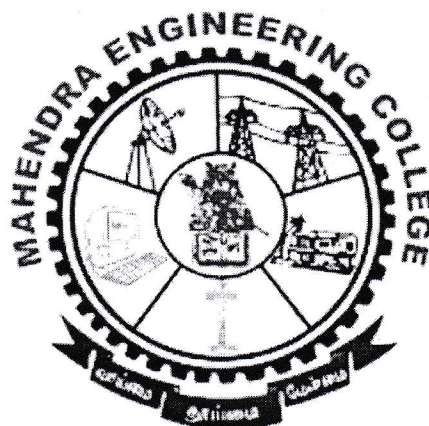# MAHENDRA ENGINEERING COLLEGE

(An Autonomous Institution, affiliated to Anna University Chennai and Accredited by NAAC with 'A' Grade & NBA Tier-I (WA) UG : CSE, ECE, EEE) Namakkal-637503, Tamilnadu
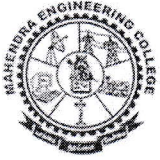
10th Board of Studies Meeting

Minutes of the Meeting

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING
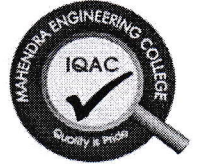
12.04.2023

MAHENDRA ENGINEERING COLLEGE

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Mahendhirapuri, Mallasamudram, Namakkal Dt. - 637 503.

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

MINUTES OF MEETING of BOARD OF STUDIES

Date: 12.04.2023

The **10th Board of Studies meeting** for B.E. Electrical and Electronics Engineering and M.E. Control Systems was held on 12.04.2023 at 10:30 a.m. in EEE Seminar Hall.

Agenda of the Meeting:

i) To discuss and approve the changes in Curriculum Structure in Regulations 2022 for B.E. Electrical and Electronics Engineering.

ii) To discuss and approve the Syllabi (5th to 8th Semesters) of Regulations 2022 for B.E. Electrical and Electronics Engineering keeping in view of the PEOs, POs and interest of the stakeholders and national requirement.

iii) To discuss and approve any amendment in the existing curriculum and syllabi.

iv) To discuss and approve the panel members identified for appointment of various examination activities.

v) To discuss and approve the changes in Curriculum Structure in Regulations 2022 for M.E. Control Systems.

vi) Any other points with the permission of the Chair

The following Board of Studies members were present:

1. **Dr.R.Uthirasamy**, Head of the Department of Electrical and Electronics Engineering, Mahendra Engineering College - **BoS Chairman**

2. **Dr.A.Vetrivel**, Associate Professor, Department of Electrical and Electronics Engineering, Government Engineering College (IRTT) Erode - **Anna University Nominee**

3. **Dr.Anand Gurupatham**, General Manager, Power train CAE, Renault Nissan Technology& Business Center, Chennai – **Subject Expert**

4. **Dr.C.Sivakumar**, Managing Director, Ensafe Technologies Pvt. Ltd, Salem- **Industry Expert**

5. **Dr.B.Ashok Kumar**, Associate Professor, Department of Electrical and Electronics Engineering, Thiyagarajar College of Engineering, Madurai – **Academic Expert**

6. **Dr.D.Chitra**, Professor, Department of Electronics and Communication Engineering, Mahendra Engineering College, Namakkal – **Member (Allied Department)**

7. **Er.K.Saravana kumar**, Managing Director, Frankinsteins Engineering Laboratories Pvt. Ltd, Tirupur - **(UG Alumnus/Alumna)**

8. **Mr.K.Saravanan**, Student, B.E- Final Year, Department of Electrical and Electronics Engineering, Mahendra Engineering College, Namakkal - **Member (UG Student)**

9. **Dr.R.V.Mahendra Gowda**, Principal, Mahendra Engineering College, Namakkal- **Special Invitee**

10. **Dr.N.Viswanathan**, Controller of Examinations, Mahendra Engineering College, Namakkal-**Special Invitee**

11. **All the Members of Faculty of Electrical and Electronics Engineering**, Mahendra Engineering College, Namakkal

The following points were discussed and approved:

1. The BoS Chairman welcomed all the members of Board of Studies for the meeting.

2. Reviewed and confirmed the Minutes of the previous Board of Studies meeting.

3. Discussed and approved the Fifth to Eighth semester UG programme Curriculum under Regulations 2022. Further it is decided to include the following core courses in the Curriculum: i) Project Design Laboratory, ii) Electrical Measurements and Instrumentation

4. Discussed and approved the Syllabi for Fifth to Eight semester UG programme under Regulations 2022, keeping in view of the AICTE model Curriculum and Syllabi, interest of the stakeholders and College and Department Vision and Mission and National requirement.

