



THE OHIO STATE UNIVERSITY
COLLEGE OF ENGINEERING

High Voltage Engineering and Laboratory

ECE 5047

Credit Hours:

3.00

Course Levels:

Undergraduate (1000-5000 level)

Graduate (5000-8000 level)

Course Components:

Lecture

Lab

Course Description:

Dielectric strength and breakdown of gases, liquids, and solids, electric field design problems in power system equipment; laboratory study of high voltage insulation.

Prerequisites and Co-requisites:

Prereq: 3040 (341), and enrollment in ECE major, or Grad standing in Engineering, Biological Sciences, or Math and Physical Sciences.

Course Goals / Objectives:

- Apply the knowledge of mathematics and engineering, especially in the areas of high voltage engineering, electromagnetics, and power engineering
- Be able to design and conduct high voltage experiments through their experience in the High Voltage Laboratory
- Be able to interpret data by the use of statistics
- Be able to design a system, component or process, and apply simultaneously high voltage criteria
- Work and write reports together as team members
- Develop an ability to recognize, formulate and solve high voltage engineering problems
- Understand professional responsibility through meticulous safety procedures
- Communicate more efficiently, since weekly lab reports are required; and will practice report writing, programming, plotting and editing skills necessary for engineering practice
- Use modern simulation and programming tools to solve problems related to contemporary engineering issues, such as high voltage transmission line design for wind power

Course Topics:

- Introduction to high voltage engineering
 - High voltage generation/measurements
 - Electric and magnetic fields
 - Breakdown in gases
 - Breakdown in liquids
 - Breakdown in solids
 - Insulators, artificial aging
 - Corona discharges
 - Partial discharges
 - Surge generators
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Designation:

Elective