



COIMBATORE INSTITUTE OF TECHNOLOGY, COIMBATORE – 641 014
(Autonomous Institution affiliated to ANNA UNIVERSITY, CHENNAI)
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING
REGULATIONS 2023 - CHOICE BASED CREDIT SYSTEM

B. E. ELECTRONICS AND COMMUNICATION ENGINEERING

CURRICULA AND SYLLABI

SEMESTER I

S. NO.	COURSE CODE	COURSE TITLE	CATE GORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
THEORY								
1	23FYH111	Technical English	HSC	2	2	0	4	4
2	23FYM114	Calculus and Differential Equations	BSC	3	1	0	4	4
3	23FYP114	Physics for Communication Engineering	BSC	3	0	0	3	3
4	23FYC114	Engineering Chemistry	BSC	3	0	0	3	3
5	23EC111	Electrical Engineering and Instrumentation	ESC	3	0	0	3	3
PRACTICALS								
6	23FPC122	Basic Sciences Laboratory	BSC	0	0	4	4	2
7	23EC121	Electrical Engineering and Instrumentation Laboratory	ESC	0	0	2	2	1
8	23EC122	Problem Solving Skills and Practices	ESC	0	0	2	2	1
MANDATORY COURSES								
9	23FYH121	Heritage of Tamils / தமிழர் மரபு	HSC	15 Hours			1	1
10	23MC101	Induction Programme	MC	2 Weeks			2 Weeks	-
11	23MC102	Soft Skills	EEC	15 Hours			1	-
TOTAL				14	3	8	27	22

SEMESTER II

S. NO.	COURSE CODE	COURSE TITLE	CATEGORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
THEORY								
1	23FYM214	Complex Variables, Laplace Transforms and Fourier Series	BSC	3	1	0	4	4
2	23FYP212	Semiconductor Physics	BSC	3	0	0	3	3
3	23EC211	Problem Solving Using C Programming	ESC	3	0	0	3	3
4	23EC212	Electron Devices	ESC	3	0	0	3	3
5	23EC213	Network Theory	ESC	3	1	0	4	4
PRACTICALS								
6	23FYH221	English Communication Competency Laboratory	HSC	0	0	4	4	2
7	23EC221	C Programming Laboratory	ESC	0	0	2	2	1
8	23EC222	Devices and Circuits Laboratory	ESC	0	0	2	2	1
MANDATORY COURSES								
9	23FYH222	Tamils and Technology / தமிழரும் தொழில்நுட்பமும்	HSC	15 Hours			1	1
10	23FYC221	Environmental Science and Engineering	HSC	15 Hours			1	1
11	23CC	Co-Curricular Activities*	MC	15 Hours			1	1
		23CC221-NSS						
		23CC222-YRC						
		23CC223-RSP						
		23CC224-SPORTS						
TOTAL				15	2	18	28	24

SEMESTER III

S. NO.	COURSE CODE	COURSE TITLE	CATEGORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
THEORY								
1	23M314	Linear Algebra and Probability	BSC	3	1	0	4	4
2	23EC311	Signals and Systems	PCC	3	1	0	4	4
3	23EC312	Analog Electronics	PCC	3	0	0	3	3
4	23EC313	Digital Electronics	PCC	3	0	0	3	3
5	23EC314	Electromagnetic Fields and Transmission Lines	PCC	3	1	0	4	4
PRACTICALS								
6	23EC321	Analog Electronics Laboratory	PCC	0	0	3	3	1.5
7	23EC322	Digital Electronics Laboratory	PCC	0	0	3	3	1.5
8	23EC323	Python Programming Laboratory	ESC	0	0	2	2	1
MANDATORY COURSES								
9	23MC301	Induction Programme	MC	1 Week				
10	23MC321	Human Values and Professional Ethics	MC	15 Hours			1	1
11	23MC322	Design Thinking	EEC	15 Hours			1	1
TOTAL				15	3	8	28	24

