E5-232 May-June 2:1

Advances in Electric Power Transmission

Instructor

Dr Subba Reddy B
Email: sreddy@iisc.ac.in

Teaching Assistant

Email:

Department: Electrical Engg

Course Time: Tue , Thu, 9.30 to 11.30 Thu: 2 -5pm

Lecture venue: HV Seminar Hall / EE Lecture hall

Detailed Course Page:

Announcements

The first lecure meeting will be on 1st May 2018

Brief description of the course

The course provides important information about the recent advances in EHV/UHV AC & DC transmission, Design criteria to be adopted for overhead transmission components namely conductors, insulators, towers, accessories/hardware etc. Performance of components to Lightning, switching, powerfrequency overvoltages and pollution/contamination conditions, protection and safety issues etc. .

Prerequisites

Preferably knowledge of High Voltage Engg.

Syllabus

Overview of primary and renewable energy sources, installed capacity and projected growth.

Recent advances in UHV power transmission - introduction to 765/1200kV AC and Â±500/800 kV DC transmission systems; present status and future growth.

Design criteria for overhead transmission lines: general system design, methodology,reliability, wind/ice loading, security and safety requirements.

Components of HV transmission systems, types of conductors/HTLS, bundle configurations, conductor

accessories/clamps etc.

Transmission towers: calculations of clearances for power frequency, switching and lightning surges, right of way (ROW), earth wire/OPGW,

Selection of insulators for light, medium and heavy polluted areas.

Up-gradation of existing transmission lines, Design considerations of UHV Substations, Comparison of AIS, Hybrid-AIS and GIS.

Review on insulation coordination/overvoltages for UHV systems- high performance metal oxide surge arresters, Introduction to SCADA and Substation automation.

Earthing and safety measures for 765/1200kV HV substations.

Course outcomes

Advanced knowledge in high voltage insulation and transmission engg,

Understanding of the SCADA and substation automation etc..

Grading policy

50% for assignments & Midterm test, 50% for final exam

Assignments

Assignments pertaining to the lecture and laboratory will be given.

Resources

Some reference books are listed,

Recent papers from IEEE/IET transactions, CIGRE proceedings,

Handouts of the course material will be given.