



# FACTS DEVICES

## PROF. AVIK BHATTACHARYA

Department of Electrical Engineering  
IIT Roorkee

**PRE-REQUISITES** : Knowledge of Power Electronics and Power Systems( Power system dynamics and Control)

**INTENDED AUDIENCE** : Post Graduate student of Power Electronics (EDPE) and Power System

**INDUSTRIES APPLICABLE TO** : SIEMENS,ABB, GE, POWER GRID

### COURSE OUTLINE :

FACTS is the acronym for Flexible AC Transmission Systems and refers to a group of resources used to overcome certain limitations in the static and dynamic transmission capacity of electrical networks. The main purpose of these systems is to supply the network as quickly as possible with inductive or capacitive reactive power that is adapted to its particular requirements, while also improving transmission quality and the efficiency of the power transmission system. FACTS Devices course is designed to provide in-depth knowledge to provide actual hardware solution of the FACTS.

### ABOUT INSTRUCTOR :

Prof. Avik Bhattacharya is working as Assistant Professor in IIT Roorkee from February 2014. Before joining IIT Roorkee he was research and development team of Danfoss Solar inverter and ABB. He has over a decade of experience in power quality issues and published four IEEE transaction on it. He is also teaching this course in IIT Roorkee for past two years for UG and PG (B.Tech fourth year and M.Tech) . His teaching is right blending of Industry, research and academic interest

### COURSE PLAN :

**Week 1:** FACTS: Concept & Power Electronic Controllers.

**Week 2:** Power Electronic Controllers and PWM techniques.

**Week 3:** Static Shunt Compensators

**Week 4:** Static Shunt Compensators

**Week 5:** Static Series Compensators

**Week 6:** Static Series Compensators and Static Voltage and Phase Angle Regulators.

**Week 7:** Unified Power quality Conditioner (UPQC) and Unified Power Flow Controller (UPFC).

**Week 8:** Interline Power Flow Controller (IPFC) and application of FACTS device.