ADHIYAMAAN COLLEGE OF ENGINEERING

[An Autonomous Institution Affiliated to Anna University, Chennai]
[Accredited by NAAC]
Dr. M.G.R NAGAR, HOSUR, KRISHNAGIRI (DT) – 635 130, TAMILNADU, INDIA

REGULATIONS 2022

CHOICE BASED CREDIT SYSTEM

B.E- ELECTRONICS AND COMMUNICATION ENGINEERING

VISION

To develop well-disciplined and competent engineers who will excel in the field of Electronics and Communication Engineering.

MISSION

- To develop qualified technical personnel with a strong knowledge on basic engineering principles.
- To disseminate Innovative technical skills by fostering excellence in engineering education.
- To promote exemplary professional conduct, to be utilised for the betterment of the society.

The Programme defines Programme Educational Objectives, Programme Outcomes and Programme Specific Outcomes as follows:

I. PROGRAMME EDUCATIONAL OBJECTIVES [PEOs]

PEO 1 Graduates of the programme will demonstrate strong fundamental mathematical concepts, advance techniques & toolsin the field of Electronics and Communication Engineering, eventually motivates them to pursue their higher studies, design and development of innovative, cost-effective products exhibiting a solid foundation to research-oriented methodologies.

PEO 2 Graduates of the programme will be proficient with a successful career in academia and industry for global competitiveness.

PEO 3 Graduates of the programme will exemplify with ethics and moral values, effective communication, Interdisciplinary approach, to solve engineering issues for broader societal benefits which paves way to entrepreneurship and leadership.

II. PROGRAM OUTCOMES [POs]

PO1: An ability to relate the knowledge of mathematics, science and engineering, to practical real-world applications.

PO2: An ability to identify, formulate and solve the engineering problems.

PO3: An ability to produce the efficient system design and components design for various applications.

PO4: An ability to conduct and investigate different experiments for analysis and synthesis purpose.

PO5: Excel in modern Engineering tools, Software's and other equipment's.

PO6: An understanding the Professional responsibility in this technological world.

PO7: An ability to perceive the impact of Professional Engineering Solution in societal and Environmental contexts and demonstrate the knowledge of, and need for sustainable development.

PO8: An ability to apprehend, code of conduct and ethical responsibilities.

PO9: An ability to work on multi-disciplinary task and team work.

PO10: Ability to write and communicate effectively in verbal, written form.

PO11: An understanding of Engineering Economics and Management principles to lead projects effectively.

PO12: An ability to develop confidence for self-education and for life-long learning.

III. PROGRAM SPECIFIC OUTCOMES [PSOs]

PSO1:An ability to apply the knowledge of mathematics, science and electronic fundamentals to find solutions for complex engineering problems in the design and development of systems in Analog and Digital electronics, VLSI Design, Embedded Systems, Communication, Signal Processing and other relevant domains.

PSO2:An ability to solve real world problems with optimal solutions using modern hardware and software tools in the domain of electronics and communication engineering.

PSO3:An ability to grasp the social-cognizance and environmental-wisdom with ethical responsibility to be an entrepreneur in a techno-savvy world by au courant with latest technologies.

MAPPING OF PROGRAMME EDUCATIONAL OBJECTIVES WITH PROGRAMME OUTCOMES AND PROGRAMME SPECIFIC OUTCOMES(PSOs)

PROGRAM EDUCATIONAL OBJECTIVES (PEOs)	PROGRAM OUTCOMES (POs)												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
PEO 1	3	2	3	1	1		1	1				3	3	2	
PEO 2	1	2		3	1	1		1	1	1		1	3		1
PEO 3					2	1	2	3		1	1	1			3

Curricula and Syllabi

of

B.E-Electronics & Communication Engineering

Regulations 2022

Choice Based Credit System

Department of Electronics & Communication Engineering

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TAMILNADU, INDIA

ADHIYAMAAN COLLEGE OF ENGINEERING (AUTONOMOUS), HOSUR

B.E. ELECTRONICS AND COMMUNICATION ENGINEERING
REGULATIONS – 2022
CHOICE BASED CREDIT SYSTEM
I - VIII SEMESTER CURRICULA AND SYLLABI