5. Discussed and approved the Program Elective courses to be offered to UG programme under Regulations 2022. Further Board recommended to introduce the following new courses as Programme Elective courses.

   - EV Batteries and Charging Systems
   - Data Acquisition and Robotic Control
   - Power System Security
   - EV Standards and Testing
   - EHV AC and DC Transmission
   - Power System Restructuring
   - IoT in EV Applications

6. The Value added courses to be offered to UG Programme under Regulations 2022 were discussed and approved.

   - Design and Simulation of Electrical Systems using MATLAB/SIMULINK
   - LabVIEW Programming for Engineering Applications
   - Design Thinking

7. The following new courses to be offered to award UG (Hons) with Specialization were discussed and approved
   - Sensors and its Applications
   - Advanced Electric Motors and Controllers
   - Hybrid Electric Vehicles
   - Industrial Automation
   - Embedded Networking and Automation of Electrical Systems
   - Data Acquisition and Robotic Control
   - Data Base Management Systems
   - Augmented Reality and Virtual Reality Applications in Engineering
   - IoT System Design and Security
   - Machine Learning
   - Artificial Neural Network and Fuzzy Systems
   - Deep Learning

8. Dr.Anand Gurupatham, Subject Expert suggested to add recent publications of text books and reference books.

The members made the following suggestions to revise the contents of the syllabi:

Power Electronics

- Dr.B.Ashokkumar, Academic Expert suggested that the simulation based assignments can be included in 3rd unit.
- Dr.A.Vetrivel, University Nominee suggested to include triggering circuit for IGBT module.

Control Systems

- Dr.B.Ashokkumar, Academic Expert recommended to include design of PI control in 5th unit
- Dr.A.Vetrivel, University Nominee suggested to introduce the topic of digital control methods. Also, he has suggested to add Lyapunov stability method in 5th unit.

Electrical Measurements and Instrumentation

- Dr.A.Vetrivel, University Nominee suggested that specific bridges can be included instead of all. He also suggested to add Data loggers as a one of the experiment in the lab.
- Dr.B.Ashokkumar, Academic Expert recommended to introduce Sensors and Actuators in 3rd unit.
- Dr.Anand Gurupatham, Subject Expert suggested to add smart sensors which are used in Electric Vehicles.

Power Electronics Laboratory

- Dr.B.Ashokkumar, Academic Expert suggested that the design experiments can be included.
- Dr.A.Vetrivel, University Nominee opined that Matrix converter can be introduced as one experiment.
- Dr.R.V.Mahendra Gowda, Principal, suggested to rewrite the experiments list with detailed description.
- Dr.Anand Gurupatham, Subject Expert suggested that more specific application oriented experiments can be included

Control System Laboratory

- Dr.Anand Gurupatham, Subject Expert opined that simulation of PI and PID controllers can be included.

Transmission and Distribution System

- Dr.A.Vetrivel, University Nominee suggested that SCADA automation can be included. He also suggested to include wireless transmission for Electric Vehicles.
- Dr.Anand Gurupatham, Subject expert suggested to include topics of Vehicle to Grid and Grid to Vehicle.

4

Microcontroller based system Design

- Dr.B.Ashokkumar, Academic Expert suggested that the course name can be renamed as Microprocessors and Microcontrollers
- Dr.A.Vetrivel, University Nominee suggested to include the topics related to Remote Integrated development environment and design aspects in micro controller.

Special Electrical Machines

- Dr.B.Ashokkumar, suggested that the abbreviation of Special Electrical Machines can be represented as full form.
- Dr.Anand Gurupatham, Subject expert suggested to include advanced Electrical Motors used in Electric Vehicles

Project Design Laboratory

- Dr.B.Ashokkumar, suggested that the experiment title can be framed for specific application and he also suggested that number of experiments can be categorized as 3 groups and instruct every student batch to do one experiment from each category.

Power System Operation and Analysis

- Dr.A.Vetrivel, University Nominee opined to include simulation topic for fault analysis in Power system.

Power System Control and Protection

- Dr.B.Ashokkumar, suggested to include the protection mechanism for photovoltaic system.

