

**B.E. ELECTRONICS AND COMMUNICATION ENGINEERING
REGULATION 2020
CHOICE BASED CREDIT SYSTEM
I – VIII SEMESTER CURRICULUM AND SYLLABI**

SEMESTER I							
SL. No.	Course Code	Course	L/T/P	Cont act hrs./wk.	C	Ext./Int.	Cat.
THEORY							
1	20SB101	Engineering Biology	3/0/0	3	3	50/50	BSC
THEORY CUM PRACTICAL							
2	20MA101	Engineering Mathematics I	2/1/2	5	4	40/60	BSC
3	20PH101	Physics for Electronics	3/0/3	6	4.5	40/60	BSC
4	20CS111	Problem Solving Using C Programming	3/0/2	5	4	40/60	ESC
5	20EC101	Circuit Theory	3/0/3	6	4.5	40/60	ESC
LABORATORY COURSE							
6	20ME103	Engineering Practices Laboratory	0/0/3	3	1.5	40/60	ESC
MANDATORY COURSE							
7	20MC101	Mandatory Course I (Induction Programme)	3 weeks		0	0/100	MC
TOTAL			14/1/13	28	21.5	700	

SEMESTER II							
SL. No.	Course Code	Course	L/T/P	Conta ct hrs./wk.	C	Ext./Int.	Cat.
THEORY							
1	20GE201	Universal Human Values	3/0/0	3	3	50/50	HSMC
THEORY CUM PRACTICAL							
2	20MA201	Engineering Mathematics II	2/1/2	5	4	40/60	BSC
3	20CH101	Engineering Chemistry	3/0/3	6	4.5	40/60	BSC
4	20EC201	Electron Devices	3/0/3	6	4.5	40/60	ESC
5	20EN101	Technical Communication Skills	2/0/2	4	3	40/60	HSMC
LABORATORY COURSE							
6	20ME111	Engineering Graphics	1/0/3	4	2.5	40/60	ESC
MANDATORY COURSE							
7	20MC102	Mandatory Course II (Environmental Sciences)	2/0/0	2	0	0/100	MC
TOTAL			16/1/13	30	21.5	700	

SEMESTER III							
SL. No.	Course Code	Course	L/T/P	Contact hrs./wk.	C	Ext./Int.	Cat.
THEORY							
1	20EC301	Digital Electronics	3/0/0	3	3	50/50	PCC
2	20EC302	Electronic Circuits	4/0/0	4	4	50/50	PCC
3	20EC303	Electromagnetics	3/0/0	3	3	50/50	PCC
4	20MG301	Principles of Management	2/0/0	2	2	50/50	HSMC
THEORY CUM PRACTICAL							
5	20CS311	Data Structures Using C++	3/0/2	5	4	40/60	ESC
6	20MA301	Engineering Mathematics III	2/1/2	5	4	40/60	BSC
LABORATORY COURSE							
7	20EC305	Digital Electronics Laboratory	0/0/2	2	1	40/60	PCC
8	20EC306	Electronic Circuits Laboratory	0/0/2	2	1	40/60	PCC
MANDATORY COURSE							
9	20MC103	Mandatory Course III –Soft Skills	2/0/0	2	0	0/100	MC
TOTAL			19/1/8	28	22	900	

SEMESTER IV							
SL. No.	Course Code	Course	L/T/P	Contact hrs./wk.	C	Ext./Int.	Cat.
THEORY							
1	20EC401	Analog Integrated Circuits	3/0/0	3	3	50/50	PCC
2	20EC402	Signals and Systems	3/0/0	3	3	50/50	PCC
3	20EE411	Control Engineering	3/0/0	3	3	50/50	ESC
4	20EC403	Analog and Digital Communication	3/0/0	3	3	50/50	PCC
THEORY CUM PRACTICAL							
5	20IT101	Python Programming	3/0/2	5	4	40/60	ESC
6	20MA402	Probability and Random Processes	2/1/2	5	4	40/60	BSC
LABORATORY COURSE							
7	20EC404	Analog Integrated Circuits Laboratory	0/0/2	2	1	40/60	PCC
8	20EC405	Analog and Digital Communication Laboratory	0/0/2	2	1	40/60	PCC
PROJECT							
9	20EC406	Mini Project-I	-	-	1	0/100	PROJ
TOTAL			17/1/8	26	23	900	

