



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

REGULATION 2022

CHOICE BASED CREDIT SYSTEM

B.E - ELECTRICAL AND ELECTRONICS ENGINEERING

VISION

To produce competent Electrical and Electronics Engineers by imparting effective teaching and learning processes to meet the rapidly changing technical scenario.

MISSION

- To produce exemplary Electrical Engineers with sound knowledge on fundamentals.
- To inculcate the students with innovative technical skills, entrepreneurial expertise and research capabilities.
- To promote leadership qualities and ethical attitude.

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

I. PROGRAMME EDUCATIONAL OBJECTIVES [PEOs]

- PEO 1:** Graduates will excel in their careers and higher studies by learning the Engineering fundamentals with more emphasis in Electrical and Electronics Engineering
- PEO 2:** Graduates will work in multidisciplinary teams with essential engineering expertise and with an ethical attitude.
- PEO 3:** Graduates will enhance their knowledge through lifelong learning to transform engineering solutions into a broader social context.

II. PROGRAMME OUTCOMES [POs]

- PO1: Engineering Knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
- PO2: Problem Analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- PO3: Design/Development of Solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
- PO4: Conduct Investigations of Complex Problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
- PO5: Modern Tool Usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
- PO6: The Engineer and Society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
- PO7: Environment and Sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- PO8: Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- PO9: Individual and Team Work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- PO10: Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
- PO11: Project Management and Finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
- PO12: Life-long Learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

III. PROGRAM SPECIFIC OUTCOMES [PSOs]

PSO1: Skilled Professional in Electrical & Electronic Systems

Ability to identify, formulate and solve real time problems by applying the knowledge acquired during the course of the program.

PSO2: Problem Solving Skills:

Ability to understand the recent technological developments in Electrical & Electronics Engineering and to develop products/software to cater the societal & Industrial needs.

PSO3: Successful Career:

Ability to utilize the modern technologies in building innovative career paths for being a thriving entrepreneur and to have a zest for higher studies.

Correlation of PEOs with POs and PSOs

Program Educational Objectives (PEOs)	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
PEO I	3	2	3	3	3		2				2	3	3	3	3
PEO II	2	3	3	3	3	2	3		2	3	1	2	2	2	3
PEO III						3	2	3	3	3	3	3			3

ADHIYAMAAN COLLEGE OF ENGINEERING - HOSUR
(An Autonomous institute affiliated to Anna University, Chennai)
Regulation-2022 (CBCS)
B.E- ELECTRICAL AND ELECTRONICS ENGINEERING
CURRICULUM FOR SEMESTER-I

S. No	CAT	COURSE CODE	COURSE TITLE	L	T	P	C	MARKS		
								CA	EA	TOT
		122IP001	Induction Programme	-	-	-	-	-	-	-
THEORY										
1	HS MC	122ENI01	Professional English-I	2	0	2	3	50	50	100
2	BS	122MAT02	Matrices and Calculus	3	1	0	4	40	60	100
3	BS	122PHT03	Engineering Physics	2	0	0	2	40	60	100
4	BS	122CYT04	Engineering Chemistry	2	0	0	2	40	60	100
5	ES	122PPT05	Problem Solving and Python Programming	3	0	0	3	40	60	100
6	ES	122CMT06	Basic Civil and Mechanical Engineering	3	0	0	3	40	60	100
7	VAC	112HST07	Heritage of Tamils	1	0	0	0	40	60	100
PRACTICALS										
8	BS	122PHP08	Engineering Physics Laboratory	0	0	2	1	60	40	100
9	ES	122PPP09	Problem Solving and Python Programming Laboratory	0	0	2	1	60	40	100
			TOTAL MANDATORY CREDITS				19			

CURRICULUM FOR SEMESTER-II

S. No	CAT	COURSE CODE	COURSE TITLE	L	T	P	C	MARKS		
								CA	EA	TOT
THEORY										
1	HS MC	222ENI01	Professional English-II	2	0	2	3	50	50	100
2	BS	222MAT02	Probability and Statistics	3	1	0	4	40	60	100
3	BS	222EST03	Environmental Sciences and Sustainability	2	0	0	2	40	60	100
4	ES	222EGT04	Engineering Graphics	2	0	4	4	40	60	100
5	BS	222PET05	Physics for Electronics Engineering	2	0	0	2	40	60	100

6	ES	222CAI06	Electric Circuit Analysis	3	0	2	4	50	50	100
7	VAC	222HST07	Tamils and Technologies	1	0	0	0	40	60	100
PRACTICALS										
8	BS	222CYP01	Engineering Chemistry Laboratory	0	0	2	1	60	40	100
9	ES	222EPP02	Engineering Practice Laboratory	0	0	2	1	60	40	100
TOTAL MANDATORY CREDITS							21			