Solid State Drives

- Dr.A.Vetrivel, University Nominee suggested to include the SVPWM techniques. Also, he opined to include Slip Power Recovery Schemes.

Project Work (Phase-I)

- Dr.R.V.Mahendra Gowda, Principal Mahendra Engineering College suggested that a Project work (Phase-1) can be renamed as Mini-project.

Electrical Safety

- Dr.C.Sivakumar, Industry Expert recommended that passive fire protection can be included.

Design of Electrical Machines

- Dr.Anand Gurupatham, Subject expert and Dr.R.V.Mahendra Gowda, Principal suggested that Design of Electrical Machines course can be shifted to Programme core.

Fundamentals of Electrical and Electronics Engineering

- Dr.B.Ashokkumar, suggested to include Architecture of 8051 in 5th unit

- Dr.R.V.Mahendra Gowda, Principal, Mahendra Engineering College suggested that Fundamentals of Electrical and Electronics Engineering for Mechanical Engineering can be offered in II/III semester instead of I semester students

B.E Hons Vertical I Electric vehicles and Automation

- Dr.Anand Gurupatham, Subject expert recommended to introduce the thermal and energy management topics in Hybrid Electric vehicle course.

B.E Hons Vertical II Artificial Intelligence

- Dr.R.V.Mahendra Gowda, Principal, suggested to replace Database Management system course with Big data analytics
- Dr.Sivakumar, Industry expert suggested to include the topics IoT based double layer protection in IoT system design security course.

9. **Changes/Revision in Curriculum and Syllabus**

The changes/revision in curriculum and syllabi are provided in Annexure I.

10. **New Courses introduced**

The list of new courses introduced is provided in Annexure II.

11. I to IV semester Curriculum and Syllabi of Regulations 2022 for M.E. Control Systems was already approved in the 9th Board of studies. No amendments proposed in the 10th BoS meeting.

12. The meeting was concluded with Vote of Thanks by **Dr.M.Muthuvinayagam, Associate Professor/EEE,** who thanked all the members for their valuable suggestions and support for the successful conduction of the BoS meeting.

Convener 21/04/23

Chairperson 21/04/2023

Principal 21/04/23
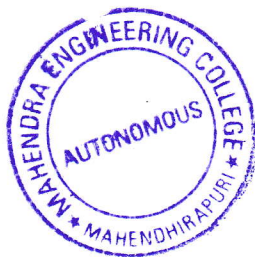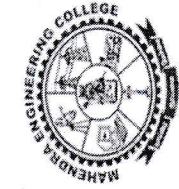
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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Percentage of changes/revision in Syllabi-Regulations-2022 as compared to R-2019

Academic Year -2022-2023

S.No.	Semester	Course Code	Course Name	Lecture	Tutorial	Practical	Credits	Category	Course Type	Changes in contents (No. of Hrs) (X)	Total no. of Hrs (Y)	Changes/ Revision (%) = (X*100/Y)
1	I	22MA12101	Engineering Mathematics I	3	1	0	4	BS	T	12	60	20
2	I	22PY12101	Engineering Physics	3	0	0	3	BS	T	28	45	62
3	I	22CS13001	Problem Solving Techniques Using C	3	0	0	3	ES	T	8	45	17.78
4	I	22EE33101	Basics of Electrical & Electronics Engineering (Integrated Course)	2	0	0	2	ES	T	4	15	26.67
				0	0	2	1	ES	L	2	10	20
5	I	22ME33101	Basics of Civil and Mechanical Engineering (Integrated Course)	3	0	0	3	ES	T	36	36	100
				0	0	2	1	ES	L	24	24	100
6	I		Induction Program	-	-	-	-	MC	T	-	-	-

