

**MINUTES OF THE MEETING OF BOARD OF STUDIES IN ELECTRICAL AND ELECTRONICS  
ENGINEERING**

**MEETING No. 23**

**DATE** :12-02-2022

**TIME** :10.00 AM (Online/ Offline)

**Google Meet Id:**<https://meet.google.com/ewk-mbug-znd>

**The following members were present for the meeting:**

1.	Dr.A.Sheela, Associate Professor & Head, Department of Electrical and Electronics Engineering Kongu Engineering college, Perundurai-638060	Chairman
2.	Dr.P.Thirumoorthi Professor Department of Electrical and Electronics Engineering, Kumaraguru College of Technology, Coimbatore – 641049	University Nominee
3.	Dr. S. Balamurugan Professor Department of Electrical and Electronics Engineering Amrita Vishwa Vidyapeetham, Coimbatore Campus Amritanagar, Coimbatore - 641 112	Academic Council Nominee
4.	Dr.S. Kumaravel Assistant Professor Department of Electrical Engineering, NIT, Calicut, Kerala-673 601.	Academic Council Nominee
5.	Mr.S.Nandhkumar Scientist F, RAD IV, LRDE, DRDO,CV Raman Nagar, Bangalore- 560093	Alumni Representative
6.	Er.S.Yuvaraj Moorthy Associate General Manager – Central Technical Marketing, Strategy & Technology, Schneider Electric India Private Limited, 2nd Floor,Block-2,Bannari Amman Towers,, No.29, Dr.Radhakrishnan Road, Mylapore, Chennai-600004	Industry Representative
7.	Dr.R.Meenakumari	Internal Member
8.	Dr.N.Senthilnathan	Internal Member
9.	Dr.M.Sivachitra	Internal Member
10.	Dr.S.Albert Alexander	Internal Member
11.	Dr.M.Karthik	Internal Member
12.	Dr.P.S.Raghavendran	Internal Member

13.	Dr.S.Usha	Internal Member
14.	Dr.S. Maheswari	Internal Member
15.	Dr.T.Logeswaran	Internal Member
16.	Dr.T. Gunasekar	Internal Member
17.	Mr.S.Chandrasekar	Internal Member
18.	Mr.P. Karthikeyan	Internal Member
19.	Dr.V.Surendar	Internal Member
20.	Dr.N. Priyadharshini	Internal Member
21.	Dr.K.Prithivi	Internal Member
22.	Mr.S.K. Logesh	Internal Member
23.	Ms.S. Gomathy	Internal Member
24.	Mr.R. Ranjith Kumar	Internal Member
25.	Mr.K. Ranjith Kumar	Internal Member
26.	Mr.K.KavinMullai	Internal Member
27.	Mr.V. Kumaresan	Internal Member
28.	Dr.M.S.Kamalesh	Internal Member
29.	Mr.M.Sabarimuthu	Internal Member
30.	Dr.M.Srinivasan	Internal Member
31.	Mr.P.Tamilarasu	Internal Member
32.	Mr.P.Sethupathi	Internal Member
33.	Mr.M.Suresh	Internal Member
34.	Mr.D.Sarathkumar	Internal Member
35.	Mr.P.Gowrishankar	Internal Member

**The following members were present as special invitees:**

-- NIL--

**The following members have requested for leave of absence:**

-- NIL--

**Meeting of the EEE Board:**

Chairman/BoS welcomed the members and briefed on curriculum, syllabi of courses to be added and syllabi of courses to be modified under Regulation 2020 for UG & PG Programmes.

The board discussed and approved the following points as per the agenda:

**Item No. 23.1: Ratification of the following items under R2018 & R2020 as given in Annexure-I.**

- a. Course and Syllabi for PhD Course work
- b. One / Two credit courses
- c. On line courses
- d. Curriculum and Syllabi amendments under R2018&R2020 for UG / PG courses
- e. Introduction of new electives under R2018 & R2020 for UG / PG courses
- f. Credit transfer from Foreign Universities, Change of Regulations for readmitted students, Transferred candidates
- g. Other items if any

It is resolved to ratify the above items a, b, c, d, e, f and g as given in Annexure – I.