SEMESTER I

S.NO.	COURSE CODE	COURSE TITLE	CATEGORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
	122IP001	Induction program	-	-	-	-	–	-
THEORY								
1	122ENI01	Professional English-I	HSMC	2	0	2	4	3
2	122MAT02	Matrices and Calculus	BSC	3	1	0	4	4
3	122PHT03	Engineering Physics	BSC	2	0	0	2	2
4	122CYT04	Engineering Chemistry	BSC	2	0	0	2	2
5	122PPT05	Python Programming	ESC	3	0	0	3	3
6	122CMT06	Basic Civil and Mechanical Engineering	ESC	3	0	0	3	3
7	122HST07	Heritage of Tamils*	HSMC/EEC	1	0	0	1	1
PRACTICALS								
8	122PHP08	Engineering Physics Laboratory	BSC	0	0	2	2	1
9	122PPP09	Python Programming Laboratory	ESC	0	0	2	2	1
	Total			16	1	6	23	19

SEMESTER II

S.NO.	COURSE CODE	COURSE TITLE	CATEGORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
THEORY								
1	222ENT01	Professional English -II	HSMC	3	0	2	3	3
2	222MAT02	Probability and Statistics	BSC	3	1	0	4	4
3	222EST03	Environmental Science and Engineering	BSC	2	0	0	2	2
4	222EGT04	Engineering Graphics	ESC	2	0	4	6	4
5	222PET05	Physics for Electronics Engineering	BSC	2	0	0	2	2
6	222EDI06	Electric circuits and Electronic Devices	ESC	3	0	2	5	4
7	222HST07	Tamils & Technology*	HSMC/EEC	1	0	0	1	1
PRACTICALS								
8	222CYP08	Engineering Chemistry Laboratory	BSC	0	0	2	2	1
9	222EPP09	Engineering Practice Laboratory	ESC	0	0	2	2	1
	Total			15	1	12	27	21

SEMESTER III

S.NO.	COURSE CODE	COURSE TITLE	CATEGORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
THEORY								
1	322PRT01	Random Processes and Linear Algebra	BSC	3	1	0	4	4
2	322ECT02	Signals and Systems	PCC	3	0	0	3	3
3	322ECT03	Fundamentals of Data Structures in C	ESC	3	0	0	3	3
4	322ECT04	Analog Electronics – I	PCC	3	0	0	3	3
5	322ECI05	Digital System Design	PCC	3	0	2	5	4
6	322ECT06	Electromagnetic Fields	PCC	3	0	0	3	3
PRACTICALS								
7	322ECP07	Fundamentals of Data Structures in C Laboratory	ESC	0	0	2	2	1
8	322ECP08	Analog Electronics –I	PCC	0	0	2	2	1
9	322GEV01	Professional Development Programme*	EEC	0	0	2	2	1
	Total			18	1	8	27	22

SEMESTER IV

S.NO.	COURSE CODE	COURSE TITLE	CATEGORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
THEORY								
1	422ECT01	Communication Theory	PCC	3	0	0	3	3
2	422ECT02	Electrical Engineering and Instrumentation	ESC	3	0	0	3	3
3	422ECI03	Linear Integrated Circuits	PCC	3	0	2	5	4
4	422ECT04	Analog Electronics -II	PCC	3	0	0	3	3
5	422ECT05	Control Systems Engineering	PCC	3	0	0	3	3
6	422ECT06	Network Essentials & Security	PCC	3	0	0	3	3
PRACTICALS								
7	422ECP07	Computer Networks-I Laboratory	ESC	0	0	2	2	1
8	422ECP08	Analog Electronics-II Laboratory	PCC	0	0	2	2	1
9	422GEV02	Math Solver Software*	EEC	0	0	2	2	1
	Total			18	0	8	26	21