S.No	Sem	Course Code	Course Name	L	T	P	C	Category	Type			
7	I	22PY12001	Physics Laboratory	0	0	3	1.5	BS	L	1	7	14
8	I	22CS23001	Problem Solving Techniques Using C Laboratory	0	0	3	1.5	ES	L	-	10	-
9	II	22MA12201	Engineering Mathematics –II	3	1	0	4	BS	T	12	60	20
10	II	22CY12001	Chemistry for Engineering	3	0	0	3	BS	T	20	45	44
11	II	22EN11001	Communicative English	3	0	0	3	HS	T	7	45	15.55
	II	22ME33102	Engineering Graphics & Design	3	0	0	3	ES	T	-	24	-
12	II			0	0	2	1		L	6	36	17
13	II	22EE14201	Electric Circuit Analysis	3	0	0	3	PC	T	33	45	73.33
14	II	22CY22001	Chemistry Laboratory	0	0	3	1.5	BS	L	-	12	-
15	II	22EE24201	Electric Circuits Laboratory	0	0	3	1.5	PC	L	4	10	40
16	II	22EN21001	Personality Development Practice	0	0	2	1	HS	L	-	10	-
17	III	22MA12303	Differential Equations and Numerical Methods	3	1	0	4	BS	T	60	60	100
18	III	22EE13301	Analog Electronics	3	1	0	4	PC	T	-	60	-
19	III	22EE14301	Electromagnetic fields	3	0	0	3	PC	T	12	45	26.67
20	III	22EE14302	DC Machines and Transformers	3	0	0	3	PC	T	5	45	11.11
21	III	22CY12001	Environmental Science and Engineering	3	-	-	-	MC	T	5	45	11.11
22	III		Open Elective I	3	0	0	3	OE	T	-	45	-
23	III	22EE23301	Analog Electronics Laboratory	0	0	3	1.5	PC	L	1	10	10
24	III	22EE24301	DC Machines and Transformers laboratory	0	0	3	1.5	PC	L	-	10	-

Sr. No.	Sem.	Course Code	Course Name	L	T	P	Credits	Category	L/T			
25	III	22EE24302	Electrical Winding Practices Laboratory	0	0	3	1.5	PC	L	-	10	-
26	IV	22EE13401	Digital Electronics	3	1	0	4	PC	T	-	45	-
27	IV	22EE14401	Synchronous and Induction Machines	3	0	0	3	PC	T	-	45	-
28	IV	22SH11006	Universal Human Values	3	0	0	3	MC	T	-	45	-
29	IV		Program Elective I	3	0	0	3	PE	T	-	45	-
30	IV		Open Elective II	3	0	0	3	OE	T	-	45	-
31	IV		Open Elective III	3	0	0	3	OE	T	-	45	-
32	IV	22EE23401	Digital Electronics Laboratory	0	0	3	1.5	PC	L	4	10	40
33	IV	22EE24401	Synchronous and Induction Machines Laboratory	0	0	3	1.5	PC	L	-	10	-
34	IV	22EN60001	Professional Communication Skills	0	1	2	2	EEC	L	-	12	-
35	V	22EE14501	Power Electronics	2	1	0	3	PC	T	15	45	33.33
36	V	22EE14502	Control Systems	2	1	0	3	PC	T	5	45	11
37	V	22EE34501	Electrical Measurements and Instrumentation	2	0	0	2	PC	T	3	27	11.11
38	V		Program Elective II	3	0	0	3	PE	T	-	45	-
39	V		Open Elective IV	3	0	0	3	OE	T	-	45	-
40	V		Open Elective V	3	0	0	3	OE	T	-	45	-
41	V	22MC60001	Constitution of India	3	-	-	-	MC	T	-	45	-
42	V	22EE24501	Power Electronics laboratory	0	0	3	1.5	PC	L	-	11	-
43	V	22EE24502	Control Systems Laboratory	0	0	3	1.5	PC	L	1	10	10

No.	Sem	Course Code	Course Title	L	T	P	C	EEC				
44	V	22EN60002	Interview Skills and Soft Skills	0	1	2	2	EEC	L	-	10	-
45	VI	22EE14601	Transmission and Distribution Systems	3	1	0	4	PC	T	18	60	30
46	VI	22EE14602	Microcontroller based System Design	3	0	0	3	PC	T	9	45	20
47	VI	22EE14603	Special Electrical Machines	3	0	0	3	PC	T	-	45	-
48	VI		Managerial Skills and Quality Management	3	0	0	3	HS	T	-	45	-
49	VI		Program Elective III	3	0	0	3	PE	T	-	45	-
50	VI		Open Elective VI	3	0	0	3	OE	T	-	45	-
51	VI	22EE24601	Microcontroller Laboratory	0	0	3	1.5	PC	L	2	10	20
52	VI	22EE24602	Special Electrical Machines Laboratory	0	0	3	1.5	PC	L	4	10	40
53	VI	22EE24603	Project Design Laboratory	0	0	3	1.5	PC	L	4	8	50
54	VII	22EE14701	Power System Operation and Analysis	3	1	0	4	PC	T	-	60	-
55	VII	22EE14702	Power Systems Control and Protection	3	0	0	3	PC	T	-	45	-
56	VII	22EE14703	Embedded Systems	3	0	0	3	PC	T	5	45	11.11
57	VII	22EE14704	Solid State Drives	3	0	0	3	PC	T	5	45	11.11
58	VII		Program Elective IV	3	0	0	3	PE	T	-	45	-
59	VII	22EE24701	Power System Simulation Laboratory	0	0	3	1.5	PC	L	3	12	25
60	VII	22EE24702	Embedded Systems Laboratory	0	0	3	1.5	PC	L	-	10	-
61	VII	22EE36701	Mini Project	0	0	6	3	EEC	P	-	90	-
62	VIII		Program Elective V	3	0	0	3	PE	T	-	45	-