**Item No. 23.2. Approval of the curriculum, syllabi of courses to be added newly and syllabi of courses to be modified from 2<sup>nd</sup> semester to 8<sup>th</sup> semester for BE-Electrical and Electronics Engineering) under R2018 / R2020 and for PG (Power Electronics and Drives) under R2020 as given in Annexure-II.**

The members discussed the curriculum, syllabi of courses to be added newly and syllabi of courses to be modified from 2<sup>nd</sup> semester to 8<sup>th</sup> semester for BE (Electrical and Electronics Engineering) and for PG (Power Electronics and Drives) as given in Annexure-II and approved the same.

**Item No. 23.3. Approval of the syllabi of courses to be studied for honours degree under R2020 as given in Annexure-III.**

The members discussed the syllabi of the courses to be studied for honors degree under R2020 as given in Annexure – III and approved the same. (put NA if not applicable)

**Item No. 23.4. Approval for Value Added Courses (one / two credit courses), on-line courses with syllabi to be offered from first semester onwards, Transfer of credits from UGC & AICTE approved institutions and Credit transfer from foreign universities under R2018 & R2020 as given in Annexure-IV.**

The members discussed the value added courses (one/ two credit courses), on-line courses with syllabi to be offered from first semester onwards. Transfer of credits from UGC and AICTE approved institutions including NPTEL, SWAYAM, etc., and Credit transfer from foreign universities under R2018 & R2020 (from the year 2021-22 onwards) as given in Annexure –IV and approved the same.

Item No. 23.5. Approval of Syllabus for PhD courses under R2020 as given in Annexure-V.

The members discussed the Syllabus for PhD courses under R2020 (if any from the year 2021-22 onwards) as given in Annexure -V and approved the same.

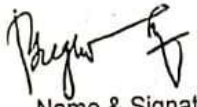
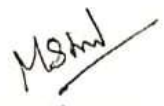
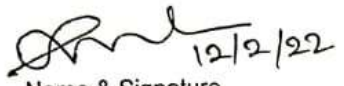

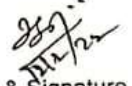

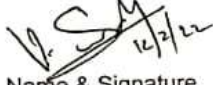



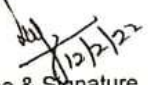




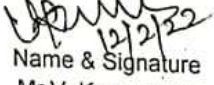


Reporting Item No. 23.6. Proctored online/ conventional examination system being followed for the November / December 2021 end semester / trimester examinations as given in Annexure-VI.

The members appreciated the proctored online/ conventional examination system being followed for the November / December 2021 end semester / trimester examinations as given in Annexure-VI.




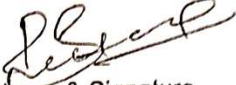
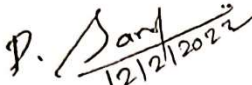


The meeting was concluded with a vote of thanks to the members.

 12-02-2022 Name & Signature Dr.P.Thirumoorthi University Nominee	 Name & Signature Dr. S. Balamurugan Academic Council Nominee
 Name & Signature Dr.S. Kumaravel Academic Council Nominee	 Name & Signature Mr.S.Nandhkumar Alumni Representative
 Name & Signature Er.S.Yuvaraj Moorthy Industry Representative	 Name & Signature Dr.R.Meenakumari
 Name & Signature Dr.N.Senthilnathan	 12/2/22 Name & Signature Dr.M.Sivachitra
 Name & Signature Dr.S.Albert Alexander	 Name & Signature Dr.M.Karthik