*** The credits earned shall be over and above the total credit requirement prescribed in the curriculum for the award of degree.**

SEMESTER V

S.NO.	COURSE CODE	COURSE TITLE	CATEGORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
THEORY								
1	522ECT01	Digital Signal Processing	PCC	3	0	0	3	3
2	522ECI02	Microprocessors and Microcontrollers	PCC	3	0	2	5	4
3	522ECT03	Digital Communication	PCC	3	0	0	3	3
4	522ECT04	Transmission Lines and Waveguides	PCC	3	0	0	3	3
5	522ECEXX	Professional Elective-I	PEC	3	0	0	3	3
6	522XXOXX	Open Elective-I	OEC	3	0	0	3	3
7	522MCTXX	Mandatory Course – I	MC	2	0	0	2	0
PRACTICALS								
8	522ECP07	Digital Signal Processing Laboratory	PCC	0	0	2	2	1
9	522ECP08	Communication Systems Laboratory	PCC	0	0	2	2	1
10	522ECP09	Internship	EEC	0	0	0	0	2
	Total			20	0	6	26	23

SEMESTER VI

S.NO.	COURSE CODE	COURSE TITLE	CATEGORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
THEORY								
1	622ECI01	Data Communication & Networks	PCC	3	0	2	5	4
2	622ECT02	VLSI Design	PCC	3	0	0	3	3
3	622ECT03	Wireless Communication	PCC	3	0	0	3	3
4	622BAOXX	Elective- Management	HSMC	3	0	0	3	3
5	622ECEXX	Professional Elective-II	PEC	3	0	0	3	3
6	622XXOXX	Open Elective –II	OEC	3	0	0	3	3
7	622MCTXX	Mandatory Course-II	MC	2	0	0	2	0
PRACTICALS								
7	622ECP07	Wireless Communication Laboratory	PCC	0	0	2	2	1
8	622ECP08	VLSI Design Laboratory	PCC	0	0	2	2	1
	Total			20	0	6	26	21

SEMESTER VII

S.NO.	COURSE CODE	COURSE TITLE	CATEGORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
THEORY								
1	722ECT01	Ethics & Human Values	HSMC	3	0	0	3	3
2	722ECI02	Optical and Microwave Engineering	PCC	3	0	2	5	4
3	722ECT03	Embedded Systems Design and IoT	PCC	3	0	0	3	3
4	722XXOXX	Open Elective- III	OEC	3	0	0	3	3
5	722ECEXX	Professional Elective III	PEC	3	0	0	3	3
6	722ECEXX	Professional Elective-IV	PEC	3	0	0	3	3
PRACTICALS								
8	722ECP07	Embedded Systems Design Laboratory	PCC	0	0	2	2	1
9	722ECP08	Professional Readiness for Innovation, Employability & Entrepreneurship development	EEC	0	0	2	2	2
	Total			18	0	6	24	22

SEMESTER VIII

S.NO.	COURSE CODE	COURSE TITLE	CATEGORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
THEORY								
1	822ECEXX	Professional Elective V	PEC	3	0	0	3	3
2	822ECEXX	Professional Elective VI	PEC	3	0	0	3	3
PRACTICALS								
3	822ECP03	Project Work	EEC	0	0	18	18	9
	Total			6	0	18	24	15

List of Mandatory Courses- I

S.NO.	COURSE CODE	COURSE TITLE	CATEGORY	L	T	P	CONTACT PERIODS	C
1	522MCT01	Indian Constitution	MC	3	0	0	3	0
2		Gender Based Courses						
	522MCT02	Gender, Culture and Development	MC	3	0	0	3	0
	522MCT03	Women and Work	MC	3	0	0	3	0
	522MCT04	Introduction to women &Gender studies	MC	3	0	0	3	0
3	522MCT05	Disaster Management	MC	3	0	0	3	0