SEMESTER IV

S. NO.	COURSE CODE	COURSE TITLE	CATEGORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
THEORY								
1	23EC411	Antennas and Wave Propagation	PCC	3	0	0	3	3
2	23EC412	Principles of Communication	PCC	3	1	0	4	4
3	23EC413	Linear Integrated Circuits	PCC	3	0	0	3	3
4	23EC414	Microcontroller based Systems	PCC	3	1	0	4	4
5	23EC415	Data structures and Algorithms	PCC	3	1	0	4	4
PRACTICALS								
6	23EC421	Linear Integrated Circuits Laboratory	PCC	0	0	3	3	1.5
7	23EC422	Microcontrollers Laboratory	PCC	0	0	3	3	1.5
8	23EC423	Data structures and Algorithms Laboratory	PCC	0	0	2	2	1
MANDATORY COURSES								
9		Value Added Course I	MC	15 Hours			-	1
10	23MC401	Community Services and Engineering	EEC	15 Hours				
TOTAL				15	3	8	26	23

SEMESTER V

S. NO.	COURSE CODE	COURSE TITLE	CATEGORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
THEORY								
1	23EC511	Control Systems	PCC	3	1	0	4	4
2	23EC512	Digital Signal Processing	PCC	3	1	0	4	4
3	23EC513	Embedded Systems and IoT	PCC	3	0	0	3	3
4		Elective –I	PEC/OEC	3	0	0	3	3
5		Elective –II	PEC	3	0	0	3	3
PRACTICALS								
6	23EC521	Signal Processing Laboratory	PCC	0	0	2	2	1
7	23EC522	Embedded Systems and IoT Laboratory	PCC	0	0	2	2	1
8	23EC523	DBMS Laboratory	PCC	0	0	2	2	1
	23EC541	In-Plant Training*	EEC	2 Weeks			-	1
MANDATORY COURSES								
9		Value Added Course II	EEC	15 Hours			-	1
10	23MC501	Seminar and Technical Writing	EEC	15 Hours			1	1
TOTAL				15	1	6	22	23

* IN-PLANT TRAINING to be completed in fourth semester

SEMESTER VI

S. NO.	COURSE CODE	COURSE TITLE	CATEGORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
THEORY								
1	23EC611	VLSI Design	PCC	3	0	0	3	3
2	23EC612	Digital Communication	PCC	3	1	0	4	4
3	23EC613	Data Communication Networks	PCC	3	0	0	3	3
4		Elective -III	PEC/OEC	3	0	0	3	3
5		Elective – IV	PEC	3	0	0	3	3
PRACTICALS								
6	23EC621	VLSI Design Laboratory	PCC	0	0	2	2	1
7	23EC622	Analog and Digital Communication Laboratory	PCC	0	0	2	2	1
8	23EC623	Java Programming Laboratory	PCC	0	0	2	2	1
9	23EC641	Mini Project	EEC	0	0	4	4	2
MANDATORY COURSES								
10	23MC601	Hackathon	EEC	15 Hours				1
TOTAL				15	1	10	26	22

SEMESTER VII

S. NO.	COURSE CODE	COURSE TITLE	CATEGORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
THEORY								
1	23EC711	Digital Image Processing	PCC	3	1	0	4	4
2	23EC712	Wireless Communication and Networks	PCC	3	0	0	3	3
3	23EC713	Microwave Engineering and Optical Communication	PCC	4	0	0	4	4
4		Elective -V	PEC	3	0	0	3	3
5		Elective -VI	PEC	3	0	0	3	3
PRACTICALS								
6	23EC721	Wireless Communication and Networking Laboratory	PCC	0	0	2	2	1
7	23EC722	Microwave Engineering and Optical Communication Laboratory	PCC	0	0	2	2	1
8	23EC723	Electronic Systems Design Laboratory	PCC	0	0	2	2	1
TOTAL				16	1	6	23	20

SEMESTER VIII

S. NO.	COURSE CODE	COURSE TITLE	CATEGORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
THEORY								
		ELECTIVE -VII	PEC	3	0	0	3	3
		ELECTIVE -VIII	PEC	3	0	0	3	3
PRACTICALS								
	23EC841	Project Work and Viva-Voce	EEC	0	0	12	6	6
TOTAL				6	0	12	12	12

LIST OF PROFESSIONAL ELECTIVE COURSES:

SI. No	COURSE CODE	COURSE TITLE	CATEGORY	L	T	P	CONTACT PERIODS	CREDITS
ELECTRONICS AND VLSI								
1.	23ECPE01	CAD for VLSI Circuits	PEC	3	0	0	3	3
2.	23ECPE02	ASIC Design	PEC	3	0	0	3	3
3.	23ECPE03	High Speed Digital Design	PEC	3	0	0	3	3
4.	23ECPE04	Reconfigurable Computing	PEC	3	0	0	3	3
5.	23ECPE05	VLSI Technology	PEC	3	0	0	3	3
6.	23ECPE06	Bio-Medical CMOS ICs	PEC	3	0	0	3	3
7.	23ECPE07	Validation and Testing Technology	PEC	3	0	0	3	3
8.	23ECPE08	Quantum Circuit Design	PEC	3	0	0	3	3
9.	23ECPE09	Signal Integrity for High Speed Devices	PEC	3	0	0	3	3
10.	23ECPE10	System on Chip	PEC	3	0	0	3	3
11.	23ECPE11	Semiconductor Device Modeling	PEC	3	0	0	3	3
12.	23ECPE12	Semiconductor Memory Design	PEC	3	0	0	3	3
13.	23ECPE13	Design Fundamentals of Electric and Hybrid Vehicles	PEC	3	0	0	3	3
14.	23ECPE14	Power Electronics	PEC	3	0	0	3	3
15.	23ECPE15	Electronic Packaging	PEC	3	0	0	3	3
EMBEDDED SYSTEMS & IoT								
16.	23ECPE16	Automotive Electronics	PEC	3	0	0	3	3
17.	23ECPE17	Real Time Operating Systems	PEC	3	0	0	3	3
18.	23ECPE18	Programming for IoT Boards	PEC	3	0	0	3	3
19.	23ECPE19	IoT System Design and Applications	PEC	3	0	0	3	3
20.	23ECPE20	Real Time Applications using Python	PEC	3	0	0	3	3
21.	23ECPE21	Drone Technologies	PEC	3	0	0	3	3
22.	23ECPE22	Robotics	PEC	3	0	0	3	3
23.	23ECPE23	Foundation Skills for Integrated Product Development	PEC	3	0	0	3	3
COMMUNICATION AND SIGNAL PROCESSING								
24.	23ECPE24	Multimedia Compression and Communication	PEC	3	0	0	3	3
25.	23ECPE25	Digital Switching and Transmission	PEC	3	0	0	3	3
26.	23ECPE26	Error Control Coding	PEC	3	0	0	3	3
27.	23ECPE27	Cognitive Radio Communication Systems	PEC	3	0	0	3	3
28.	23ECPE28	Satellite Communication	PEC	3	0	0	3	3

29.	23ECPE29	Under Water Communication	PEC	3	0	0	3	3
30.	23ECPE30	Optical Communication Networks	PEC	3	0	0	3	3
31.	23ECPE31	Wireless Adhoc and Sensor Networks	PEC	3	0	0	3	3
32.	23ECPE32	Wireless Networks and Standards	PEC	3	0	0	3	3
33.	23ECPE33	Next Generation Networks	PEC	3	0	0	3	3
34.	23ECPE34	Network Routing and Infrastructure Management	PEC	3	0	0	3	3
35.	23ECPE35	Cryptography and Network Security	PEC	3	0	0	3	3
36.	23ECPE36	Radar and Navigational Aids	PEC	3	0	0	3	3
37.	23ECPE37	Compressive Sensing and Sparse Signal Processing	PEC	3	0	0	3	3
38.	23ECPE38	Pattern Recognition	PEC	3	0	0	3	3
39.	23ECPE39	Machine Learning for Signal Processing	PEC	3	0	0	3	3
40.	23ECPE40	Adaptive Signal Processing	PEC	3	0	0	3	3
MICROWAVE AND RF DESIGN								
41.	23ECPE41	Modern Antennas	PEC	3	0	0	3	3
42.	23ECPE42	Electromagnetic Interference and Compatibility	PEC	3	0	0	3	3
43.	23ECPE43	RF Microelectronics	PEC	3	0	0	3	3
44.	23ECPE44	Radiation Systems	PEC	3	0	0	3	3
45.	23ECPE45	Electromagnetic Radiation Hazards and Safety	PEC	3	0	0	3	3
46.	23ECPE46	Advanced Antenna Technology	PEC	3	0	0	3	3
SOFT COMPUTING								
47.	23ECPE47	Machine Learning Algorithms	PEC	3	0	0	3	3
48.	23ECPE48	Deep Learning	PEC	3	0	0	3	3
49.	23ECPE49	Artificial Intelligence	PEC	3	0	0	3	3
50.	23ECPE50	Cyber Security	PEC	3	0	0	3	3
51.	23ECPE51	Operating Systems	PEC	3	0	0	3	3
52.	23ECPE52	Relational Database Management Systems	PEC	3	0	0	3	3
53.	23ECPE53	Java Programming	PEC	3	0	0	3	3
54.	23ECPE54	Intel Collaborated Course: Introduction to Machine Learning	PEC	3	0	0	3	3
55.	23ECPE55	Deep Learning for Computer Vision	PEC	3	0	0	3	3