  
22/2/22

 Name & Signature Dr.P.S.Raghavendran	 Name & Signature Dr.S.Usha
 Name & Signature Dr.S.Maheswari	 Name & Signature Dr.T.Logeswaran
 Name & Signature Mr.S.Chandrasekar	 Name & Signature Mr.P.Karthikeyan
 Name & Signature Dr.V.Surendar	 Name & Signature Dr.T. Gunasekar
 Name & Signature Dr.N. Priyadarshini	 Name & Signature Dr.K.Prithivi
 Name & Signature Mr.S.K. Logesh	 Name & Signature Ms.S. Gomathy
 Name & Signature Mr.R. Ranjith Kumar	 Name & Signature Mr.K. Ranjith Kumar
 Name & Signature Ms.K.KavinMullai	 Name & Signature Mr.V. Kumaresan
 Name & Signature Dr.M.S.Kamalesh	 Name & Signature Mr.M.Sabarimuthu

13/12/22

 Name & Signature Dr.M.Srinivasan	 Name & Signature Mr.P.Tamilarasu
 Name & Signature Mr.M.Suresh	 Name & Signature Mr.P.Sethupathi
 Name & Signature Mr.D.Sarathkumar	 Name & Signature Mr.P.Gowrishankar
	 Name & Signature Dr.A.Sheela Chairman/BoS

## **Annexure – I**

**Ratification items under R2018& R2020 implemented during the academic year 2021-22 and/or previous years.**

a. Course and Syllabi for PhD Course work

b. One credit courses

- SPICE Based Simulation and Analysis of Electronic Circuits using MULTISIM- Level 1
- Electric Vehicle and Battery Management System
- FPGA Design For Signal and Image Processing
- Introduction to IoT& its Real time applications

c. On line courses

- noc22-cs46 Embedded System Design
- noc22-cs53 Introduction To Internet Of Things
- noc22-ee44 Design and Analysis of VLSI Subsystems
- noc22-cs51 Data Base Management System
- noc22\_ee29 Recent Advances in Transmission Insulators
- noc22-ee21 Fuzzy Sets, Logic and Systems & Applications
- noc22-ee13 Fundamentals of Semiconductor Devices
- noc22-ee38 Digital IC Design
- noc22-ee50 Sensors and Actuators

d. Curriculum and Syllabi amendments under R2018& R2020

e. Introduction of new electives under R2018 &R2020

f. Credit transfer from Foreign Universities, Change of Regulations for readmitted students, Transferred candidates

g. Other items if any

## Annexure - II

(i) Curriculum, syllabi of courses to be added newly and syllabi of courses to be modified from 2<sup>nd</sup> semester to final semester for BE (Electrical and Electronics Engineering)/ under R2018 / R2020

(a) List of courses newly added:

S.No.	Course Name	Semester	Regulation
1	Electronic Design Laboratory	III,IV	2020
2	Power and Energy Laboratory	VI	2020

(b) List of courses modified the syllabus content:

S.No.	Course Code & Course Name	Semester	Regulation
1	20EEO03-Electrical Safety	IV	2020

(c) List of courses removed:

S.No.	Course Code & Course Name	Semester	Regulation
1	20EEL42 Signals and Systems Laboratory	IV	2020
2	20EEL63-Protection and RES Laboratory	VI	2020

(d) List of courses swapped:

S.No.	Course Code(s) & Course Name(s)	Existing Semester	Swapped Semester	Regulation
1	20EET21 - Network Analysis	II	III	2020
2	20CSC31- Programming in C	III	II	2020
3	20CSC41- Python Programming	IV	III	2020
4	20EET31- Digital Electronics	III	IV	2020
5	20EEL32- Analog and Digital Electronics Laboratory	III	IV	2020
6	20GEP61 - Comprehensive Test / Viva	VII	VI	2020
7	20EET71- Power System Protection and Switchgear	VI	VII	2020
8	Open Elective 1	V	IV	2020
9	Open Elective 2	VI	V	2020
10	Open Elective 3	VII	VI	2020
11	Professional Elective 2	VI	VII	2020



