



# ADVANCES IN UHV TRANSMISSION AND DISTRIBUTION

## DR. SUBBA REDDY B

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IISc Bangalore

**PRE-REQUISITES :** Basic electrical Engineering

**INTENDED AUDIENCE :** 3rd or 4th year UG, 1st year masters and research students

### **COURSE OUTLINE :**

This course introduces the recent advances in EHV/UHV transmission and distribution systems. The course emphasizes learning and understanding the newer design criteria required for the UHV transmission systems viz: insulation design, protections, safety concerns etc. The course starts with an introduction to the importance of EHV /UHV transmission, its present and future growth. The discussion on the various components used for UHV transmission, design considerations for UHV substations etc are strengthened with the aid of lectures, practical video demonstrations and assignment exercises.

### **ABOUT INSTRUCTOR :**

Prof. Subba Reddy B is a Principal Research Scientist at the High Voltage Laboratory, Dept. of Electrical Engineering, Indian Institute of Science, Bangalore, India. He received Bachelor's in Electrical Engineering degree from Karnatak university, Dharwad, and M.Sc.(Engg) and PhD from Indian Institute of Science, Bangalore, India. His research interests are high voltage engineering, transmission line insulators, numerical techniques for high voltage applications, condition monitoring and diagnostics of HV equipment, surge arrester, renewable energy systems etc. He has received national and international recognition for his research work. He is a Fellow of Institution of Engineers (India), Fellow, Society of Power Engineers (India) and Senior member IEEE.

### **COURSE PLAN :**

**Module 1 :** Introduction to the development of Power Transmission.

**Module 2 :** Recent advances in UHV power transmission systems; present status and future growth.

**Module 3 :** General Design Criteria for overhead transmission lines: Methodologies, reliability, wind/ice loading etc

**Module 4 :** Major Components of HV transmission systems, types of conductor configurations conductor accessories/clamps etc.

**Module 5 :** Towers for UHV transmission: calculations of clearances for power frequency, switching and lightning surges, right of way (ROW) etc.

**Module 6 :** Selection of insulators for light, medium and heavy polluted areas

**Module 7 :** Up-gradation of existing transmission lines

**Module 8 :** Design consideration of UHV substations, Comparison of AIS, Hybrid-AIS and GIS electric and magnetic fields.

**Module 9 :** Insulation coordination for UHV systems

**Module 10 :** Earthing and safety measures for UHV substation