LIST OF OPEN ELECTIVE COURSES OFFERED FOR THE STUDENTS OF OTHER UG PROGRAMMES:

Sl. No	COURSE CODE	COURSE TITLE	CATEGORY	L	T	P	CONTACT PERIODS	C	UG PROGRAMME
1.	23ECOE01	Signal Processing and Its Applications	OEC	3	0	0	3	3	All Branches
2.	23ECOE02	Smart Sensors and IoT	OEC	3	0	0	3	3	
3.	23ECOE03	Consumer Electronics	OEC	3	0	0	3	3	
4.	23ECOE04	Information Theory and Coding Techniques	OEC	3	0	0	3	3	
5.	23ECOE05	Automotive Embedded Systems	OEC	3	0	0	3	3	
6.	23ECOE06	5G Technologies and Applications	OEC	3	0	0	3	3	
7.	23ECOE07	Vehicular Communication	OEC	3	0	0	3	3	

SUMMARY

Category; BSC – Basic sciences, HSC– Humanities and Social Sciences, ESC–Engineering sciences, PCC –Professional Core, PEC- Professional Elective, OEC-Open Elective Course, EEC –Employability Enhancement Course, MC – Mandatory Course

B.E. ELECTRONICS AND COMMUNICATION ENGINEERING										
Sl. No.	Subject Area	Credits per Semester								Credits Total
		I	II	III	IV	V	VI	VII	VIII	
1	HSC	5	4							9
2	BSC	12	7	4						23
3	ESC	5	12	1						18
4	PCC			17	22	14	13	14		80
5	PEC/OEC					6	6	6	6	24
6	EEC			1		2	3		6	12
7	MC		1	1	1	1				4
TOTAL CREDITS										170

VALUE ADDED COURSES

S. NO.	COURSE CODE	COURSE TITLE	CATEGORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
1	23ECOC01	Digital System Design with Verilog and VHDL	EEC	15 Hours			-	1
2	23ECOC02	Python for Data Science	EEC	15 Hours			-	1
3	23ECOC03	IoT Edge Computing	EEC	15 Hours			-	1
4	23ECOC04	IoT based System Design	EEC	15 Hours			-	1
5	23ECOC05	Communication System Design	EEC	15 Hours			-	1
6	23ECOC06	Antenna Design and Testing	EEC	15 Hours			-	1