**Curriculum from 2<sup>nd</sup> semester to final semester BE- Electrical and Electronics Engineering under  
R2020, CURRICULUM UNDER REGULATIONS 2020  
(For the students admitted from 2020-21 onwards with all amendments)**

<b>SEMESTER – I</b>									
Course Code	Course Title	Hours/ Week			Credit	Maximum Marks			CBS
		L	T	P		CA	ESE	Total	
	<b>Theory/Theory with Practical</b>								
20EGT11	English Language Skills	3	0	0	3	50	50	100	HS
20MAC11	Matrices and Differential Equations	3	1*	2*	4	50	50	100	BS
20PHT11	Applied Physics	3	0	0	3	50	50	100	BS
20CYT11	Applied Chemistry	3	0	0	3	50	50	100	BS
20EET11	Electric Circuits and Electron Devices	3	1	0	4	50	50	100	PC
20EET12	Electrical Measurements and Instrumentation	3	0	0	3	50	50	100	ES
	<b>Practical</b>								
20EEL11	Electric Circuits and Measurements Laboratory	0	0	2	1	50	50	100	ES
20PHL11	Physical Sciences Laboratory I	0	0	2	1	50	50	100	BS
20MNT11	Student Induction Program #	-	-	-	0	100	0	100	MC
	<b>Total</b>				<b>22</b>				

# Induction Training Program (including, Indian Constitution and Essence of Indian Knowledge Tradition, etc.)  
to be conducted at the beginning of the semester for 3 weeks

<b>SEMESTER – II</b>									
Course Code	Course Title	Hours/ Week			Credit	Maximum Marks			CBS
		L	T	P		CA	ESE	Total	
	<b>Theory/Theory with Practical</b>								
20EGT21	Advanced communication Skills	3	0	0	3	50	50	100	HS
20MAC21	Multivariable Calculus and Complex Analysis	3	1*	2*	4	50	50	100	BS
20PHT24	Materials Science and Solid State Devices	3	0	0	3	50	50	100	BS
20CYT23	Chemistry of Electronic Materials	3	0	0	3	50	50	100	BS
20MEC11	Engineering Drawing	2	0	2	3	50	50	100	ES
20EET21/ 20CSC31	Network Analysis *	3	1	0	4	50	50	100	PC/ES
	Programming in C #	3	0	2					
	<b>Practical</b>								
20MEL11	Engineering Practices Laboratory	0	0	2	1	50	50	100	ES
20PHL25	Physical Sciences Laboratory II	0	0	2	1	50	50	100	BS
20VEC11	Yoga and Values for Holistic Development	1	0	1	1	100	0	100	HS
Total					23				

L – Lecture, T – Tutorial, P – Practical, C – Credits, CA – Continuous Assessment, ESE – End Semester Examination  
\* 2020-2021 #2021-2022

## B.E. DEGREE IN ELECTRICAL AND ELECTRONICS ENGINEERING

SEMESTER – III									
Course Code	Course Title	Hours / Week			Credit	Maximum Marks			Category
		L	T	P		CA	ESE	Total	
Theory/Theory with Practical									
20MAT32	Probability, Transforms and Partial Differential Equations	3	1	0	4	50	50	100	BS
20CSC31/20CSC41	Programming in C * / Python Programming #	3	0	2	4	50	50	100	ES
20EET33/20EET21	Digital Electronics * / Network Analysis #	3	0/1	0	3/4	50	50	100	PC
20EET31	DC Machines and Transformers	3	1	0	4	50	50	100	PC
20EET32	Analog Electronics	3	0	0	3	50	50	100	PC
Practical / Employability Enhancement									
20EGL31	English for Workplace Communication Laboratory	0	0	2	1	50	50	100	HS
20EEL31	DC Machines and Transformers Laboratory	0	0	2	1	50	50	100	PC
20EEL32/20EEL33	Analog and Digital Electronics Laboratory*/ Electronic Design Laboratory#	0	0	2	1	50	50	100	PC
20GET31	Universal Human Values	2	0	0	2	100	0	100	HS
Total Credits to be earned					23/24				

