
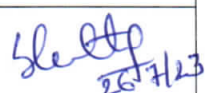
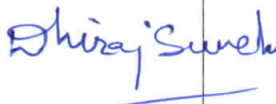







BOARD OF STUDIES
FOR
ELECTRONICS AND COMMUNICATION ENGINEERING
MINUTES OF THE MEETING

The meeting of the Board of Studies for ECE was held on **26.07.2023** at 10:00 AM at CMR Technical Campus, Kandlakoya (V), Medchal Road, Hyderabad – 501 401 through Online Mode.
The following members attended the meeting:

S. No	Name	Designation	Role	Signature
1	Dr. A. Raji Reddy	Director, CMR Technical Campus	Special Invitee	
2	Prof. G Srikanth	Professor & HOD of ECE, CMR Technical Campus	Chairman	
3	Dr. Dhiraj Sunehra	Professor & HOD Electronics & Communication Engineering, JNTU College of Engg. Jagtial.	Univ. Nominated Member	
4	Dr. B. Premalatha	Associate Professor of ECE, CMRCET, Hyderabad.	Subject Expert	
5	Dr. P. Venkatakrishnan	Professor of ECE CMR Technical Campus	Subject Expert	
6	Dr. Bandi Doss	Professor of ECE, CMR Technical Campus	Subject Expert	
7	Mr. D. Rajesh Reddy	Scientist-E, ISRO Centre, Hyderabad	Industry Representative	
8	Mr. A. Venkatesh (097R1A0403)	Oracle-Prod-Dev-Analyst, Oracle India, Pvt. Ltd.	Alumnus	
10	Dr. D T V Dharmajee Rao	Professor & Dean Academics, CMR Technical Campus	Special Invitee	—

Prof. G. Srikanth, Professor of ECE and Chairman, Board of Studies welcomed all the members and presented the **R22** scheme & syllabus for the new course, which has been already approved for the existing courses. The same is extended to the new course **B.Tech – Computer Science and Information Technology** (w.e.f.: Academic Year 2023-24) after thorough discussion in detail and approved as mentioned below:

(P.T.O.)

CMR TECHNICAL CAMPUS
UGC AUTONOMOUS
B. Tech. I Year Syllabus

Common for CSE, IT & CSIT

I SEMESTER

S.No.	Course Code	Course Title	L	T	P	Credits
1	22MA101BS	Matrices and Calculus	3	1	0	4
2	22CH102BS	Engineering Chemistry	3	1	0	4
3	22CS103ES	Programming for Problem Solving	3	0	0	3
4	22EC104ES	Basic Electrical and Electronics Engineering	3	1	0	4
5	22ME105ES	Computer Aided Engineering Graphics	1	0	2	2
6	22CH106BS	Engineering Chemistry Laboratory	0	0	2	1
7	22CS107ES	Programming for Problem Solving Laboratory	0	0	2	1
8	22EC108ES	Basic Electrical and Electronics Engineering Laboratory	0	0	2	1
9	22CH109MC	Environmental Science	3	0	0	0
		Induction Programme				
Total			16	3	08	20

II SEMESTER

S.No.	Course Code	Course Title	L	T	P	Credits
1	22MA201BS	Ordinary Differential Equations and Vector Calculus	3	1	0	4
2	22PH202BS	Applied Physics	3	1	0	4
3	22CS203ES	Data Structures	3	0	0	3
4	22EN204HS	English for Skill Enhancement	3	0	0	3
5	22CS205ES	IT Workshop	0	0	3	1.5
6	22PH206BS	Applied Physics Laboratory	0	0	3	1.5
7	22CS207ES	Data Structures Laboratory	0	0	2	1
8	22EN208HS	English Language and Communication Skills Laboratory	0	0	2	1
9	22CS209ES	Basic Elements of Engineering and Technology	0	0	2	1
Total			12	2	12	20

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[Signature]

Shiraj Sunehra

CMR TECHNICAL CAMPUS
UGC AUTONOMOUS
B. Tech. I Year Syllabus

Common for ECE, CSE [AI & ML] & CSE[DS]

I SEMESTER

S.No.	Course Code	Course Title	L	T	P	Credits
1	22MA101BS	Matrices and Calculus	3	1	0	4
2	22PH102BS	Applied Physics	3	1	0	4
3	22CS103ES	Programming for Problem Solving	3	0	0	3
4	22EN104HS	English for Skill Enhancement	3	0	0	3
5	22CS105ES	IT Workshop	0	0	3	1.5
6	22PH106BS	Applied Physics Laboratory	0	0	3	1.5
7	22CS107ES	Programming for Problem Solving Laboratory	0	0	2	1
8	22EN108HS	English Language and Communication Skills Laboratory	0	0	2	1
9	22CS109ES	Basic Elements of Engineering and Technology	0	0	2	1
		Induction Programme				
Total			12	2	12	20