SEMESTER V							
SL. No.	Course Code	Course	L/T/P	Contact hrs./wk.	C	Ext./Int.	Cat.
THEORY							
1	20XXXX	Open Elective-1	3/0/0	3	3	50/50	OEC
2	20EC502	Microcontrollers and Interfacing	3/0/0	3	3	50/50	PCC
3	20EC503	Data and Wireless Networks	3/0/0	3	3	50/50	PCC
4	20EC9XX	Professional Elective-1	3/0/0	3	3	50/50	PEC
THEORY CUM PRACTICAL							
5	20EC504	Digital Signal Processing	3/0/2	5	4	40/60	PCC
6	20EC501	VLSI Design	3/0/2	5	4	50/50	PCC
LABORATORY COURSE							
7	20EC505	Microcontrollers Laboratory	0/0/2	2	1	40/60	PCC
PROJECT							
8	20EC507	Mini Project-II	-	-	1	0/100	PROJ
TOTAL			18/0/6	24	22	800	

SEMESTER VI							
SL. No.	Course Code	Course	L/T/P	Contact hrs./wk.	C	Ext./Int.	Cat.
THEORY							
1	20EC9XX	Professional Elective-2	3/0/0	3	3	50/50	PEC
2	20XXXXXX	Emerging Elective-1	3/0/0	3	3	50/50	OEC
3	20EC601	Antennas and Wave Propagation	4/0/0	4	4	50/50	PCC
4	20EC602	Embedded Systems and its Applications	3/0/0	3	3	50/50	PCC
5	20EC9XX	Professional Elective-3	3/0/0	3	3	50/50	PEC
6	20EC603	Fundamentals of Network Security	3/0/0	3	3	50/50	PCC
LABORATORY COURSE							
7	20EC604	Embedded Systems Laboratory	0/0/2	2	1	40/60	PCC
8	20EN601	Business Communication skills Laboratory	1/0/2	3	2	40/60	HSMC
TOTAL			20/0/4	24	22	800	

SEMESTER VII							
SL. No.	Course Code	Course	L/T/P	Contact hrs./wk.	C	Ext./Int.	Cat.
THEORY							
1	20EC9XX	Professional Elective-4	3/0/0	3	3	50/50	PEC
2	20EC9XX	Professional Elective-5	3/0/0	3	3	50/50	PEC
3	20EC9XX	Professional Elective-6	3/0/0	3	3	50/50	PEC
4	20XXXXX	Open Elective-2	3/0/0	3	3	50/50	OEC
5	20XXXXX	Emerging Elective-2	3/0/0	3	3	50/50	OEC
6	20EC701	Microwave and Optical Communication	3/0/0	3	3	50/50	PCC
LABORATORY COURSE							
7	20EC702	Microwave and Optical Communication Laboratory	0/0/2	2	1	40/60	PCC
EMPLOYABILITY ENHANCEMENT SKILLS							
8	20EES01	Employability Enhancement Skills (Summer Internship/Summer Training – 4 weeks)			2	40/60	
TOTAL			18/0/2	20	21	800	

SEMESTER VIII							
SL. No.	Course Code	Course	L/T/P	Contact hrs./wk.	C	Ext./Int.	Cat.
PROJECT							
1.	20EC801	Project Work	0/0/24	24	12	40/60	PROJ
TOTAL			0/0/24	24	12	500	

SCHEME OF CREDIT DISTRIBUTION - SUMMARY

SL. No.	Stream	Credits/Semester								AICTE	C	%
		I	II	III	IV	V	VI	VII	VIII			
1	Humanities (HSMC)		6	2			2			12*	10	6.06
2	Basic Sciences (BSC)	11.5	8.5	4	4					25*	28	16.97
3	Engineering Sciences (ESC)	10	7	4	7					24*	28	16.97
4	Professional Core (PCC)			12	11	15	11	4		48*	53	32.12
5	Professional Electives (PEC)					3	6	9		18*	18	10.91
6	Open Electives/ Emerging Electives (OEC/EEC)					3	3	6		18*	12	7.27
7	Project Work (PROJ)				1	1			12	15*	14	8.49
8	Mandatory Course (MC)									Non-Credit	Non-Credit	
9	Employability Enhancement Skills							2		-	2	1.21
Total		21.5	21.5	22	23	22	22	21	12	160*	165	100