SEMESTER – IV									
Course Code	Course Title	Hours / Week			Credit	Maximum Marks			Category
		L	T	P		CA	ESE	Total	
Theory/Theory with Practical									
20MAT41	Statistics and Numerical Methods	3	1	0	4	50	50	100	BS
20CSC41/ 20EET33	Python Programming* / Digital Electronics #	3	0	2/0	4/3	50	50	100	ES/PC
20EET41	Synchronous and Induction Machines	3	1	0	4	50	50	100	PC
20EET42	Electromagnetic Theory	3	0	0	3	50	50	100	PC
20EET43	Generation, Transmission and Distribution	3	1	0	4	50	50	100	ES
	Open Elective 1	3	1	0	4	50	50	100	OE
Practical / Employability Enhancement									
20EEL41	Synchronous and Induction Machines Laboratory	0	0	2	1	50	50	100	PC
20EEL33/ 20EEL32	Electronic Design Laboratory * / Analog and Digital Electronics Laboratory #	0	0	2	1	50	50	100	PC
20MNT31	Environmental Science	2	0	0	0	100	0	100	MC
Total Credits to be earned					25/24				

\* 2020-2021 #2021-2022

## B.E. DEGREE IN ELECTRICAL AND ELECTRONICS ENGINEERING

SEMESTER – V									
Course Code	Course Title	Hours / Week			Credit	Maximum Marks			Category
		L	T	P		CA	ESE	Total	
Theory/Theory with Practical									
20EET51	Power Electronics	3	0	0	3	50	50	100	PC
20EET52	Power System Analysis	3	0	0	3	50	50	100	PC
20EET53	Control systems	3	0	0	3	50	50	100	PC
	PE 1	3	0	0	3	50	50	100	PE
	OE2 (JAVA Programming/ Web Engineering)	3	1/0	0/2	4	50	50	100	OE
Practical / Employability Enhancement									
20EEL51	Power Electronics Laboratory	0	0	2	1	50	50	100	PC
20EEL52	Power System Analysis Laboratory	0	0	2	1	50	50	100	PC
20EEL53	Control System Laboratory	0	0	2	1	50	50	100	PC
20GEL51/ 20GEI51	Professional Skills Training I / Industrial Training I	--	--	--	2	100	0	100	EC
Total Credits to be earned					21				

SEMESTER – VI									
Course Code	Course Title	Hours / Week			Credit	Maximum Marks			Category
		L	T	P		CA	ESE	Total	
Theory/Theory with Practical									
20EET61	Microprocessor and Microcontroller	3	0	0	3	50	50	100	PC
20EET62	Electric Drives and Control	3	0	0	3	50	50	100	PC
20EET63	Signals and Systems	3	0	0	3	50	50	100	PC
	Open Elective III	3	0	0	3	50	50	100	OE
Practical / Employability Enhancement									
20EEL61	Microprocessor and Microcontroller Laboratory	0	0	2	1	50	50	100	PC
20EEL62	Electric Drives Laboratory	0	0	2	1	50	50	100	PC
20EEL63	Power and Energy Laboratory	0	0	2	1	50	50	100	PC
20GEL61/ 20GEI61	Professional Skills Training II / Industrial Training II	--	--	--	2	100	0	100	EC
20GEP61	Comprehensive Test / Viva	--	---	---	2	100	0	100	EC
20EEP61	Project Work I	0	0	4	2	100	0	100	EC
Total Credits to be earned					21				