II SEMESTER

S.No.	Course Code	Course Title	L	T	P	Credits
1	22MA201BS	Ordinary Differential Equations and Vector Calculus	3	1	0	4
2	22CH202BS	Engineering Chemistry	3	1	0	4
3	22CS203ES	Data Structures	3	0	0	3
4	22EC204ES	Basic Electrical and Electronics Engineering	3	1	0	4
5	22ME205ES	Computer Aided Engineering Graphics	1	0	2	2
6	22CH206BS	Engineering Chemistry Laboratory	0	0	2	1
7	22CS207ES	Data Structures Laboratory	0	0	2	1
8	22EC208ES	Basic Electrical and Electronics Engineering Laboratory	0	0	2	1
9	22CH209MC	Environmental Science	3	0	0	0
Total			16	3	8	20

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K. S. S.

Shiraj Sunehra

Basic Electrical & Electronics Engineering

L T P C

B. Tech. I Semester

Subject Code: 22EC104ES

3 1 0 4

Prerequisites:

Course Objectives:

1. To introduce the concepts of electrical circuits and its components.
2. To study and understand the different types of DC, AC single & three phase circuits.
3. To study and understand the different types of DC, AC machines and Transformers.
4. To introduce the concepts of diodes & transistors.
5. To impart the knowledge of various configurations, characteristics and applications.

Course Outcomes:

After completion of this course, the students will be able to:

1. Identify the basic DC electrical circuits.
2. Evaluate the basic single phase and three phase AC circuits.
3. Analyze the working principles of Electrical Machines.
4. Classify the concepts of diodes & Rectifiers.
5. Compare the knowledge of various transistor configurations, characteristics and applications.

UNIT- I:

[14 Lectures]

D.C. CIRCUITS: Introduction, Types of elements, Definitions, Ohm's law and its limitations, Passive elements R-L-C, Energy sources-Ideal and practical, Series and Parallel combination of Resistances, Inductances and Capacitances, Star-Delta Transformation, Source transformation, Kirchhoff's Laws, Mesh analysis, Nodal analysis.

UNIT-II:

[12 Lectures]

A.C. CIRCUITS: Representation of sinusoidal waveforms, Instantaneous value, Peak value, Average and RMS value, Form factor and Peak factor for sinewave, Rectifier output, Saw tooth and Square Waveforms, Phasor representation, Real power, Reactive power, Apparent power, Power factor, Analysis of single- phase ac circuits RL, RC, RLC series combination. Three phase balanced circuits, Voltage and current relationship in star and delta connections.

UNIT – III:

[14 Lectures]

TRANSFORMERS: Construction, Types, Working principle of Single-phase transformer, EMF equation, Equivalent circuit, Losses in transformers, Efficiency and Condition for maximum efficiency.

DC & AC Machines: Construction, Working Principle of DC generator, EMF equation, Types, Working principle of DC motor, Torque equation, Three phase induction motor construction and working, Slip and Rotor current frequency.

UNIT – IV:

[10 Lectures]

DIODES: Principle of Operation, Diode current equation, Volt-Ampere characteristics, Static and dynamic resistances, Diffusion and Transition capacitances. Half Wave Rectifier, Full Wave Rectifier-Center-Tap and Bridge Rectifier, Ripple factor, Rectification efficiency, Peak Inverse Voltage, Transformer Utilisation Factor, Simple problems. Zener diode characteristics, Zener diode as voltage regulator.

UNIT – V:

[10 Lectures]

Bipolar junction Transistor: Construction, Principle of Operation, Amplifying Action, Common Emitter, Common Base and Common Collector configurations, Current amplification factor, Relation between α and β , Comparison of CE, CB and CC configurations. SCR Construction, Operation and V-I characteristics

TEXT BOOKS:

1. D.P. Kothari and I. J. Nagrath, "Basic Electrical Engineering", Tata McGraw Hill, 4th Edition, 2019
2. MS Naidu and S Kamakshaiah, "Basic Electrical Engineering", Tata McGraw Hill, 2nd Edition, 2008.
3. M. S. Sukhija, T. K. Nagsarkar, "Basic Electrical and Electronics Engineering", Oxford, 1st Edition, 2012.
4. V.K. Mehta, Rohit Mehta, Principles of Electrical Engineering and Electronics – S.Chand Publications, 2nd Edition, 2014.

