

SWARNANDHRA

COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous)

Accredited by NBA, AICTE, NEW DELHI • Accredited by NAAC with "A" Grade – 3.32/4.00 CGPA

Recognized by UGC Under Sections 2(f) & 12 (B) of UGC Act 1956

Approved by AICTE, New Delhi, Permanent Affiliated to JNTU K, Kakinada

Seetharampuram, NARSAPUR-534 280, W.G-Dist., Andhra Pradesh

Department of Electrical and Electronics Engineering

TEACHING PLAN

Course Code	Course Title	Semester	Branches	Contact Periods/ Week	Academic Year	Date of Commencement of Semester
16EE7T02	ELECTRICAL DISTRIBUTION SYSTEMS	VII	EEE	5	2021-2022	04-10-2021

Course Outcomes: After successful completion of this course, students should be able to:

- 1 Understand the various concepts of distribution system and the design of substations. (K1)
- 2 Determine the voltage drop and power loss. (K3)
- 3 Understand the protection and its coordination. (K1)
- 4 Understand the effect of compensation on p.f improvement and voltage control. (K1)

Unit	Outcome/Bloom's Level	Topics No.	Topics/ Activity	Text Book/ Reference	Contact Hour	Delivery Method
UNIT-1. DISTRIBUTION SYSTEMS						
1	COURSEOUTCOME-1: Understand the various concepts of distribution system and the design of substations. (K1)	1.1	Classification of Distribution systems	T1,R2	1	Chalk&Talk, PPT
		1.2	design features of Distribution system	T1,R2	1	Chalk&Talk, PPT
		1.3	design features of Distribution system continued	T1,R2	1	Chalk&Talk, PPT
		1.4	Radial Distribution, ring main Distribution	T1,R2	1	Chalk&Talk, PPT
		1.5	voltage drop calculations	T1,R2	1	Chalk&Talk, PPT
		1.6	radial DC distributor fed at one end and at both ends	T1,R2	1	Chalk&Talk, PPT
		1.7	radial DC distributor fed at one end and at both ends continued	T1,R2	1	Chalk&Talk, PPT
		1.8	Problems on radial DC distributor fed at one end and at both ends	T1,R2	1	Chalk&Talk, PPT
		1.9	Problems on radial DC distributor fed at one end and at both ends continued	T1,R2	1	Chalk&Talk, PPT
		1.10	ring main distributor	T1,R2	1	Chalk&Talk, PPT



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		1.11	stepped distributor and AC Distribution	T1,R2	1	Chalk&Talk, PPT
		1.12	Comparison of AC and DC Distribution system	T1,R2	1	Chalk&Talk, PPT
		Total			12	
		UNIT-2. SUB STATIONS				
		2.1	Location of substations	T1,R2	1	Chalk&Talk, PPT
		2.2	Rating of distribution substation	T1,R2	1	Chalk&Talk, PPT
		2.3	Service area within primary feeders	T1,R2	1	Chalk&Talk, PPT
		2.4	Service area within primary feeders continued	T1,R2	1	Chalk&Talk, PPT
		2.5	Benefits derived through optimal location of substations	T1,R2	1	Chalk&Talk, PPT
		2.6	Benefits derived through optimal location of substations continued	T1,R2	1	Chalk&Talk, PPT
		2.7	Distribution Feeders	T1,R2	1	Chalk&Talk, PPT
		2.8	Design Considerations of distribution feeders	T1,R2	1	Chalk&Talk, PPT
		2.9	Radial and loop types of primary feeders	T1,R2	1	Chalk&Talk, PPT
		2.10	Voltage levels- Feeder loading	T1,R2	1	Chalk&Talk, PPT
		2.11	Voltage levels- Feeder loading continued	T1,R2	1	Chalk&Talk, PPT
		2.12	Basic design practice of the secondary distribution system	T1,R2	1	Chalk&Talk, PPT
		Total			12	
		UNIT-3. SYSTEM ANALYSIS				
		3.1	Voltage drop and power loss calculations	T1,R2	1	Chalk&Talk, PPT
		3.2	Voltage drop and power loss calculations continued	T1,R2	1	Chalk&Talk, PPT
		3.3	Derivation for voltage drop and power loss in lines	T1,R2	1	Chalk&Talk, PPT
		3.4	Manual methods of solution for radial	T1,R2	1	Chalk&Talk, PPT
i:	COURSEOUTCOME-2: Understand the various concepts of distribution system and the design of substations.(K1)					
iii	COURSEOUTCOME-2: Understand the various concepts of distribution system and the design of substations. (K1)					



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		networks			
	3.5	Manual methods of solution for radial networks continued	T1,R2	1	Chalk&Talk, PPT
	3.6	Three phase balanced primary lines.	T1,R2	1	Chalk&Talk, PPT
	3.7	Three phase balanced primary lines continued	T1,R2	1	Chalk&Talk, PPT

Total 07

UNIT-4. DISTRIBUTION SYSTEM PROTECTION & COORDINATION

COURSEOUTCOME-3:
Understand the protection and its coordination. (K1)