\* 2020-2021 #2021-2022

## B.E. DEGREE IN ELECTRICAL AND ELECTRONICS ENGINEERING

SEMESTER – VII									
Course Code	Course Title	Hours / Week			Credit	Maximum Marks			Category
		L	T	P		CA	ESE	Total	
Theory/Theory with Practical									
20GET71	Engineering Economics and Management	3	0	0	3	50	50	100	HS
20EET71	Power System Protection and Switchgear	3	0	0	3	50	50	100	PC
	Professional Elective II	3	0	0	3	50	50	100	PE
	Professional Elective III	3	0	0	3	50	50	100	PE
	Professional Elective IV	3	0	0	3	50	50	100	PE
	Professional Elective V	3	0	0	3	50	50	100	PE
Practical / Employability Enhancement									
20EEP71	Project Work II Phase I	0	0	6	3	100	0	100	EC
Total Credits to be earned					21				

SEMESTER – VIII									
Course Code	Course Title	Hours / Week			Credit	Maximum Marks			Category
		L	T	P		CA	ESE	Total	
Theory/Theory with Practical									
	Open Elective IV	3	0	0	3	50	50	100	OE
	Professional Elective VI	3	0	0	3	50	50	100	PE
Practical / Employability Enhancement									
20EEP81	Project Work II Phase II	---	---	14	7	50	50	100	EC
Total Credits to be earned					13				

\* 2020-2021, #2021-2022

**Total Credits: 169**

LIST OF PROFESSIONAL ELECTIVES							
Course code	Course Title	Hours/Week			Credit	Sem	Domain/ Stream
		L	T	P			
Elective I-5 SEM							
20EEE01	Power Semiconductor Devices	3	0	0	3	V	PE
20EEE02	Electrical Distribution System Analysis	3	0	0	3	V	PS
20EEE03	Renewable Energy System	3	0	0	3	V	ES
20EEE04	Generalized Machine Theory	3	0	0	3	V	EM
20EEE05	Digital System Design	3	0	0	3	V	EL
Elective II- 7SEM							
20EEE06	Advanced Power Electronic Circuits	3	0	0	3	VII	PE
20EEE07	Substation Engineering and Automation	3	0	0	3	VII	PS
20EEE08	Biomass Energy System	3	0	0	3	VII	ES
20EEE09	Special Electrical Machines	3	0	0	3	VII	EM
20EEE10	VLSI Design	3	0	0	3	VII	EL
20EEE11	Advanced Control Theory	3	0	0	3	VII	CA
Elective III-7 SEM							
20EEE12	Design of Power Converters	3	0	0	3	VII	PE
20EEE13	Restructured Power System	3	0	0	3	VII	PS
20EEE14	Design, Installation and Commissioning of Solar and Wind Energy Systems	3	0	0	3	VII	ES
20EEE15	Advanced Electric Drives and Control	3	0	0	3	VII	EM
20EEE16	Advanced Microprocessors and Controllers	3	0	0	3	VII	EL
20EEE17	PLC and SCADA System	3	0	0	3	VII	CA
Elective IV-7 SEM							
20EEE18	Pulse Generating Circuits for Power Converters	3	0	0	3	VII	PE
20EEE19	High Voltage Engineering	3	0	0	3	VII	PS
20EEE20	Energy Storage Systems	3	0	0	3	VII	ES
20EEE21	CAD of Electrical Machines	3	0	0	3	VII	EM
20EEE22	Embedded System and IOT	3	0	0	3	VII	EL
20EEE23	Computational Intelligence Techniques	3	0	0	3	VII	CA
Elective V-7 SEM							
20EEE24	Power Electronic Interfaces to Renewable Energy	3	0	0	3	VII	PE
20EEE25	Power System Operation and Control	3	0	0	3	VII	PS
20EEE26	Microgrid	3	0	0	3	VII	ES
20EEE27	Electrical Machine Design	3	0	0	3	VII	EM
20EEE28	Digital Image Processing and Multi Resolution Analysis	3	0	0	3	VII	EL
20EEE29	Industrial Automation	3	0	0	3	VII	CA
Elective VI-8 SEM							
20EEE30	Power Quality	3	0	0	3	VIII	PE
20EEE31	Smart Grid	3	0	0	3	VIII	PS
20EEE32	Hybrid Electric Vehicles	3	0	0	3	VIII	ES
20EEE33	Electrical Machine Control and Maintenance	3	0	0	3	VIII	EM
20EEE34	Digital Signal Processors and its Applications	3	0	0	3	VIII	EL
20EEE35	Electric Power Utilization	3	0	0	3	VIII	CA