List of Mandatory Courses- II

S.NO.	COURSE CODE	COURSE TITLE	CATEGORY	L	T	P	CONTACT PERIODS	C
1	622MCT01	Well Being with traditional practices (Yoga, Ayurveda and Siddha)	MC	3	0	0	3	0
2	622MCT02	History of Science and Technology in India	MC	3	0	0	3	0
3	622MCT03	Political and Economic Thought for a Humane Society	MC	3	0	0	3	0
4	622MCT04	State, Nation Building and Politics in India	MC	3	0	0	3	0
5	622MCT05	Industrial Safety	MC	3	0	0	3	0

List of Elective- Management (Semester VI)

S.NO.	COURSE CODE	COURSE TITLE	CATEGORY	L	T	P	CONTACT PERIODS	C
1	622BAO01	Principles of Management	HSMC	3	0	0	3	3
2	622BAO02	Total Quality Management	HSMC	3	0	0	3	3
3	622BAO03	Human Resource Management	HSMC	3	0	0	3	3
4	622BAO04	Knowledge Management	HSMC	3	0	0	3	3
5	622BAO05	Industrial Management	HSMC	3	0	0	3	3
6	622BAO06	Digital Marketing	HSMC	3	0	0	3	3

List of Subjects for Professional Electives

Vertical I Semiconductor Chip Design

S.NO.	COURSE CODE	COURSE NAME	CATEGORY	L	T	P	CONTACT PERIODS	C
1	X22ECE01	Digital System Design using VHDL	PEC	3	0	0	3	3
2	X22ECE02	FPGA Based System Design	PEC	3	0	0	3	3
3	X22ECE03	Mixed Signal (SoC) IC Design	PEC	3	0	0	3	3
4	X22ECE04	ASIC Design	PEC	3	0	0	3	3
5	X22ECE05	CAD for VLSI Circuits	PEC	3	0	0	3	3
6	X22ECE06	Low Power IC Design	PEC	3	0	0	3	3

Vertical II Signal Processing

S.NO.	COURSE CODE	COURSE TITLE	CATEGORY	L	T	P	CONTACT PERIODS	C
1	X22ECE07	Digital Image processing	PEC	3	0	0	3	3
2	X22ECE08	Advanced Digital Signal Processing	PEC	3	0	0	3	3
3	X22ECE09	Speech Signal Processing	PEC	3	0	0	3	3
4	X22ECE10	DSP Architecture and Programming	PEC	3	0	0	3	3
5	X22ECE11	Software Defined Radio	PEC	3	0	0	3	3
6	X22ECE12	VLSI Signal Processing	PEC	3	0	0	3	3

Vertical III RF & Space Technologies

S.NO.	COURSE CODE	COURSE TITLE	CATEGORY	L	T	P	CONTACT PERIODS	C
1	X22ECE13	RF System Design	PEC	3	0	0	3	3
2	X22ECE14	Antenna and Beamforming Design	PEC	3	0	0	3	3
3	X22ECE15	Digital Avionics	PEC	3	0	0	3	3
4	X22ECE16	RF ID System Design & Testing	PEC	3	0	0	3	3
5	X22ECE17	Radar and Navigational Aids	PEC	3	0	0	3	3
6	X22ECE18	Satellite Communication	PEC	3	0	0	3	3

Vertical IV Embedded Systems and IoT Technologies

S.NO.	COURSE CODE	COURSE NAME	CATEGORY	L	T	P	CONTACT PERIODS	C
1	X22ECE19	Advanced Microcontrollers	PEC	3	0	0	3	3
2	X22ECE20	Display Systems	PEC	3	0	0	3	3
3	X22ECE21	Powering IoT using ARDUINO/Raspberry Pi	PEC	3	0	0	3	3
4	X22ECE22	Robotic Process and Industrial Automation	PEC	3	0	0	3	3
5	X22ECE23	Industrial IOT & Industry 4.0	PEC	3	0	0	3	3
6	X22ECE24	ARM System Architecture and Applications	PEC	3	0	0	3	3