HUMANITIES & SOCIAL SCIENCES INCLUDING MANAGEMENT (10 Credits)

SL. No.	Course Code	Course Title	L/T/P	Contact hrs./Wk.	C	Cat.
1.	20GE201	Universal Human Values	3/0/0	3	3	HSMC
2.	20EN101	Technical Communication Skills	2/0/2	4	3	HSMC
3.	20MG301	Principles of Management	2/0/0	2	2	HSMC
4.	20EN601	Business Communication skills Laboratory	1/0/2	3	2	HSMC

BASIC SCIENCE COURSES (28 Credits)

SL. No.	Course Code	Course Title	L/T/P	Contact hrs./Wk.	C	Cat.
1	20SB101	Engineering Biology	3/0/0	3	3	BSC
2	20MA101	Engineering Mathematics I	2/1/2	5	4	BSC
3	20PH101	Physics for Electronics	3/0/3	6	4.5	BSC
4	20MA201	Engineering Mathematics II	2/1/2	5	4	BSC
5	20CH101	Engineering Chemistry	3/0/3	6	4.5	BSC
6	20MA301	Engineering Mathematics III	2/1/2	5	4	BSC
7	20MA402	Probability and Random Processes	2/1/2	5	4	BSC

ENGINEERING SCIENCE COURSES (28 Credits)

SL. No.	Course Code	Course Title	L/T/P	Contact hrs./Wk.	C	Cat.
1.	20CS111	Problem Solving Using C Programming	3/0/2	5	4	ESC
2.	20EC101	Circuit Theory	3/0/3	6	4.5	ESC
3.	20ME103	Engineering Practices Laboratory	0/0/3	3	1.5	ESC
4.	20EC201	Electron Devices	3/0/3	6	4.5	ESC
5.	20ME111	Engineering Graphics	1/0/3	4	2.5	ESC
6.	20CS311	Data Structures Using C++	3/0/2	5	4	ESC
7.	20EE411	Control Engineering	3/0/0	3	3	ESC
8.	20IT101	Python Programming	3/0/2	5	4	ESC

PROFESSIONAL CORE COURSES (53 Credits)

SL. No.	Course Code	Course Title	L/T/P	Contact hrs./Wk.	C	Cat.
1.	20EC301	Digital Electronics	3/0/0	3	3	PCC
2.	20EC302	Electronic Circuits	4/0/0	4	4	
3.	20EC303	Electromagnetics	3/0/0	3	3	PCC
4.	20EC305	Digital Electronics Laboratory	0/0/2	2	1	PCC
5.	20EC306	Electronic Circuits Laboratory	0/0/2	2	1	PCC
6.	20EC401	Analog Integrated Circuits	3/0/0	3	3	PCC
7.	20EC402	Signals and Systems	3/0/0	3	3	PCC
8.	20EC403	Analog and Digital Communication	3/0/0	3	3	PCC
9.	20EC404	Analog Integrated Circuits Laboratory	0/0/2	2	1	PCC
10.	20EC405	Analog and Digital Communication Laboratory	0/0/2	2	1	PCC
11.	20EC501	VLSI Design	3/0/2	5	4	PCC
12.	20EC502	Microcontrollers and Interfacing	3/0/0	3	3	PCC
13.	20EC503	Data and Wireless Networks	3/0/0	3	3	PCC
14.	20EC504	Digital Signal Processing	3/0/2	5	4	PCC
15.	20EC505	Microcontrollers Laboratory	0/0/2	2	1	PCC
16.	20EC601	Antennas and Wave Propagation	4/0/0	4	4	PCC
17.	20EC602	Embedded Systems and its Applications	3/0/0	3	3	PCC
18.	20EC603	Fundamentals of Network Security	3/0/0	3	3	PCC
19.	20EC604	Embedded Systems Laboratory	0/0/2	2	1	PCC
20.	20EC701	Microwave and Optical Communication	3/0/0	3	3	PCC
21.	20EC702	Microwave and Optical Communication Laboratory	0/0/2	2	1	PCC

PROFESSIONAL ELECTIVE COURSES (18 Credits)