**LIST OF OPEN ELECTIVES OFFERED TO OTHER DEPARTMENTS****(Common to all BE/BTech branches except EEE branch)**

<b>Course Code</b>	<b>Course Title</b>	<b>Hours/Week</b>			<b>Credit</b>	<b>Sem</b>
		<b>L</b>	<b>T</b>	<b>P</b>		
20EEO01	Solar & Wind Energy Systems	3	1	0	4	IV
20EEO02	Electrical Wiring and Lighting	3	1	0	4	IV
20EEO03	Electrical Safety	3	1	0	4	IV
20EEO04	Energy Conservation and Management	3	1	0	4	V
20EEO05	AI with MATLAB	3	1	0	4	V
20EEO06	Micro Grid and Smart Grid	3	0	0	3	VI
20EEO07	E-Waste Management	3	0	0	3	VI
20EEO08	Electric Vehicle	3	0	0	3	VIII
20GEO13	NCC Studies(Army Wing) – I	3	0	2	4	VI/VIII

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## 20EEL33 ELECTRONIC DESIGN LABORATORY

<b>Programme &amp; Branch</b>	<b>B.E &amp; Electrical and Electronics Engineering</b>	<b>Sem.</b>	<b>Category</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Credit</b>
<b>Prerequisites</b>	<b>NIL</b>	<b>3/4</b>	<b>PC</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>

### List of Exercises / Experiments :

1.	Design and fabrication of constant voltage power supply
2.	Design and fabrication of variable voltage power supply
3.	Design and fabrication of LED based water level indicator
4.	Design and fabrication of isolation circuit using opto coupler
5.	Design and fabrication of driver circuit to control a motor using electromagnetic relay

**Total:30**

**REFERENCES/MANUAL/SOFTWARE:**

1.	Laboratory Manual
2.	YouTube Do It Yourself (DIY) videos

<b>COURSE OUTCOMES:</b> On completion of the course, the students will be able to		<b>BT Mapped (Highest Level)</b>
CO1	Design a constant and variable power supply	Understanding (K2), Imitation(S1)
CO2	Design a simple home based simple applications	Applying(K3), Manipulation (S2)
CO3	Design control circuits for various applications	Applying (K3), Manipulation(S2)

Mapping of COs with POs and PSOs														
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	2	3	1	1				3			2	3
CO2	3	3	2	3	1	1				3			2	3
CO3	3	3	2	3	1	1				3			2	3

1 – Slight, 2 – Moderate, 3 – Substantial, BT- Bloom’s Taxonomy

## 20EEL63 POWER AND ENERGY LABORATORY

<b>Programme &amp; Branch</b>	<b>B.E &amp; Electrical and Electronics Engineering</b>	<b>Sem.</b>	<b>Category</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Credit</b>
<b>Prerequisites</b>	<b>NIL</b>	<b>6</b>	<b>PC</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>

### List of Exercises / Experiments :

1.	Characteristics of over current/ overvoltage relay.
2.	Characteristics of differential relay/ negative sequence relay.
3.	Measurement of breakdown voltage of liquid dielectric.
4.	VI characteristics of solar PV
5.	Testing of solar PV Modules
6.	Testing of Battery
7.	VI characteristics of fuel cell
8.	Power Quality analysis using Chroma/ WT3000
9.	Simulation of WECS using MATLAB
10.	Simulation of solar-wind hybrid system using MATLAB

**Total:30**

**REFERENCES/MANUAL/SOFTWARE:**

1.	Laboratory Manual
2.	MATLAB

<b>COURSE OUTCOMES:</b> On completion of the course, the students will be able to		<b>BT Mapped (Highest Level)</b>
CO1	compute the time current characteristics of analog/digital/numerical relays	Applying (K3), Manipulation (S2)
CO2	understand and analyze the VI characteristics of renewable sources and power quality indices	Applying (K3), Manipulation (S2)
CO3	analyze the testing of solar PV modules, batteries and fuel cell	Applying (K3), Manipulation (S2)

