

## **(EE508) FLEXIBLE AC TRANSMISSION SYSTEMS**

### **Objective of the Course :**

*The student is exposed to the modelling and analysis of the power control methods and of improvement of power quality through the use of FACTS devices.*

### **UNIT - I**

Power Flow in AC Systems, Loading capability Limits, Dynamic stability considerations, controllable parameters, basic types of FACTS, FACTS controllers

### **UNIT - II**

#### **Voltage Source Converters:**

Single phase and 3-phase full wave bridge converters, transformer connections for 12, 24, 48 pulse operation, 3 level voltage source converters, PWM converters.

### **UNIT - III**

#### **Static Shunt Compensation:**

Objectives of shunt compensation, Voltage in stability and its prevention, power oscillations and damping, controllable VAR generation, variable impedance type VAR generators.

### **UNIT - IV**

#### **SVC and STATCOM:**

Dynamic performance, transient stability enhancement, modeling and simulation of SVC and STATCOM

### **UNIT - V**

Series capacitive compensation, transient stability improvement. Thyristor controlled series capacitor (TCSC), thyristor control power angle regulator (TCPAR) Unified power flow controller and its modeling and simulation.

### **REFERENCE BOOKS:**

1. N.G. Hingorani and L. Gygi, "Understanding FACTS Devices", IEEE Press Publications, 2000.
2. E. Acha et. Al. John Wiley, "FACTS: Modelling and Simulation in power Networks", London, UK, 2004
3. P. Kundur, "Power System Stability and Control", Mc Graw Hill, 1994.