IV

	4.1	Objectives of distribution system protection	T1	1	Chalk&Talk, PPT
	4.2	Types of common faults	T1	1	Chalk&Talk, PPT
	4.3	Procedure for fault calculations	T1	1	Chalk&Talk, PPT
	4.4	Procedure for fault calculations continued	T1	1	Chalk&Talk, PPT
	4.5	Protective devices: Principle of operation of fuses	T1	1	Chalk&Talk, PPT
	4.6	Circuit reclosures	T1	1	Chalk&Talk, PPT
	4.7	Line sectionalizes and circuit breakers	T1	1	Chalk&Talk, PPT
	4.8	Line sectionalizes and circuit breakers continued	T1	1	Chalk&Talk, PPT
	4.9	Coordination of Protective devices: General coordination procedure	T1	1	Chalk&Talk, PPT
		Residual current circuit breaker(RCCB)			

Content beyond the syllabus (if need)

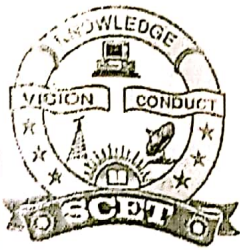
Total 10

UNIT-5. COMPENSATION FOR PF IMPROVEMENT

COURSEOUTCOME-4:
Understand the effect of compensation on p.f improvement and voltage control. (K1)

V

	5.1	Capacitive compensation for power-factor control	T1,R2	1	Chalk&Talk, PPT
	5.2	Capacitive compensation for power factor control Continued	T1,R2	1	Chalk&Talk, PPT
	5.3	Different types of power capacitors	T1,R2	1	Chalk&Talk, PPT



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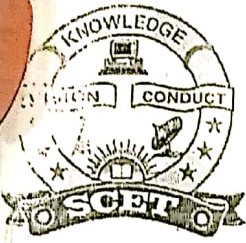
	5.4	Effect of shunt capacitors	T1,R2	1	Chalk&Talk, PPT
	5.5	Power factor correction	T1,R2	1	Chalk&Talk, PPT
	5.6	Capacitor allocation	T1,R2	1	Chalk&Talk, PPT
	5.7	Economic justification	T1,R2	1	Chalk&Talk, PPT
	5.8	Procedure to determine the best capacitor location	T1,R2	1	Chalk&Talk, PPT
	5.9	Procedure to determine the best capacitor location continued..	T1,R2	1	Chalk&Talk, PPT
Content beyond the syllabus (if need)		Find capacitor size in kVAR & F for pf improvement.			
Total				10	
UNIT-6. VOLTAGE CONTROL					
VI COURSEOUTCOME-4: Understand the effect of compensation on p.f improvement and voltage control. (K1)	6.1	Correction of system voltage problems	T1,R2	1	Chalk&Talk, PPT
	6.2	Correction of system voltage problems continued	T1,R2	1	Chalk&Talk, PPT
	6.3	Equipment for voltage control	T1,R2	1	Chalk&Talk, PPT
	6.4	Equipment for voltage control continued	T1,R2	1	Chalk&Talk, PPT
	6.5	Effect of series capacitors	T1,R2	1	Chalk&Talk, PPT
	6.6	Effect of AVB/AVR	T1,R2	1	Chalk&Talk, PPT
	6.7	Effect of AVB/AVR continued	T1,R2	1	Chalk&Talk, PPT
	6.8	Linedrop compensation	T1,R2	1	Chalk&Talk, PPT
Total				08	
Cumulative Proposed Periods				69	

Text Books:

S. No.	Authors, Book Title, Edition, Publisher, Year of Publication
1	Turan Gonen, "Electric Power Distribution system. Engineering" 3 rd edition - CRC Press. 2014.

Reference Books:

S. No	Authors, Book Title, Edition, Publisher, Year of Publication
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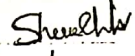
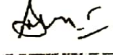
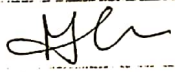
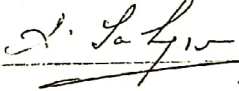
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1. Dale R.Patrick and Stephen W.Fardo, Electrical Distribution Systems, 2nd edition. CRC press, 2012.
2. A.S. Pabla, Electric Power Distribution, 6th edition Tata McGraw hill Publishing Company, 2017.
3. V.Kamaraju, Electrical Power Distribution Systems, 1st edition, McGraw-Hill Education, 2017.
4. C.L. Wadhw, Generation Distribution and Utilization of Electrical Energy –Revised 3rd Edition, New Age International Publishers, 2012.

Web Details:

1. [https://electrical4u.in/electrical distribution](https://electrical4u.in/electrical%20distribution)
2. [https://en.wikipedia.org/wiki/distribution systems](https://en.wikipedia.org/wiki/distribution_systems)
3. <https://nptel.ac.in/courses/108/106/108106022>
4. https://www.google.co.in/books/edition/Electrical_Distribution_Systems/uXQWEAAAQBAJ?hl=en&gbpv=0

	Name	Signature with Date
i. Faculty /Course Coordinator	Mr.A.V D Suresh Kumar	
	Mr. B.Subrahmanyam	
ii. Module Coordinator	Mr. V. Madhu	
iii. Programme Coordinator	Mr.A.Satyanarayana	


Principal