| 63 | VIII | Program Elective VI | 3 | 0 | 3 | PE | T | - | 45 | - |
| 64 | VIII | Project Work | 0 | 0 | 6 | EEC | P | - | 180 | - |

Total No. of credits: 165

Changes/Revision in Theory course (%)	22.17
Changes/Revision in Laboratory course (%)	20.89

Semester	I	II	III	IV	V	VI	VII	VIII	Total
Change/Revision in contents (No. of Hours) (X)	115	82	83	4	24	37	13	0	358
Total no. of hours (Y)	252	287	285	167	199	223	307	180	1900
Changes/Revision (%) = (X*100/Y)	45.63	28.57	29.12	2.4	12.06	16.6	4.23	-	18.84

HoD-EEE

'T' - Theory Course, ' L' - Laboratory Course, 'P' - Internship/Project work
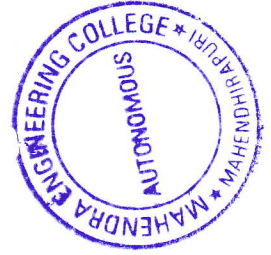
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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

List of New Courses

Academic Year -2022-2023

S.No.	Semester	Course Code	Course Name	Lecture	Tutorial	Practical	Credits	Category
1	VI	22EE24603	Project Design Laboratory	0	0	3	1.5	PC
2		22EE15007	EV Batteries and Charging Systems	3	0	0	3	PE
3		22EE15009	Data Acquisition and Robotic Control	3	0	0	3	PE
4		22EE15011	Power System Security	3	0	0	3	PE
5		22EE15013	EV Standards and Testing	3	0	0	3	PE
6		22EE15016	EHV AC and DC Transmission	3	0	0	3	PE
7		22EE15021	Power System Restructuring	3	0	0	3	PE
8		22EE15029	IoT in EV Applications	3	0	0	3	PE

Convener 21/04/23

Chairperson

Principal 25/4/23
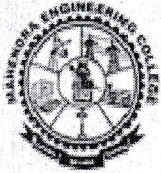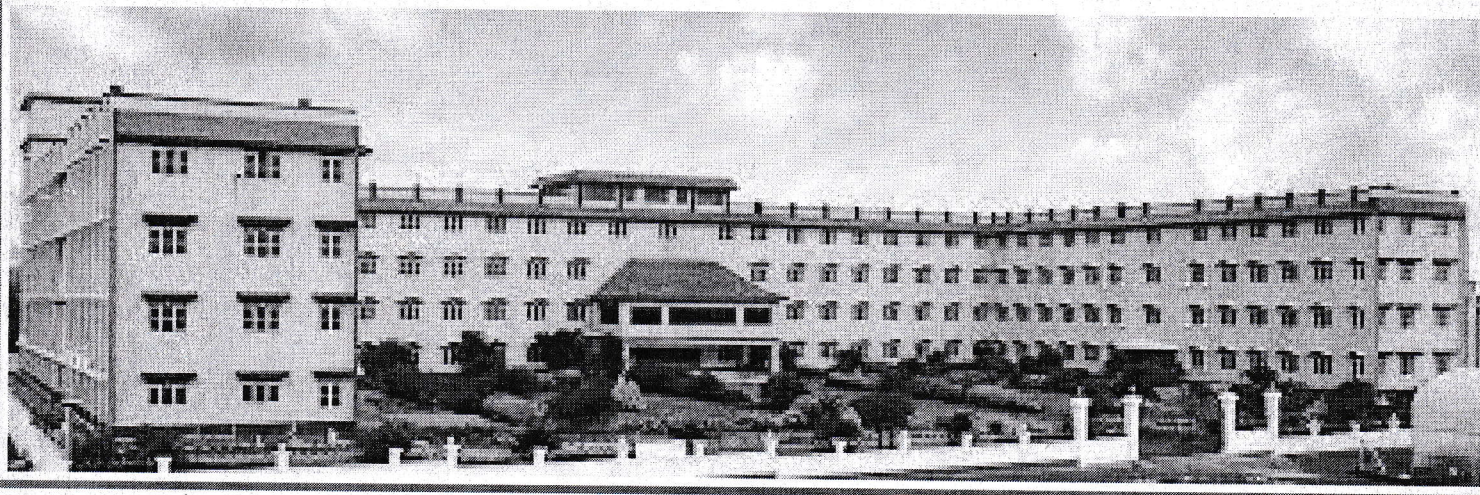
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Under Graduate

