Alanya Alaaddin Keykubat University | Rafet Kayış Faculty of Engineering
Electrical-Electronics Engineering Department
2023-2024 Fall Semester

Syllabus

Code/Name	SEC 401.34/ Distribution Systems
Type	Required
Credit/ECTS	6/6
Hour per Week	3(3+0+0)
Level/Year	Undergraduate/4
Semester	Fall
Classroom	A103
Content	This course familiarizes the student with electric distribution systems. It focuses specifically on designing and operating primary and secondary distribution systems. It includes explanation of radial network, ring network, fundamentals of line conductor cross-section determinations, calculations of fault current, voltage-drop calculations, fundamentals of grounding, power factor correction, power quality and protection systems.
Prerequisites	None
Textbooks	***Primary*** D A. A. Sallam, "Electric Distribution Systems, Wiley-IEEE Press, First Edition, 2011. ***Supplementary*** E. Dwilconk, Engineering Design for Electrical Engineers, Prentice Hall, New Jersey, 1990.
Objectives	• To learn logical steps of design of distribution systems • To learn Network calculations, operation principles of distribution systems • To learn transfer potential, step voltage, touch voltage and grounding in distribution system • To learn Network faults and short circuit current calculations, power factor correction
Course Outcomes	In this course you will be able to: CO1 Have knowledge and skills required for operating of distribution systems CO2 Have knowledge about network voltage drop and line losses CO3 Have knowledge about short circuits current calculations and circuit breaker selection CO4 Have knowledge about transfer potential, step voltage, touch voltage and grounding in distribution system CO5 Have knowledge about power factor correction

Weekly Schedule of Topics

W	Topic
1	The introduction to electrical distribution systems
2	Characteristics of cables and overhead lines, selection criteria of cross-section of conductor
3	Network types and configurations according to voltage levels
4	Voltage drop calculations in secondary distribution networks
5	Voltage drop calculations in distribution networks supplied by different voltage levels
6	Voltage drop calculations in primary distribution networks, voltage drop calculations in ring distribution networks
7	Line losses, short circuit calculations.

8	Short circuit calculations and selection of circuit breakers
9	Investigation of unsymmetrical short circuits.
10	Reactive power compensation
11	Some concepts for protection such as grounding, transferred potential, step voltage, touch voltage
12	Network protection
13	Relay coordination
14	Harmonics and resonant circuits

Contribution to Program Outcomes*

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	5	5	1	5	0	5	1	3	1	3	0
CO2	5	5	1	4	0	5	4	3	4	3	0
CO3	5	5	3	5	2	5	1	3	1	3	0
CO4	5	4	3	5	0	5	2	3	1	4	0
CO5	5	4	1	4	0	5	4	3	4	1	2

* Contribution Level | 0: None | 1: Very Low | 2: Low | 3: Medium | 4: High | 5: Very High

Requirements	Basic knowledge of Electromagnetic Field Theory
Course Policy	• Be in the class on time. • English should always be used to communicate with one another. • At least 70% attendance is required, otherwise a grade of **DZ** will be assigned.
Cheating & Plagiarism	• Copying or letting someone copy your work on exams, assignments, or reports is cheating. • Cutting and pasting text, figures and tables from web sources or any other electronic source is plagiarism. • The consequence of academic dishonesty is to receive a grade of **FF** for the course.
Evaluation	Midterm 40% Final Exam 60% Total 100%

Instructor

Name/Surname	Leyla Akbulut	Email	leyla.akbulut@alanya.edu.tr
Room		Office Hours	

Prepared by Akın Uslu on June 10th, 2024.