**DC MICROGRID AND CONTROL SYSTEM**

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IIT Roorkee

**TYPE OF COURSE** : Rerun | Elective | PG

**COURSE DURATION** : 8 weeks (26 Jul'21 - 17 Sep'21)

**EXAM DATE** : 26 Sep 2021

**PRE-REQUISITES** : Power electronics, Power system and Control system

**INTENDED AUDIENCE** : M.Tech and PhD students in Power electronics and Power system

**INDUSTRIES APPLICABLE TO** : ABB, GE, CESC

**COURSE OUTLINE**:
This course is suitable for PG students studying Power electronics, Power system and System & control. The course details the fundamental concepts of Microgrid and its components, types of Microgrids, advantages of Microgrid compared to the central conventional grid. The course also describes general concepts and application, control strategies and principle of operation of DC Microgrid. The course is applicable for students and researchers who do research in fast growing and emerging renewable energy technology.

**ABOUT INSTRUCTOR**:
Dr Avik Bhattacharya joined IIT Roorkee in February 2014. His fields of interest are DC Microgrids, FACTS, Power Quality, Solid state transformer, SIC and Gian devices. He has taught Power Electronics in IIT Roorkee for two years and FACT Devices for four years. Dr. Bhattacharya, before joining IIT Roorkee, has served in power electronics industries. His teaching thus has a proper blend of industry and academic orientation.

**COURSE PLAN**:
- **Week 1**: Brief introduction and Concepts of Microgrid
- **Week 2**: Types of Microgrid system, Microgrids vs Central Conventional power system
- **Week 3**: AC and DC Microgrids, Comparison between AC and DC Microgrids
- **Week 4**: Power Electronic Converters in Microgrid application, DC Microgrid Topologies
- **Week 5**: DC Power source components, application of DC Microgrids
- **Week 6**: DC Microgrid operations, Some Standards related with DC Power Circuit
- **Week 7**: Control methods in DC Microgrid
- **Week 8**: Linear and nonlinear Stability system in DC Microgrid