



E5 215 Aug. 2;1

Pulsed Power Engineering

Instructor

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Teaching Assistant

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Department: Electrical Engg.

Course Time: Tue/Thu 10-11

Lecture venue: HV lab lecture hall

Detailed Course Page:

Announcements

Brief description of the course

This is an elective course for the M.Tech and Ph.D students specialising in High voltage stream of the Electrical Power Engg programme. Students sponsored from DRDO, atomic energy and military establishments are specifically encouraged to take the course.

Prerequisites

The students should have done a basic course in Electrical engg including circuit theory and electromagnetics

Syllabus

Overview of Pulsed Power Engineering, Energy storage devices, Pulsed power generators, Pulse transformers, Pulse modulators, PFN schemes, Marx circuits, Magnetic pulse compression, FCG, Explosively driven FCGs, Homopolar generators. Power conditioning systems, Switching devices, Insulation requirements for pulsed power systems- gaseous, liquid, solid and magnetic insulation and their behaviour under pulsed voltages. Measurement techniques of pulsed power parameters. Applications of pulsed power systems, pulsed power systems for high power lasers, HPM, UWB, IRA, Railgun, ETC, NEMP and

ESD simulators. Pulsed power systems for biological and pollution control applications.

Course outcomes

This course will train the students to design pulsed power systems for use in various military, atomic energy and industrial applications

Grading policy

20% for assignments, 30% for Mid term and 50 % for final exam

Assignments

Resources

Advances in Pulsed Power Technology, Vol. 1 & 2, Plenum Press, New York