EL6663 Distributed Generation Systems

Course outline

Lecture 1: Smart Grids and DG's -- advantages and limitations.
Lecture 2: Classification of DG's -- Principles of operation, and elect equivalent circuits.
Lecture 3: Induction generator – self and line excitation
Lecture 4: Induction generator – fault assessment
Lecture 5: Synchronous generator – reactive power control
Lecture 6: Islanded operation
Lecture 7: Utility Interconnection -- Static converters
• Midterm examination
Lecture 8: Utility Interconnection – synchronization with the utility line
Lecture 9: Utility Interconnection – reactive power control
Lecture 10: Utility Interconnection – relay protection
Lecture 11: Utility Interconnection – quality of power assessment
Lecture 12: Utility Interconnection – fault condition analysis
Lecture 13: Utility Interconnection – single-phase generators
• Final exam

Ref. books:

1. "Electrical Machines, Drives, and Power Systems," by T. Wildi, Prentic Hall, 6th Ed., 2006
2. "Power System Analysis," by J.J. Grainger, W.D. Stevenson, McGraw Hills, 1994
3. "Power Electronics - Circuits, Devices, and Applications," by M.H. Rashid, 3rd Ed., 2004
4. "Electric Power Quality," by G.T. Heydt, Stars in a Circle Publications, 1991

Grading policy:

Homework – 10%
Midterm exam – 30%
Final exam – 60%