Mapping of COs with POs and PSOs														
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2	1	1									3	1
CO2	3	2	3	1									3	1
CO3	3	2	3	1									3	1

1 – Slight, 2 – Moderate, 3 – Substantial, BT- Bloom’s Taxonomy



(ii) Syllabi of courses to be added newly and syllabi of courses to be modified for PG programme under R2020

(a) List of courses newly added:

S.No.	Course Name	Semester	Regulation
	NIL		

(b) List of courses modified the syllabus content:

S.No.	Course Code & Course Name	Semester	Regulation
	NIL		

(c) List of courses removed:

S.No.	Course Code & Course Name	Semester	Regulation
	NIL		

(d) List of courses swapped:

S.No.	Course Code(s) & Course Name(s)	Existing Semester	Swapped Semester	Regulation
	NIL			

Syllabi for the courses mentioned in above items (a) and (b) under R2020

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### Annexure - III

#### Syllabi of the courses to be studied for BE/BTech EEE Branch with Honours in Microgrid Technologies & Electric Vehicles under R2020

##### DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

If a candidate earns 18 to 20 credits additionally in any particular specialization during the programme, such candidate can be awarded with Honours degree in that specialization as per the guidelines of AICTE upon getting the approval from Anna University, Chennai. A candidate shall have not less than 8.0 CGPA and no history of arrears to opt for the honours degree and has to maintain the same during the entire programme.

##### BE Degree in EEE with Honours in Microgrid Technologies

##### List of courses to be studied additionally for Honours degree

S. No.	Course Name	L	T	P	C
1	Hybrid Renewable Energy System	3	0	2	4
2	Design of Power Converters	3	0	0	3
3	Design of Solar and Wind Energy Systems	3	0	2	4
4.	Microgrid	3	0	0	3
5.	Smart Grid Technologies	3	1	0	4
	Total Credits				18

Syllabi of the courses additionally to be studied for BE Degree in Electrical and Electronics Engineering with Honours in Microgrid Technologies.

##### BE Degree in EEE with Honours in Electric Vehicles

S. No.	Course Name	L	T	P	C
1	Basics of Automotive Engineering	3	0	2	4
2	Fundamentals of Electric Vehicles	3	0	2	4
3	Energy Storage System	3	0	0	3
4.	Drives and Control For EV	3	0	2	4
5.	Electric Vehicle Data Acquisition System and Maintenance	3	0	0	3
	Total Credits				18

Syllabi of the courses additionally to be studied for BE Degree in Electrical and Electronics Engineering with Honours in Electric Vehicles

#### **Annexure – IV**

**List of One / Two credit courses, on-line courses and syllabi, Transfer of credits from UGC and AICTE approved institutions and Credit transfer from foreign universities under R2018& R2020(from the year 2021-22 onwards)**

NIL

## **Annexure – V**

**Syllabi for PhD courses under R2020 from the academic year 2021-22 onwards**

## **Annexure-VI**

### **REPORTING ITEM**

**Online/ conventional method of examination system being followed for the November / December 2021 ( both regular and arrear exams) End Semester / Trimester Examinations to be held in February 2022.**

- a) As per the directions issued by Anna University and guidelines issued by Higher Education Department, Government of Tamilnadu, BE / BTech, BSc and MSc (Integrated) End Semester Examinations will be conducted through online mode, with students taking up the examinations from their places of stay. Examinations will be proctored by using appropriate software and also be monitored by faculty invigilators.
- b) MBA, MCA, ME / MTech and PhD coursework End Semester / Trimester Examinations will be conducted through conventional method (paper and pen) in campus.
- c) The above examination procedure shall also be followed for the maximum period exhausted students