CURRICULUM FOR SEMESTER-III

S. No	CAT	COURSE CODE	COURSE TITLE	L	T	P	C	MARKS		
								CA	EA	TOT
THEORY										
1	BS	322MAT01	Transforms and Partial Differential Equations	3	1	0	4	40	60	100
2	PC	322EET02	Electromagnetic Theory	3	0	0	3	40	60	100
3	PC	322EET03	Energy Storage Systems	2	0	0	2	40	60	100
4	PC	322EET04	Electron Devices and Circuits	3	0	2	4	40	60	100
5	PC	322EEI05	Measurements and Instrumentation	3	0	0	3	50	50	100
6	PC	322CST04	C Programming and Data Structures	3	0	0	3	40	60	100
PRACTICALS										
7	PC	322EEP07	Electron Devices and Circuits Laboratory	0	0	2	1	60	40	100
8	PC	322CSP07	C Programming and Data Structures Laboratory	0	0	2	1	60	40	100
9	EEC	322GEV01	Professional Development Course	0	0	2	0	100		100
TOTAL MANDATORY CREDITS							21			

CURRICULUM FOR IV SEMESTER

S. No	CAT	COURSE CODE	COURSE TITLE	L	T	P	C	MARKS		
								CA	EA	TOT
THEORY										
1	BS	422NMT01	Numerical Methods	3	1	0	4	40	60	100
2	PC	422EEI02	Control Systems	3	0	2	4	50	50	100
3	PC	422EET03	Transmission and Distribution	3	0	0	3	40	60	100
4	PC	422EET04	Linear Integrated Circuits and Applications	3	0	0	3	40	60	100

5	PC	422EET05	DC Machines and Transformers	3	0	0	3	40	60	100
6	PC	422EET06	IOT for Electrical Engineers	3	0	0	3	40	60	100
PRACTICALS										
7	PC	422EEP07	Linear Integrated Circuits Laboratory	0	0	2	1	60	40	100
8	PC	422EEP08	DC Machines and Transformers Laboratory	0	0	2	1	60	40	100
9	EEC	422VAP02	Math Solvers	0	0	2	0	100		100
			TOTAL MANDATORY CREDITS				22			

CURRICULUM FOR V SEMESTER

S. No	CAT	COURSE CODE	COURSE TITLE	L	T	P	C	MARKS		
								CA	EA	TOT
THEORY										
1	PC	522EET01	Microprocessors and Microcontrollers	3	0	0	3	40	60	100
2	PC	522EEI02	Synchronous and Asynchronous Machines	3	0	2	4	50	50	100
3	PC	522EET03	Protection and Switchgear	3	0	0	3	40	60	100
4	PC	522EET04	Digital Logic Design	3	0	0	3	40	60	100
5	PE	522EEEXX	PROFESSIONAL ELECTIVE – I	3	0	0	3	40	60	100
6	OE	522OEEXX	OPEN ELECTIVE – I	3	0	0	3	40	60	100
7	MC	522MCTXX	MANDATORY COURSE – I	1	0	0	0	100		100
PRACTICALS										
8	EEC	522EEP08	Microprocessors and Microcontrollers Laboratory (MOU with Industry)	0	0	2	1	60	40	100
9	PC	522EEP09	Digital Logic Design Laboratory	0	0	2	1	60	40	100
10			Internship	0	0	4	2*			
			TOTAL MANDATORY CREDITS				23			

MANDATORY COURSE-I

S.No	Course Code	Course Title	Category	L	T	P	C
1	522MCT01	Introduction to Women and Gender studies	MC	1	0	0	0
2	522MCT02	Elements of Literature	MC	1	0	0	0
3	522MCT03	Industrial Safety	MC	1	0	0	0
4	522MCT04	Film Appreciation	MC	1	0	0	0

CURRICULUM FOR VI SEMESTER

S. No	CAT	COURSE CODE	COURSE TITLE	L	T	P	C	MARKS		
								CA	EA	TOT
THEORY										
1	PC	622EET01	Power Electronics	3	0	0	3	40	60	100
2	PC	622EET02	Power System Analysis and Stability	3	0	0	3	40	60	100
3	PC	622EEI03	Embedded System Design Board Development and Debug	3	0	2	4	50	50	100
4	PE	622EEEXX	PROFESSIONAL ELECTIVE-II	3	0	0	3	40	60	100
5	PE	622EEEXX	PROFESSIONAL ELECTIVE-III	3	0	0	3	40	60	100
6	OE	622XXOXX	OPEN ELECTIVE-II	3	0	0	3	40	60	100
7	EEC	622EETXX	VALUE ADDED COURSE	1	0	0	0			
PRACTICALS										
8	EEC	622EEP08	Power Electronics (MOU with Industry)	0	0	2	1	60	40	100
9	PC	622EEP09	Electronic System Design Laboratory	0	0	2	1	60	40	100
			TOTAL MANDATORY CREDITS				21			

