECP85	Project Work	EC	-	6	3	100	100	200	6
6	17ECS86	Seminar	EC	-	4	-	-	100	100	1
TOTAL				Theory: 11 hours Project and Seminar: 10 hours		15	330	370	700	20

Professional Elective -5	
17EC831	Micro Electro Mechanical Systems
17EC832	Speech Processing
17EC833	Radar Engineering
17EC834	Machine learning
17EC835	Network and Cyber Security

1. **Internship/ Professional Practice:** 4 Weeks internship to be completed between the (VI and VII semester vacation) and/or (VII and VIII semester vacation) period.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI
Scheme of Teaching and Examination 2018 – 19
Outcome Based Education (OBE) and Choice Based Credit System (CBCS)
(Effective from the academic year 2018 – 19)

Programme: B.E: Electronics & Communication Engineering

V SEMESTER

Sl. No	Course and Course code		Course Title	Teaching Department	Teaching Hours /Week			Examination				Credits
					Theory Lecture	Tutorial	Practical/ Drawing	Duration in hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P					
1	HSMC	18ES51	Technological Innovation Management and Entrepreneurship		3	0	--	03	40	60	100	3
2	PCC	18EC52	Digital Signal Processing		3	2	--	03	40	60	100	4
3	PCC	18EC53	Principles of Communication Systems		3	2	--	03	40	60	100	4
4	PCC	18EC54	Information Theory & Coding		3	--	--	03	40	60	100	3
5	PCC	18EC55	Electromagnetic Waves		3	--	--	03	40	60	100	3
6	PCC	18EC56	Verilog HDL		3	--	--	03	40	60	100	3
7	PCC	18ECL57	Digital Signal Processing Laboratory		--	2	2	03	40	60	100	2
8	PCC	18ECL58	HDL Laboratory		--	2	2	03	40	60	100	2
9	HSMC	18CIV59	Environmental Studies	Civil/Environmental [Paper setting: Civil Engineering Board]	1	--	--	02	40	60	100	1
TOTAL					19	8	4	26	360	540	900	25

Note: PCC: Professional Core, HSMC: Humanity and Social Science.

AICTE activity Points: In case students fail to earn the prescribed activity Points, Eighth semester Grade Card shall be issued only after earning the required activity Points. Students shall be admitted for the award of degree only after the release of the Eighth semester Grade Card.

Programme: B.E: Electronics & Communication Engineering

VI SEMESTER

VI SEMESTER												
Sl. No	Course and Course code		Course Title	Teaching Department	Teaching Hours /Week			Examination				Credits
					Theory Lecture	Tutorial	Practical/ Drawing	Duration in hours	CIE Marks	SEE Marks	Total Marks	
1	PCC	18EC61	Digital Communication		3	2	--	03	40	60	100	4
2	PCC	18EC62	Embedded Systems		3	2	--	03	40	60	100	4
3	PCC	18EC63	Microwave and Antennas		3	2	--	03	40	60	100	4
4	PEC	18XX64X	Professional Elective -I		3	--	--	03	40	60	100	3
5	OEC	18XX65X	Open Elective -A		3	--	--	03	40	60	100	3
6	PCC	18ECL66	Embedded Systems Laboratory		--	2	2	03	40	60	100	2
7	PCC	18ECL67	Communication Laboratory		--	2	2	03	40	60	100	2
8	MP	18ECMP68	Mini-project		--	--	2	03	40	60	100	2
9	Internship	--	Internship	To be carried out during the vacation/s of VI and VII semesters and /or VII and VIII semesters.								
TOTAL					15	10	6	24	320	480	800	24

Note: PCC: Professional core, PEC: Professional Elective, OE: Open Elective, MP: Mini-project.

Professional Elective -1

Professional Elective -I	
Course code under 18XX64X	Course Title
18EC641	Operating System
18EC642	Artificial Neural Networks
18EC643	Data Structures using C++
18EC644	Digital System Design Using Verilog
18EC645	Nanoelectronics
18EC646	Python Application Programming

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III SEMESTER

III SEMESTER												
Sl. No	Course and Course Code		Course Title	Teaching Department	Teaching Hours/Week			Examination				Credits
					Theory Lecture	Tutorial	Practical/ Drawing	Duration in hours	CIE Marks	SEE Marks	Total Marks	
1	BSC	18MAT31	Transform Calculus, Fourier Series and Numerical Techniques	Mathe matics	2	2	--	03	40	60	100	3
2	PCC	18EC32	Network Theory		3	2	--	03	40	60	100	4
3	PCC	18EC33	Electronic Devices		3	0	--	03	40	60	100	3
4	PCC	18EC34	Digital System Design		3	0	--	03	40	60	100	3
5	PCC	18EC35	Computer Organization & Architecture		3	0	--	03	40	60	100	3
6	PCC	18EC36	Power Electronics & Instrumentation		3	0	--	03	40	60	100	3
7	PCC	18ECL37	Electronic Devices & Instrumentation Laboratory		--	2	2	03	40	60	100	3
8	PCC	18ECL38	Digital System Design Laboratory		--	2	2	03	40	60	100	2
9	HSMC	18KVK39/49	Vyavaharika Kannada (Kannada for Communication)/	HSMC	--	2	--	--	100	--	100	1
		18KAK39/49	Aadalitha Kannada (Kannada for Administration)		--	2	--	--	--			
		OR										
		18CPC39/49	Constitution of India, Professional Ethics and Cyber Law		1	--	--	02	40	60		
		TOTAL					17	10	04	24		
					OR	OR	OR	OR		OR		
					18	08	26	360		540		

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Programme: B.E: Electronics & Communication Engineering

IV SEMESTER

IV SEMESTER													
Sl. N o	Course and Course code		Course Title	Teaching Department	Teaching Hours /Week			Examination				Credits	
					Theory Lecture	Tutorial	Practical/ Drawing	Duration in hours	CIE Marks	SEE Marks	Total Marks		
													L
1	BSC	18MAT41	Complex Analysis, Probability and Statistical Methods	Mathe matics	2	2	--	03	40	60	100	3	
2	PCC	18EC42	Analog Circuits		3	2	--	03	40	60	100	4	
3	PCC	18EC43	Control Systems		3	0	--	03	40	60	100	3	
4	PCC	18EC44	Engineering Statistics & Linear Algebra		3	0	--	03	40	60	100	3	
5	PCC	18EC45	Signals & Systems		3	0	--	03	40	60	100	3	
6	PCC	18EC46	Microcontroller		3	0	--	03	40	60	100	3	
7	PCC	18ECL47	Microcontroller Laboratory		--	2	2	03	40	60	100	2	
8	PCC	18ECL48	Analog Circuits Laboratory		--	2	2	03	40	60	100	2	
9	HSMC	18KVK39/49	Vyavaharika Kannada (Kannada for Communication)	HSM C	--	2	--	--	100	--	100	1	
		18KAK39/49	Aadalitha Kannada (Kannada for Administration)										
		OR											
		18CPC39/49	Constitution of India, Professional Ethics and Cyber Law										
TOTAL					17	10	04	24	420	480	900	24	
					OR	OR		OR	OR				
					18	08		26	360	540			
					Examination is by objective type questions								