Vertical V Electronic Applications and Waste management

S.NO	COURSE CODE	COURSE NAME	CATEGORY	L	T	P	CONTACT PERIODS	C
1	X22ECE25	Industrial Electronics	PEC	3	0	0	3	3
2	X22ECE26	Consumer Electronics	PEC	3	0	0	3	3
3	X22ECE27	Green Electronics	PEC	3	0	0	3	3
4	X22ECE28	Medical Electronics	PEC	3	0	0	3	3
5	X22ECE29	Advanced Electronic System Design	PEC	3	0	0	3	3
6	X22ECE30	e-Waste Management	PEC	3	0	0	3	3

Vertical VI High Speed Communications (Wired & Wireless)

S.NO	COURSE CODE	COURSE NAME	CATEGORY	L	T	P	CONTACT PERIODS	C
1	X22ECE31	MIMO Networks	PEC	3	0	0	3	3
2	X22ECE32	Telecommunication Switching Networks	PEC	3	0	0	3	3
3	X22ECE33	Digital Switching and Transmission	PEC	3	0	0	3	3
4	X22ECE34	Advanced Wireless Communication	PEC	3	0	0	3	3
5	X22ECE35	Next Generation Networks 5G	PEC	3	0	0	3	3
6	X22ECE36	Software Defined Networks	PEC	3	0	0	3	3

Vertical VII Emerging and Disruptive Technologies in Computing

S.NO	COURSE CODE	COURSE NAME	CATEGORY	L	T	P	CONTACT PERIODS	C
1	X22ECE37	Augmented Reality and Virtual reality development	PEC	3	0	0	3	3
2	X22ECE38	Artificial Intelligence	PEC	3	0	0	3	3
3	X22ECE39	Machine Learning with Application to Object Recognition	PEC	3	0	0	3	3
4	X22ECE40	Cybersecurity	PEC	3	0	0	3	3
5	X22ECE41	Block Chain Development	PEC	3	0	0	3	3
6	X22ECE42	Full stack Development	PEC	3	0	0	3	3

Allocation of Credits:

Semester	I	II	III	IV	V	VI	VII	VIII
Credit	19	21	22	21	23	21	22	15
Total	164							

SUMMARY

B.E -ELECTRONICS AND COMMUNICATION ENGINEERING										
S.No	SUBJECT AREA	Credits Per Semester								Credits Total	Weightage
		I	II	III	IV	V	VI	VII	VIII		
1	HSMC	3	3				3	3		12	7.317%
2	BSC	9	9	4						22	13.415%
3	ESC	7	9	4	4					24	14.634%
4	PCC			14	17	15	12	8		66	40.243%
5	PEC					3	3	6	6	18	10.976%
6	OEC					3	3	3		9	5.487%
7	EEC			1*	1*	2		2	9	13	7.927%
8	MC					✓	✓			-	-
	Total	19	21	22	21	23	21	22	15	164	100%

Courses proposed as Open Elective (OE)-For other Department students

S.NO.	COURSE CODE	COURSE NAME	CATEGORY	L	T	P	CONTACT PERIODS	C
1	X22OEC01	Electric circuits and Electronic Devices	OEC	3	0	0	3	3
2	X22OEC02	Signals and Systems	OEC	3	0	0	3	3
3	X22OEC03	Digital System Design	OEC	3	0	0	3	3
4	X22OEC04	Industrial Electronics	OEC	3	0	0	3	3
5	X22OEC05	Consumer Electronics	OEC	3	0	0	3	3
6	X22OEC06	Green Electronics	OEC	3	0	0	3	3
7	X22OEC07	Communication Theory	OEC	3	0	0	3	3
8	X22OEC08	Digital Avionics	OEC	3	0	0	3	3
9	X22OEC09	Digital Signal Processing	OEC	3	0	0	3	3
10	X22OEC10	Microprocessor and Microcontrollers	OEC	3	0	0	3	3
11	X22OEC11	Digital Communication	OEC	3	0	0	3	3
12	X22OEC12	VLSI Design	OEC	3	0	0	3	3
13	X22OEC13	Embedded Systems Design and IoT	OEC	3	0	0	3	3
14	X22OEC14	Satellite Communication	OEC	3	0	0	3	3