SL. No.	Course Code	Course Title	L/T/P	Contact hrs./Wk.	C	Cat.
Elective Stream I: Embedded Systems & VLSI Design						
1.	20EC901	High Speed Digital Design	3/0/0	3	3	PEC
2.	20EC902	Hardware Description Languages	3/0/0	3	3	PEC
3.	20EC903	ASIC Design	3/0/0	3	3	PEC
4.	20EC904	System on Chip Design	3/0/0	3	3	PEC
5.	20EC905	Electronic Design Automation Tools	3/0/0	3	3	PEC
6.	20EC906	Embedded Processors	3/0/0	3	3	PEC
7.	20EC907	ARM Processor Architecture and Programming	3/0/0	3	3	PEC
8.	20EC908	Internet of Medical Things	3/0/0	3	3	PEC
9.	20EC909	Internet of Things and its Applications	3/0/0	3	3	PEC
Elective Stream II: Communication Engineering						
1	20EC911	Advanced Wireless Technologies	3/0/0	3	3	PEC
2	20EC912	Satellite Communication and GPS	3/0/0	3	3	PEC

3	20EC913	Long Term Evolution Technology	3/0/0	3	3	PEC
4	20EC914	MEMS	3/0/0	3	3	PEC
5	20EC915	Smart Antennas	3/0/0	3	3	PEC
6	20EC916	RF System Design	3/0/0	3	3	PEC
7	20EC917	Cognitive Radio Communication	3/0/0	3	3	PEC
8	20EC918	MIMO and Multi Carrier Systems	3/0/0	3	3	PEC
9	20EC919	Millimeter Wave Communication Systems	3/0/0	3	3	PEC
Elective Stream III – Networks, Image and Video Processing						
1	20EC921	Wireless Sensor Networks	3/0/0	3	3	PEC
2	20EC922	Soft Computing	3/0/0	3	3	PEC
3	20EC923	Digital Image and Video Processing	3/0/0	3	3	PEC
4	20EC924	Convergent Networks	3/0/0	3	3	PEC
5	20EC925	Information Security	3/0/0	3	3	PEC
6	20EC926	Pattern Recognition Techniques	3/0/0	3	3	PEC
7	20EC927	High Speed Networks	3/0/0	3	3	PEC
8	20EC928	Advanced Wireless Networks	3/0/0	3	3	PEC
9	20EC929	Neural Networks and Deep Learning	3/0/0	3	3	PEC

OPEN ELECTIVE COURSES (6 Credits)

(Offered by Other Branches)

SL. No.	Course Code	Course Title	L/T/P	Contact hrs./Wk.	C	Cat.
1.	20CS002	Software Product Development and Management	3/0/0	3	3	OEC
2.	20CS003	Virtual Reality	3/0/0	3	3	OEC
3.	20CS004	Network Security	3/0/0	3	3	OEC
4.	20CS005	Green Computing	3/0/0	3	3	OEC
5.	20CS006	Data Science	3/0/0	3	3	OEC
6.	20CE001	Disaster Management	3/0/0	3	3	OEC
7.	20CE002	Engineering Risk and Uncertainty	3/0/0	3	3	OEC
8	20CE003	Environmental and Social Impact Assessment	3/0/0	3	3	OEC
9	20CE004	Geographical Information System	3/0/0	3	3	OEC
10	20CE005	Industrial Pollution Prevention	3/0/0	3	3	OEC
11	20CE006	Smart Materials and Smart Structures	3/0/0	3	3	OEC
12	20EE001	Power plant Engineering	3/0/0	3	3	OEC
13	20EE002	Energy Auditing, Conservation and Management	3/0/0	3	3	OEC
14	20EE003	Smart Grid	3/0/0	3	3	OEC
15	20EE004	Renewable Energy Sources	3/0/0	3	3	OEC
16	20EE005	Servo and Robot Drives	3/0/0	3	3	OEC
17	20EE006	Special Purpose Machines	3/0/0	3	3	OEC
18	20IT001	Mobile Applications Development using Android	3/0/0	3	3	OEC
19	20IT002	Introduction of Python Programming	3/0/0	3	3	OEC