Curricula and Syllabi

Regulations 2022

B.E Electrical and Electronics Engineering

B.E Electrical and Electronics Engineering

INSTITUTION

Vision

- To be an internationally recognized institute for engineering education and research with ethical values

Mission

- To ensure the effective use of resources to mould the students as professionals and entrepreneurs
- To enhance the industry institute interaction for innovative technology practice
- To encourage the faculty and students advanced research
- To inculcate the ethical values among the faculty members and students

DEPARTMENT

Vision

- To produce globally competent Electrical and Electronics Engineers, Entrepreneurs conversant with cutting edge technologies.

Mission

- To impart good quality technical education through effective teaching-learning process.
- To enhance the students' employability through mentoring and skill development.
- To promote innovation and research activities with analytical skills to face global challenges.
- To enable students imbibe ethical and enterprising characteristics to become socially-responsible engineers.

Programme Educational Objectives (PEOs)

The graduates of Electrical and Electronics Engineering will be able to:

- Excel in professional career by applying the knowledge and skills to meet the real-time challenges.

- Apply Electrical and Electronics expertise and research to solve interdisciplinary problems.

- Exhibit soft skills, professional ethics and an ability for life-long learning to resolve societal issues.

Program Outcomes (POs)

Engineering Graduates will be able to:

1. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems

2. 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

3. 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

4. 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

5. 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

6. 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

7. 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

8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice

9. Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings

10. 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

11. 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

12. 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

Programme Specific Outcomes (PSOs)

- Apply specific domain knowledge of automation and control for industrial systems.
- Develop software skills required for professional engineering practices leading to successful employment
- Apply innovative solutions in renewable energy for specific requirements

Regulations 2022

I Semester

Sl. No.	Course code	Course Title	L	T	P	C	Category
THEORY							
1	22MA12101	Engineering Mathematics I	3	1	0	4	BS
2	22PY12101	Engineering Physics	3	0	0	3	BS
3	22CS13001	Problem Solving Techniques Using C	3	0	0	3	ES
4	22EE33101	Basics of Electrical and Electronics Engineering	2	0	2	3	ES
5	22ME33101	Basic Civil and Mechanical Engineering	3	0	2	4	ES
6	22HS11001	Heritage of Tamils	1	0	0	1	HS
7		Induction Program	-	-	-	-	MC
PRACTICAL							
8	22PY12001	Physics Laboratory	0	0	3	1.5	BS
9	22CS23001	Problem Solving Techniques Laboratory	0	0	3	1.5	ES
		TOTAL	**15**	**1**	**10**	**21**	

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DEPARTMENT OF
ELECTRICAL AND ELECTRONICS ENGINEERING

Regulations 2022

II Semester

Sl. No.	Course code	Course Title	L	T	P	C	Category
THEORY							
1	22MA12201	Engineering Mathematics II	3	1	0	4	BS
2	22CY12001	Chemistry for Engineering	3	0	0	3	BS
3	22EN11001	Communicative English	3	0	0	3	HS
4	22ME33102	Engineering Graphics and Design	3	0	2	4	ES
5	22EE14201	Electric Circuit Analysis	3	0	0	3	PC
6	22HS11002	Tamils and Technology	1	0	0	1	HS
PRACTICAL							
7	22CY22001	Chemistry Laboratory	0	0	3	1.5	BS
8	22EE24201	Electric Circuits Laboratory	0	0	2	1.5	PC
9	22EN21001	Personality Development Practice	0	0	2	1	HS
		TOTAL	16	1	9	22	
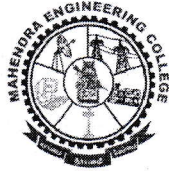
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DEPARTMENT OF
ELECTRICAL AND ELECTRONICS ENGINEERING