PROFESSIONAL ELECTIVE COURSES: VERTICALS

Sl. No.	Vertical I Semiconductor Chip Design	Vertical II SignalProcessing	Vertical III RF& Space Technologies	Vertical IV Embedded Systems and IoT Technologies	Vertical V Electronic Applications and Waste management	Vertical VI High Speed Communications (Wired & Wireless)	Vertical VII Emerging and Disruptive Technologies in Computing
1	Digital System Design using VHDL	Digital Image processing	RF System Design	Advanced Microcontrollers	Industrial Electronics	MIMO Networks	Augmented Reality and Virtual reality development
2	FPGA Based System Design	Advanced Digital Signal Processing	Antenna and Beamforming Design	Display Systems	Consumer Electronics	Telecommunication SwitchingNetworks	Artificial Intelligence
3	Mixed Signal (SoC) IC Design	Speech Signal Processing	Digital Avionics	Powering IoT using ARDUINO/Raspberry Pi	Green Electronics	Digital Switching and Transmission	Machine Learning with Application to Object Recognition
4	ASIC Design	DSP Architecture and Programming	RF ID System Design & Testing	Robotic Process and Industrial Automation	Medical Electronics	Advanced Wireless Communication	Cybersecurity
5	CAD for VLSI Circuits	Software Defined Radio	Radar and Navigational Aids	Industrial IOT & Industry 4.0	Advanced Electronic System Design	Next Generation Networks 5G	Block Chain Development
6	Low Power IC Design	VLSI Signal Processing	Satellite Communication	ARM System Architecture and applications	e-Waste Management	Software Defined Networks	Full stack Development

Registration of Professional Elective Courses from Verticals:

Professional Elective Courses will be registered in Semesters V,VI, VII and VIII. These courses are listed in groups called verticals that represent a particular area of specialisation / diversified group. Students are permitted to choose all the Professional Electives from a particular vertical or from different verticals.

VERTICALS FOR MINOR DEGREE

(In addition to all the verticals of other programmes)

Vertical I Fintech andBlock Chain	Vertical II Entrepreneurship	Vertical III Public Administration	Vertical IV Business DataAnalytics	Vertical V Environmental andSustainability
Financial Management	Foundations of Entrepreneurship	Principles of Public Administration	Statistics for Management	Sustainable infrastructure Development
Fundamentals of Investment	Team Building &Leadership Management for Business	Constitution of India	Datamining for Business Intelligence	Sustainable Agriculture andEnvironmental Management
Banking, Financial Services andInsurance	Creativity & Innovation in Entrepreneurship	Public Personnel Administration	Human Resource Analytics	Sustainable BioMaterials
Introduction to Blockchain andits Applications	Principles of Marketing Management For Business	AdministrativeTheories	Marketing andSocial Media Web Analytics	Materials for Energy Sustainability
Fintech PersonalFinance and Payments	Human Resource Management for Entrepreneurs	Indian AdministrativeSystem	Operation andSupply Chain Analytics	Green Technology
Introduction toFintech	Financing New Business Ventures	Public Policy Administration	Financial Analytics	Environmental Quality Monitoring and Analysis
-	-	-	-	Integrated EnergyPlanning for Sustainable Development
-	-	-	-	Energy Efficiency for Sustainable Development

ENROLLMENT FOR B.E. / B. TECH. (HONOURS) / MINOR DEGREE (OPTIONAL)

- A student can also optionally register for additional courses (18 credits) and become eligible for the award of B.E. / B. Tech. (Honours) or Minor Degree.
- For B.E. / B. Tech. (Honours), a student shall register for the additional courses (18 credits) from semester V onwards. These courses shall be from the same vertical or a combination of different verticals of the same programme of study only.
- For minor degree, a student shall register for the additional courses (18 credits) from semester V onwards. All these courses have to be in a particular vertical from any one of the other programmes, Moreover, for minor degree the student can register for courses from any one of the following verticals also.