20	20IT003	JAVA Programming (Fundamentals)	3/0/0	3	3	OEC
21	20IT004	Cloud Virtualization	3/0/0	3	3	OEC
22	20IT005	Database Systems	3/0/0	3	3	OEC
23	20IT006	Cyber Security	3/0/0	3	3	OEC
24	20ME001	Industrial Safety	3/0/0	3	3	OEC
25	20ME002	MEMS/NEMS	3/0/0	3	3	OEC
26	20ME003	Total Quality Management	3/0/0	3	3	OEC
27	20ME004	Product Development	3/0/0	3	3	OEC
28	20ME005	Renewable Energy	3/0/0	3	3	OEC
29	20ME006	Fuel Cell Technology	3/0/0	3	3	OEC
30	20MT001	Reliability Engineering	3/0/0	3	3	OEC
31	20MT002	Vehicle Dynamics	3/0/0	3	3	OEC
32	20MT003	Micro Machining	3/0/0	3	3	OEC
33	20MT004	Field and Service Robotics	3/0/0	3	3	OEC
34	20MT005	Automation System	3/0/0	3	3	OEC
35	20MT006	Robot Design	3/0/0	3	3	OEC

OPEN ELECTIVE COURSES (6 Credits)
(Offered to Other Branches)

SL. No.	Course Code	Course Title	L/T/P	Contact hrs./Wk.	C	Cat.
1.	20EC001	Principles of Cyber Physical Systems	3/0/0	3	3	OEC
2.	20EC002	Introduction to Raspberry Pi and Arduino	3/0/0	3	3	OEC
3.	20EC003	IT Workshop SCILAB/MATLAB	3/0/0	3	3	OEC
4.	20EC004	Brain Computer Interface and its Applications	3/0/0	3	3	OEC
5.	20EC005	Wireless wearable Sensors	3/0/0	3	3	OEC
6.	20EC006	Organizational Behaviour	3/0/0	3	3	OEC

EMERGING ELECTIVE COURSES (6 Credits)

SL. No.	Course Code	Course Title	L/T/P	Contact hrs./Wk.	C	Cat.
1.	20EC007	Fundamentals of Artificial Intelligence	3/0/0	3	3	EEC
2.	20EC008	Machine Learning	3/0/0	3	3	EEC
3.	20EC009	Robotics	3/0/0	3	3	EEC
4.	20EC010	Augmented and Virtual Reality	3/0/0	3	3	EEC
5.	20EC011	Computer Vision	3/0/0	3	3	EEC
6.	20EC012	Bio – inspired Human Machine Interface	3/0/0	3	3	EEC

PROJECT WORK (14 Credits)

SL. No.	Course Code	Course Title	L/T/P	Contact hrs./Wk.	C	Cat.
1.	20EC406	Mini Project-I	-	-	1	PROJ
2.	20EC507	Mini Project-II	-	-	1	PROJ
3.	20EC801	Project Work	0/0/24	24	12	PROJ

MANDATORY COURSES

SL. No.	Course Code	Course Title
1.	20MC101	Mandatory Course I (Induction Programme)
2	20MC102	Mandatory Course II (Environmental Sciences)
3	20MC103	Mandatory Course III –Soft Skills

ONE CREDIT COURSES (Additional Credits)

SL. No.	Course Code	Course Title	Credits
1.	20ECA801	Simulation Program with Integrated Circuit Emphasis	1
2.	20ECA802	PCB design	1
3.	20ECA803	PLC and SCADA	1
4.	20ECA804	CCNA/ CCSP Networking	1
5.	20ECA805	4G Core Network Operations, Administration & Maintenance	1
6.	20ECA806	IPv6 Fundamental & Deployment	1
7.	20ECA807	Advance Mobile communication Technologies	1
8.	20ECA808	Timing issues in Digital Circuits	1
9.	20ECA809	Embedded RTOS design	1
10.	20ECA810	Embedded LINUX/ C	1
11.	20ECA811	System Design	1
12.	20ECA812	Measurement System Analysis	1

SEMESTER WISE CREDIT DISTRIBUTION:-

Semester	I	II	III	IV	V	VI	VII	VIII	Total
Credits	21.5	21.5	22	23	22	22	21	12	165

Total Credits: 165

L: Lecture **T:** Tutorial **P:** Practical **C:** Credit **Cat.:** Category

HSMC : Humanities and Social Sciences including Management

BSC : Basic Science Courses

ESC : Engineering Science Courses

PCC : Professional Core Courses

PEC : Professional Elective Courses

OEC : Open Elective Courses

EEC : Emerging Elective Courses

PROJ : Project Work

MC : Mandatory Course