Regulations 2022

III Semester

Sl. No.	Course code	Course Title	L	T	P	C	Category
THEORY							
1	22MA12303	Differential Equations and Numerical Methods	3	1	0	4	BS
2	22EE13301	Analog Electronics	2	1	0	3	PC
3	22EE14301	Electromagnetic Fields	2	1	0	3	PC
4	22EE14302	DC Machines and Transformers	3	0	0	3	PC
5	22CY12001	Environmental Science and Engineering	3	-	-	-	MC
6		Open Elective I	3	0	0	3	OE
PRACTICAL							
7	22EE23301	Analog Electronics Laboratory	0	0	3	1.5	PC
8	22EE24301	DC Machines and Transformers Laboratory	0	0	3	1.5	PC
9	22EE24302	Electrical Winding Practices Laboratory	0	0	3	1.5	PC
		TOTAL	16	3	9	20.5	
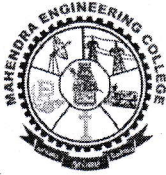
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DEPARTMENT OF
ELECTRICAL AND ELECTRONICS ENGINEERING

Regulations 2022

IV Semester

Sl. No.	Course code	Course Title	L	T	P	C	Category
THEORY							
1	22EE13401	Digital Electronics	2	1	0	3	PC
2	22EE14401	Synchronous and Induction Machines	3	0	0	3	PC
3	22SH11006	Universal Human Values	2	1	0	3	HS
4		Program Elective I	3	0	0	3	PE
5		Open Elective II	3	0	0	3	OE
6		Open Elective III	3	0	0	3	OE
PRACTICAL							
7	22EE23401	Digital Electronics Laboratory	0	0	3	1.5	PC
8	22EE24401	Synchronous and Induction Machines Laboratory	0	0	3	1.5	PC
9	22EN60001	Professional Communication Skills	0	1	2	2	EEC
		TOTAL	16	3	8	23	
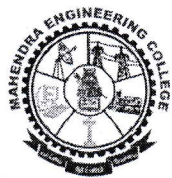
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V Semester

Sl. No.	Course code	Course Title	L	T	P	C	Category
THEORY							
1	22EE14501	Power Electronics	2	1	0	3	PC
2	22EE14502	Control Systems	2	1	0	3	PC
3	22EE34501	Electrical Measurements and Instrumentation	2	0	2	3	PC
4		Program Elective II	3	0	0	3	PE
5		Open Elective IV	3	0	0	3	OE
6		Open Elective V	3	0	0	3	OE
7	22MC60001	Constitution of India	3	-	-	-	MC
PRACTICAL							
8	22EE24501	Power Electronics laboratory	0	0	3	1.5	PC
9	22EE24502	Control Systems Laboratory	0	0	3	1.5	PC
10	22EN60002	Interview Skills and Soft Skills	0	1	2	2	EEC
		TOTAL	18	3	10	23	
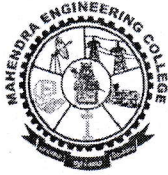
Regulations 2022

VI Semester

Sl. No.	Course code	Course Title	L	T	P	C	Category
THEORY							
1	22EE14601	Transmission and Distribution Systems	3	1	0	4	PC
2	22EE14602	Microcontroller based System Design	3	0	0	3	PC
3	22EE14603	Special Electrical Machines	3	0	0	3	PC
4		Managerial Skills and Quality Management	3	0	0	3	HS
5		Program Elective III	3	0	0	3	PE
6		Open Elective VI	3	0	0	3	OE
PRACTICAL							
7	22EE24601	Microcontroller Laboratory	0	0	3	1.5	PC
8	22EE24602	Special Electrical Machines Laboratory	0	0	3	1.5	PC
9	22EE24603	Project Design Laboratory	0	0	3	1.5	PC
		TOTAL	**18**	**1**	**9**	**23.5**	
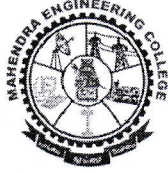
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ELECTRICAL AND ELECTRONICS ENGINEERING