REFERENCE BOOKS:

1. R. L. Boylestad and Louis Nashelsky, "Electronic Devices and Circuits – PEI/PHI, 9th Ed, 2006.
2. J. Millman and C. C. Halkias, SatyabrataJit, "Electronic Devices and Circuits – TMH, 2/e, 1998.
3. William Hayt and Jack E. Kemmerly, "Engineering circuit analysis- McGraw Hill Company, 6th edition, 2012.
4. L. S. Bobrow, "Fundamentals of Electrical Engineering", Oxford University Press, 2011.
5. E. Hughes, "Electrical and Electronics Technology", Pearson, 2010.

Web Links:

1. www.youtube.com/watch?v=vh_aCAHThTQ
2. www.electricaleasy.com/2014/03/electrical-transformer-basic.html
3. www.youtube.com/watch?v=Unh99Qn7CmI
4. www.youtube.com/watch?v=d_LOXUEFA-o
5. www.electricaleasy.com/2022/09/construction-and-working-of-dc-generator.html

Basic Electrical & Electronics Engineering Lab

B.Tech. I Semester
Subject Code 22EC108ES

L	T	P	C
0	0	2	1

Prerequisites: Mathematics

Corequisites: Basic Electrical and Electronics Engineering

Course Objectives:

1. To Analyze a given network by applying various electrical laws.
2. To Analyze the performance of single phase transformers.
3. To Analyze the performance of transformers, DC and AC machines.
4. To introduce the concepts of diodes and transistors.
5. To impart the knowledge of various types of Rectifiers.

Course Outcomes:

After completion of this course, the students will be able to:

1. Verify the Ohms law, KCL, KVL with practical approach.
2. Estimate the performance calculations of single phase transformers.
3. Analyze the Performance characteristics of DC and AC machines through various testing methods.
4. Compare the characteristics of different types of diodes and transistors.
5. Evaluate the performance of Rectifiers with and without filters.

SECTION A: ELECTRICAL ENGINEERING:

1. Verification of Ohm's law.
2. Verification of KCL and KVL.
3. Brake test on DC Shunt motor.
4. Brake test on 3-phase Induction motor.
5. Load Test on Single-Phase Transformer.
6. Measurement of Voltage, Current and Real Power in Primary and Secondary circuits of a Single Phase Transformer.
7. No Load Characteristics of 3 phase Alternator.

SECTION B: ELECTRONICS ENGINEERING:

1. Study and operation of
(i) Multi-meters (ii) Function Generator (iii) Regulated Power Supplies (iv) CRO
2. PN Junction Diode Characteristics A) Forward bias B) Reverse bias
3. Zener Diode Characteristics A) Forward bias B) Reverse bias
4. Input and Output characteristics of BJT in CE Configuration.
5. Half wave Rectifier without and with Filters .
6. Full wave Rectifier without and with Filters .
7. Note: Total 10 experiments are to be conducted.
(Minimum Five experiments from PART-A, Five experiments from PART-B)

TEXT BOOKS:

1. D.P. Kothari and I. J. Nagrath, "Basic Electrical Engineering", Tata McGraw Hill, 4th Edition, 2019.
2. MS Naidu and S Kamakshaiah, "Basic Electrical Engineering", Tata McGraw Hill, 2nd Edition, 2008.

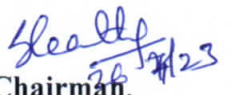
REFERENCE BOOKS:

1. P. Ramana, M. Suryakalavathi, G.T.Chandrasheker, "Basic Electrical Engineering", S. Chand, 2 nd Edition, 2019.
2. D. C. Kulshreshtha, "Basic Electrical Engineering", McGraw Hill, 2009
3. M. S. Sukhija, T. K. Nagsarkar, "Basic Electrical and Electronics Engineering", Oxford, 1st Edition, 2012.
4. Abhijit Chakrabarthi, Sudipta Debnath, Chandan Kumar Chanda, "Basic Electrical Engineering", 2nd Edition, McGraw Hill, 2021.

Web links: -

1. https://www.youtube.com/watch?v=Ki60DB0I3W4&list=PLwymdQ84KI-x0T05PcG6D_2rhbWV_O93B&index=2
2. <https://www.youtube.com/watch?v=W-AqhZLm7h4>
3. <https://www.youtube.com/watch?v=UkH4CaAsG6Q>
4. <https://www.youtube.com/watch?v=Hfk7UFSIF0>
5. <https://www.youtube.com/watch?v=i9wbWYtm2cI>
6. <https://www.youtube.com/watch?v=UdaATCmDfYU>
7. <https://www.youtube.com/watch?v=1IZIjIf3NDw>
8. <https://www.youtube.com/watch?v=X-i1MevYcpM>
9. <https://www.youtube.com/watch?v=syZgyPLHyp8>
10. <https://www.youtube.com/watch?v=QGawHsg4NpQ>

The Chairman concluded the meeting and thanked all the members for attending and sharing their views.


Chairman,
Board of Studies,
Department of ECE,
CMR Technical Campus.