VERTICALS-MAJOR

CODE	COURSE	L	T	P	Credit	Category
SIGNAL PROCESSING						
23ECV101	SPEECH SIGNAL PROCESSING	3	0	0	3	VERTICAL-MAJOR
23ECV301	DSP ARCHITECTURE AND PROGRAMMING	2	0	2	3	VERTICAL-MAJOR
23ECV102	BIOMEDICAL SIGNAL PROCESSING	3	0	0	3	VERTICAL-MAJOR
23ECV103	SIGNAL PROCESSING FOR COMMUNICATION	3	0	0	3	VERTICAL-MAJOR
23ECV104	MULTIRATE SIGNAL PROCESSING	3	0	0	3	VERTICAL-MAJOR
23ECV105	STATISTICAL SIGNAL PROCESSING	3	0	0	3	VERTICAL-MAJOR
23ECV302	DIGITAL IMAGE AND VIDEO PROCESSING	2	0	2	3	VERTICAL-MAJOR
23ECV106	AI-ML ALGORITHMS FOR IMAGE PROCESSING APPLICATIONS	3	0	0	3	VERTICAL-MAJOR
SENSOR TECHNOLOGIES AND IoT						
23ECV107	IoT PROCESSORS	3	0	0	3	VERTICAL-MAJOR
23ECV303	COMMUNICATION AND NETWORKING TECHNOLOGIES FOR IoT	2	0	2	3	VERTICAL-MAJOR
23ECV108	WEARABLE TECHNOLOGY AND APPLICATIONS	3	0	0	3	VERTICAL-MAJOR
23ECV109	INDUSTRIAL IoT AND INDUSTRY 4.0	3	0	0	3	VERTICAL-MAJOR
23ECV110	SMART SENSORS AND APPLICATIONS FOR IoT	3	0	0	3	VERTICAL-MAJOR
23ECV111	IoT EDGE COMPUTING	3	0	0	3	VERTICAL-MAJOR
23ECV112	MOBILE APP DEVELOPMENT FOR IoT	3	0	0	3	VERTICAL-MAJOR
23ECV113	NANO SENSORS AND APPLICATIONS	3	0	0	3	VERTICAL-MAJOR
HIGH SPEED COMMUNICATIONS						
23ECV114	OPTICAL COMMUNICATION SYSTEMS	3	0	0	3	VERTICAL-MAJOR
23ECV115	SOFTWARE DEFINED RADIO ARCHITECTURE AND APPLICATIONS	3	0	0	3	VERTICAL-MAJOR
23ECV116	HIGH SPEED COMMUNICATION CIRCUITS	3	0	0	3	VERTICAL-MAJOR
23ECV304	5G COMMUNICATION NETWORKS	2	0	2	3	VERTICAL-MAJOR
23ECV117	WIRELESS BROADBAND NETWORKS	3	0	0	3	VERTICAL-MAJOR
23ECV118	MASSIVE MIMO NETWORKS	3	0	0	3	VERTICAL-MAJOR
23ECV119	MILLIMETER WAVE COMMUNICATION SYSTEMS	3	0	0	3	VERTICAL-MAJOR
23ECV120	ADVANCED WIRELESS COMMUNICATION TECHNIQUES	3	0	0	3	VERTICAL-MAJOR
SEMICONDUCTOR CHIP DESIGN AND TESTING						
23ECV121	WIDE BAND GAP DEVICES	3	0	0	3	VERTICAL-MAJOR
23ECV122	SYSTEM DESIGN USING FPGA	3	0	0	3	VERTICAL-MAJOR
23ECV305	LOW POWER IC DESIGN	2	0	2	3	VERTICAL-MAJOR
23ECV123	VLSI TESTING AND DESIGN FOR TESTABILITY	3	0	0	3	VERTICAL-MAJOR

23ECV124	ANALOG IC DESIGN	3	0	0	3	VERTICAL-MAJOR
23ECV125	MIXED SIGNAL IC DESIGN	3	0	0	3	VERTICAL-MAJOR
23ECV126	VERILOG HDL	3	0	0	3	VERTICAL-MAJOR
23ECV127	VLSI SIGNAL PROCESSING	3	0	0	3	VERTICAL-MAJOR

VERTICALS-MINOR

CODE	COURSE	L	T	P	Credit	Category
INTERNET OF EVERYTHING: SMART SENSING TECHNOLOGIES						
23ECVM301	COMMUNICATION AND NETWORKING TECHNOLOGIES FOR IoT	2	0	2	3	VERTICAL-MINOR
23ECVM101	MOBILE APP DEVELOPMENT FOR IoT	3	0	0	3	VERTICAL-MINOR
23ECVM302	PYTHON PROGRAMMING FOR IoT APPLICATIONS	2	0	2	3	VERTICAL-MINOR
23ECVM102	NANO SENSORS AND APPLICATIONS	3	0	0	3	VERTICAL-MINOR
23ECVM103	SMART SENSORS AND APPLICATIONS FOR IoT	3	0	0	3	VERTICAL-MINOR
23ECVM104	IoT EDGE COMPUTING	3	0	0	3	VERTICAL-MINOR