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VII Semester

Sl. No.	Course code	Course Title	L	T	P	C	Category
THEORY							
1	22EE14701	Power System Operation and Analysis	3	1	0	4	PC
2	22EE14702	Power Systems Control and Protection	3	0	0	3	PC
3	22EE14703	Embedded Systems	3	0	0	3	PC
4	22EE14704	Solid State Drives	3	0	0	3	PC
5		Program Elective IV	3	0	0	3	PE
PRACTICAL							
6	22EE24701	Power System Simulation Laboratory	0	0	3	1.5	PC
7	22EE24702	Embedded Systems Laboratory	0	0	3	1.5	PC
8	22EE36701	Mini Project	0	0	6	3	EEC
		TOTAL	15	1	12	22	

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VIII Semester

Sl. No.	Course code	Course Title	L	T	P	C	Category
THEORY							
1		Program Elective V	3	0	0	3	PE
2		Program Elective VI	3	0	0	3	PE
PRACTICAL							
3	22EE36801	Project Work	0	0	12	6	EEC
		TOTAL	**06**	**0**	**12**	**12**	
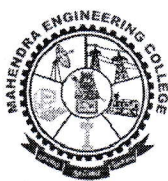
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DEPARTMENT OF
ELETRICAL AND ELECTRONICS ENGINEERING

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Program Electives

Sl. No.	Course code	Course Title	L	T	P	C	Category
1	22EE15001	Electrical Safety	3	0	0	3	PE
2	22EE15002	Power Quality	3	0	0	3	PE
3	22EE15003	Electric Power Utilization and Conservation	3	0	0	3	PE
4	22EE15004	Soft Computing Techniques	3	0	0	3	PE
5	22EE15005	Design of Electrical Machines	3	0	0	3	PE
6	22EE15006	High Voltage Engineering	3	0	0	3	PE
7	22EE15007	EV Batteries and Charging Systems	3	0	0	3	PE
8	22EE15008	Biomedical Instrumentation	3	0	0	3	PE
9	22EE15009	Data Acquisition and Robotic Control	3	0	0	3	PE
10	22EE15010	Industrial Automation and Control	3	0	0	3	PE
11	22EE15011	Power System Security	3	0	0	3	PE
12	22EE15012	Energy Management and Auditing	3	0	0	3	PE
13	22EE15013	EV Standards and Testing	3	0	0	3	PE
14	22EE15014	Power Systems Stability	3	0	0	3	PE
15	22EE15015	Digital Signal Processing	3	0	0	3	PE
16	22EE15016	EHV AC and DC Transmission	3	0	0	3	PE
17	22EE15017	Intelligent Controllers	3	0	0	3	PE

18	22EE15018	Green Energy Technologies	3	0	0	3	PE
19	22EE15019	MEMS AND NEMS	3	0	0	3	PE
20	22EE15020	Renewable and Non-Renewable Energy Sources	3	0	0	3	PE
21	22EE15021	Power System Restructuring	3	0	0	3	PE
22	22EE15022	Automotive Electronics	3	0	0	3	PE
23	22EE15023	Power Systems Dynamics and control	3	0	0	3	PE
24	22EE15024	Smart Grid Technologies	3	0	0	3	PE
25	22EE15025	Industry 4.0	3	0	0	3	PE
26	22EE15026	Electric vehicles	3	0	0	3	PE
27	22EE15027	Flexible AC Transmission Systems	3	0	0	3	PE
28	22EE15028	Distributed generation and Micro grid	3	0	0	3	PE
29	22EE15029	IoT in EV Applications	3	0	0	3	PE
30	22EE15030	Artificial Intelligence	3	0	0	3	PE

Semester wise Credit distribution

Semester	I	II	III	IV	V	VI	VII	VIII	Total
Credits	21	22	20.5	23	23	23.5	22	12	167

Category distribution

S.No.	Subject Category	Semester								Credits Total
		I	II	III	IV	V	VI	VII	VIII	
1	HS	1	4	-	3	-	3	-	-	11
2	BS	8.5	8.5	4	-	-	-	-	-	21
3	ES	11.5	4	-	-	-	-	-	-	15.5
4	PC	-	4.5	13.5	9	12	14.5	16		69.5
5	PE	-	-	-	3	3	3	3	6	18
6	OE	-	-	3	6	6	3	-	-	18
7	MC	-	-	EVS	-	COI	--	-	-	-
8	EEC	-	1	-	2	2		3	6	14
Total Credits		21	22	20.5	23	23	23.5	22	12	167

Head of the Department
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Mahendra Engineering College
Mahendhirapuri, Mallasamudram
Namakkal Dt-637 503

25/4/2023