CURRICULUM FOR VII SEMESTER

S. No	CAT	COURSE CODE	COURSE TITLE	L	T	P	C	MARKS		
								CA	EA	TOT
THEORY										
1	PC	722EET01	Power System Operation and Control	3	0	0	3	40	60	100
2	PC	722EEI02	Electric Drives and Control	3	0	2	4	50	50	100
3	PC	722EET03	Smart Grid	3	0	0	3	40	60	100
4	PE	722EEEXX	PROFESSIONAL ELECTIVE-IV	3	0	0	3	40	60	100
5	PE	722EEEXX	PROFESSIONAL ELECTIVE-V	3	0	0	3	40	60	100
6	HS MC	722BAOXX	MANAGEMENT ELECTIVE	3	0	0	3	40	60	100
7	MC	722MCTXX	MANDATORY COURSE – II	1	0	0	0			
PRACTICALS										
8	PC	722EEP07	Power System Simulation Laboratory	0	0	2	1	60	40	100
9	EEC	722EEP08	Mini Project Work (MOU with Industry)	0	0	4	2	60	40	100
			TOTAL MANDATORY CREDITS				22			

MANAGEMENT ELECTIVE

S.No	Course Code	Course Title	Category	L	T	P	C
1	722BAO01	Digital Marketing	ME	3	0	0	3
2	722BAO02	Total Quality Management	ME	3	0	0	3
3	722BAO03	Engineering Economics and Financial Accounting	ME	3	0	0	3
4	722BAO04	Human Resource Management	ME	3	0	0	3
5	722BAO05	Knowledge Management	ME	3	0	0	3
6	722BAO06	Industrial Management	ME	3	0	0	3

MANDATORY COURSE-II

S.No	Course Code	Course Title	Category	L	T	P	C
1	722MCT01	Disaster Management	MC	1	0	0	0
2	722MCT02	Well Being with Traditional Practices (Yoga, Ayurveda and Siddha)	MC	1	0	0	0
3	722MCT03	History of Science and Technology in India	MC	1	0	0	0
4	722MCT04	Political and Economic Thought for a Humane Society	MC	1	0	0	0
5	722MCT05	State, Nation Building and Politics in India	MC	1	0	0	0

CURRICULUM FOR VIII SEMESTER

S. No	CAT	COURSE CODE	COURSE TITLE	L	T	P	C	MARKS		
								CA	EA	TOT
THEORY										
1	PE	822EEEXX	PROFESSIONAL ELECTIVE-VI	3	0	0	3	40	60	100
2	PE	822EEEXX	PROFESSIONAL ELECTIVE-VII	3	0	0	3	40	60	100
PRACTICALS										
8	EEC	822EEP04	Project Work	0	0	18	9	60	40	100
			TOTAL MANDATORY CREDITS				15			

PROFESSIONAL ELECTIVE COURSES: VERTICALS

Professional Elective	Vertical I Power Engineering	Vertical II Converters and Drives	Vertical III Electric Vehicle Technology	Vertical IV Emerging Technology	Vertical V Embedded Systems	Vertical VI (Diversified Courses)
1.	Utilization and Conservation of Electrical Energy	Special Electrical Machines	Automotive Instrumentation and Control	Machine Learning with Application to Object Recognition	Embedded C Programming	Introduction to Innovation and Entrepreneurship
2.	Under Ground Cable Engineering	Analysis of Electrical Machines	Electric Vehicle Architecture	AR/VR	Embedded System Design and Applications	Hybrid Energy Technology
3.	HVDC and FACTS	Multilevel Power Converters	Design of Motor and Power Converters for Electric Vehicles	Industry 4.0	Embedded System for Industrial Applications	Design and Modelling Of Renewable Energy Systems
4.	Energy Management and Auditing	SMPS and UPS	Electric Vehicle Charging	Blockchain Development	Embedded Processors	Big Data Analytics
5.	Power Quality Management	Power Electronics for Renewable Energy Systems	Design of Electric Vehicle Charging System	Design of Photo Voltaic System	VLSI Design	Artificial Intelligence
6.	Restructured Power Market	Control of Power Electronics Circuits	Testing of Electric Vehicles	Robotic Process and Industrial Automation	MEMS and NEMS	PLC Programming
7.	EHVAC Power Transmission	Analysis of Power Converters	Intelligent control of Electric Vehicles.	Grid Integration Techniques and Challenges	Digital Signal Processing System	Cyber Security

Registration of Professional Elective Courses from Verticals:

Professional Elective Courses will be registered in Semester V, VI, VII and VIII. These courses are listed in groups called verticals that represent a particular area of specialization / diversified group.

