

ELEG 5513 - ELECTRIC POWER QUALITY

Spring Semester, 1995

Catalog Data: ELEG 5513. Electric Power Quality. Credit 3. The theory and analysis of electric power quality for industrial and commercial power systems. Specific topics include: grounding, shielding, wiring considerations, instrumentation, site surveys and analysis, case studies, specification and selection of power system components, and recommended design and installation practice. Prerequisites: ELEG 3303, MATH 3404, or consent of the instructor.

Textbook: IEEE Std 1100-1992, IEEE Recommended Practice for Powering and Grounding Sensitive Electronic Equipment, 1992.

Reference: G. T. Heydt, Electric Power Quality, West Lafayette IN: Stars in a Circle Publications, 1991.

NFPA 70, National Electrical Code, 1994.

Selected papers, reports, etc. from the literature.

Coordinator: Kraig J. Olejniczak, Associate Professor of Electrical Engineering

Goals: This course is designed to introduce the senior and/or graduate electrical engineering student to the growing concerns of electric power quality for industrial and commercial power systems with an emphasis on applications involving the supplying and grounding of sensitive electronic loads.

Prerequisites by topic:

1. Complex numbers and phasors.
2. Sinusoidal steady-state analysis and power calculations.
3. Static electric and magnetic field theory.
4. Elementary concepts of matrix algebra.

Topics:

1. Introduction. (1 class *)
2. Definitions, measures and standards of power quality. (3 classes)
3. Guidelines and needs for electric power quality. (3 classes)
4. Electric Power Quality Fundamentals. (6 classes)
5. Electric Power Quality Instrumentation. (3 classes)
6. Site Surveys and Analysis Methods. (6 classes)
7. Case Histories. (6 classes)
8. Specification and Selection of Equipment and Materials. (6 classes)
9. Recommended Design/Installation Practices. (7 classes)
10. Exams. (3 classes)

Computer usage:

Use of PSpice[®], Matlab[®] and other software programs for course homework assignments and special projects.

ELEG 5513
Spring Semester, 1995
Page Two

Laboratory projects (including major items of equipment and instrumentation used):

None.

ABET category content as estimated by faculty member who prepared this course description:

Engineering science: 2.5 credits or 83%
Engineering design: 0.5 credit or 17%

* Three 50 minute classes per week.

Prepared by: _____ Date: