

1. Course number and name

EE 483: Electric Energy Distribution Systems (Topics in Electrical Engineering)

2. Credits and contact hours

3 credits, 3 lecture hours

3. Instructor's or course coordinator's name

Anamika Dubey

4. Textbook, title, author, and year

W. H. Kersting. 2012. *Distribution System Modeling and Analysis* (3rd ed.). CRC Press.

Other supplemental materials

Cooper Power Systems. 1990. *Electrical Distribution System Protection* (3rd ed.).

Course notes will be made available on the course web page.

T. Gonen, 2014. *Electric Power Distribution System Engineering* (3rd ed.).

McGraw-Hill. (Optional).

5. Specific course information

a. *Catalog description:* Fundamentals of distribution systems engineering, distribution system modeling and analysis, distribution load flow analysis, voltage regulation, recent advances in distribution automation.

b. *Prerequisites or corequisites:* EE 361 or equivalent.

6. Specific goals for the course

By the end of the course, students will be able to

- Ability to mathematically model and analyze electric power distribution systems (1b, 1c, 1d, 1e, 6a)
- Ability to develop computer models for electric power distribution systems and perform power flow, voltage drop and short-circuit analysis. (2a, 2b, 2c, 2e, 2g, 6b, 6c, 7b)
- Ability to present the findings from analysis of the given power distribution system. (3a, 3c, 3d, 3e, 6c)
- Ability to plan and operate electric power distribution systems (1a, 1b, 1c, 1d, 1e, 2c, 2e, 2g, 6a)
- Have a basic understanding of recent advances in electric power distribution systems (3a, 3c, 3d, 7c)

7. Brief list of topics to be covered

- Introduction to Distribution Systems
- Load Characteristics
- Approximate Analysis
- Distribution Transformers
- Series Impedance
- Shunt Admittance
- Line Models

- Distribution Power Flow
- Voltage Regulation
- Capacitor Placement
- Fault Analysis
- Distribution Protection
- Distribution Automation