Students are permitted to choose all the Professional Electives from a particular vertical or from different verticals. Further, only one Professional Elective course shall be chosen in a semester horizontally (row-wise).

However, two courses are permitted from the same row, If they are enrolled in different semesters.

PROFESSIONAL ELECTIVE COURSES: VERTICALS

VERTICAL I: POWER ENGINEERING

S. No	CAT	COURSE CODE	COURSE TITLE	L	T	P	C	MARKS		
								CA	EA	TOT
THEORY										
1	PE	X22EEE01	Utilization and Conservation of Electrical Energy	3	0	0	3	40	60	100
2	PE	X22EEE02	Under Ground Cable Engineering	3	0	0	3	40	60	100
3	PE	X22EEE03	HVDC and FACTS	3	0	0	3	40	60	100
4	PE	X22EEE04	Energy Management and Auditing	3	0	0	3	40	60	100
5	PE	X22EEE05	Power Quality Management	3	0	0	3	40	60	100
6	PE	X22EEE06	Restructured Power Market	3	0	0	3	40	60	100
7	PE	X22EEE07	EHVAC Power Transmission	3	0	0	3	40	60	100

VERTICAL II: CONVERTERS AND DRIVES

S. No	CAT	COURSE CODE	COURSE TITLE	L	T	P	C	MARKS		
								CA	EA	TOT
THEORY										
1	PE	X22EEE08	Special ElectricalMachines	3	0	0	3	40	60	100
2	PE	X22EEE09	Analysis of ElectricalMachines	3	0	0	3	40	60	100
3	PE	X22EEE10	Multilevel PowerConverters	3	0	0	3	40	60	100
4	PE	X22EEE11	SMPS and UPS	3	0	0	3	40	60	100
5	PE	X22EEE12	Power Electronics for Renewable Energy Systems	3	0	0	3	40	60	100
6	PE	X22EEE13	Control of Power Electronics Circuits	3	0	0	3	40	60	100
7	PE	X22EEE14	Analysis of Power Converters	3	0	0	3	40	60	100

VERTICAL III - ELECTRIC VEHICLE TECHNOLOGY

S. No	CAT	COURSE CODE	COURSE TITLE	L	T	P	C	MARKS		
								CA	EA	TOT
THEORY										
1	PE	X22EEE15	Automotive Instrumentation and Control	3	0	0	3	40	60	100
2	PE	X22EEE16	Electric VehicleArchitecture	3	0	0	3	40	60	100
3	PE	X22EEE17	Design of Motor and Power Converters for Electric Vehicles	3	0	0	3	40	60	100
4	PE	X22EEE18	Electric Vehicle Charging	3	0	0	3	40	60	100
5	PE	X22EEE19	Design of Electric Vehicle Charging System	3	0	0	3	40	60	100
6	PE	X22EEE20	Testing of ElectricVehicles	3	0	0	3	40	60	100
7	PE	X22EEE21	Intelligent control of Electric Vehicles.	3	0	0	3	40	60	100

VERTICAL IV - EMERGING TECHNOLOGY

S. No	CAT	COURSE CODE	COURSE TITLE	L	T	P	C	MARKS		
								CA	EA	TOT
THEORY										
1	PE	X22EEE22	Machine Learning with Application to Object Recognition	3	0	0	3	40	60	100
2	PE	X22EEE23	AR/VR	3	0	0	3	40	60	100
3	PE	X22EEE24	Industry 4.0	3	0	0	3	40	60	100
4	PE	X22EEE25	Black Chain Development	3	0	0	3	40	60	100
5	PE	X22EEE26	Design of Photo Voltaic System	3	0	0	3	40	60	100
6	PE	X22EEE27	Robotic Process and Industrial Automation	3	0	0	3	40	60	100
7	PE	X22EEE28	Grid Integration Techniques and Challenges	3	0	0	3	40	60	100

VERTICAL V - EMBEDDED SYSTEMS

S. No	CAT	COURSE CODE	COURSE TITLE	L	T	P	C	MARKS		
								CA	EA	TOT
THEORY										
1	PE	X22EEE29	Embedded C Programming	3	0	0	3	40	60	100
2	PE	X22EEE30	Embedded System Design and Applications	3	0	0	3	40	60	100
3	PE	X22EEE31	Embedded System for Industrial Applications	3	0	0	3	40	60	100
4	PE	X22EEE32	Embedded Processors	3	0	0	3	40	60	100
5	PE	X22EEE33	VLSI Design	3	0	0	3	40	60	100
6	PE	X22EEE34	MEMS and NEMS	3	0	0	3	40	60	100
7	PE	X22EEE35	Digital Signal Processing System	3	0	0	3	40	60	100

VERTICAL VI – DIVERSIFIED COURSES

S. No	CAT	COURSE CODE	COURSE TITLE	L	T	P	C	MARKS		
								CA	EA	TOT
THEORY										
1	PE	X22EEE36	Innovation, IPR and Entrepreneurship Development	3	0	0	3	40	60	100
2	PE	X22EEE37	Hybrid EnergyTechnology	3	0	0	3	40	60	100
3	PE	X22EEE38	Design and Modelling Of Renewable Energy Systems	3	0	0	3	40	60	100
4	PE	X22EEE39	Big Data Analytics	3	0	0	3	40	60	100
5	PE	X22EEE40	Artificial Intelligence	3	0	0	3	40	60	100
6	PE	X22EEE41	PLC Programming	3	0	0	3	40	60	100
7	PE	X22EEE42	Cyber Security	3	0	0	3	40	60	100

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

*If a student takes Internship during his/her IV Semester Vacation, 2 credits will be added in V semester.

If a student takes Internship during his/her VI Semester Vacation, 2 credits will be added in VII semester.

CREDIT DISTRIBUTION

SL.No.	Subject Area	Credits as per semester								Credits Total
		I	II	III	IV	V	VI	VII	VIII	
1	HSMC	3	3	-	-	-	-	3	-	09
2	BS	9	9	4	4	-	-	-	-	26
3	ES	7	9	-	-	-	-	-	-	16
4	PC	-	-	17	18	14	11	11	-	71
5	PE	-	-	-	-	3	6	6	6	21
6	OE	-	-	-	-	3	3	-	-	06
7	EEC	-	-	0	0	1	1	2	9	13
8	MC	-	-	-	-	0	-	0	-	0
9	VAC	0	0	-	-	-	-	-	-	-
10	INTERNSHIP					2*				02
	Total	19	21	21	22	23*	21	22*	15	164

HSMC-Humanity Science & Management Course **OE-Open Elective**
BS-Basic Science **EEC-Employability Enhancement Course**
ES-Engineering Science **MC- Mandatory Course**
PC- Professional Core **PE- Professional Elective**
VAC- Value Added Course



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Department of Electrical and Electronics Engineering

SUSTAINABLE DEVELOPMENT GOALS

The Sustainable Development Goals are the blueprint to achieve a better and more sustainable future for all. They address the global challenges we face, including those related to poverty, inequality, climate change, environmental degradation, peace and justice.

SDG		Description
SDG 1	No Poverty	End poverty in all its forms everywhere
SDG 2	Zero Hunger	End hunger, achieve food security and improved nutrition, and promote sustainable agriculture
SDG 3	Good health and well Being	Ensure healthy lives and promote well-being for all at all Ages
SDG 4	Quality education	Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all
SDG 5	Gender Equality	Achieve gender equality and empower all women and girls
SDG 6	Clean water and Sanitation	Ensure availability and sustainable management of water and sanitation for all
SDG 7	Affordable and clean Energy	Ensure access to affordable, reliable, sustainable and modern energy for all
SDG 8	Decent work and Economic Growth	Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all
SDG 9	Industry, Innovation and Infrastructure	Build resilient infrastructure, promote inclusive and sustainable industrialization, and foster innovation
SDG 10	Reducing Inequality	Reduce income inequality within and among countries
SDG 11	Sustainable cities and communities	Make cities and human settlements inclusive, safe, resilient, and sustainable
SDG 12	Responsible consumption and production	Ensure sustainable consumption and production patterns
SDG 13	Climate action	Take urgent action to combat climate change and its impacts by regulating emissions and promoting developments in renewable energy
SDG 14	Life below water	Conserve and sustainably use the oceans, seas and marine resources for sustainable development
SDG 15	Life on Land	Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss
SDG 16	Peace, justice and string Institutions	Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels
SDG 17	Partnerships for the goals	Strengthen the means of implementation and revitalize the global partnership for sustainable development

