

**EE3015 – POWER SYSTEMS & PROTECTION
2016 – 2017**

Course Notes on

**FUNDAMENTALS OF POWER SYSTEMS &
THREE-FAULT FAULTS &
POWER SYSTEMS OPERATION**

(Weeks 1 to 7: 13 Hours)

by

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INTRODUCTION

- Introduction to Power Systems
- Review of Single-phase & Three-phase Circuits
- Per-unit System
- Impedance Diagram
- Power Transfer
- Load Models

SYNCHRONOUS GENERATORS

- Construction/Types
- Synchronous Reactance
- Equivalent Circuits
- Voltage Regulation
- Excitation Control
- Governor Control
- Parallel Operation
- Applications

CONTENTS (cont'd)

POWER TRANSMISSION LINES

- Construction
- Properties of R, L & C
- Equivalent Circuits

FAULTS in POWER SYSTEMS

- Symmetrical Faults
- Z_{Bus} Matrix and Thevenin's Methods

POWER SYSTEMS OPERATION

- Reactive Power & Voltage Control
- Methods of Voltage Control
- Shunt Compensation

ACKNOWLEDGEMENT

The lecturer would like to thank Prof L K Goel for the permission to use his EE3015 lecture notes (Wks 1 – 7).

PRESCRIBED TEXTS

1. Chapman Stephen, “Electric Machinery and Power System Fundamentals”, 1st Edition, McGraw-Hill, 2002.(TK2000.C466E)
2. Blackburn J Lewis, Protective Relaying: Principles and Applications, 3rd Edition, CRC Press, 2007. (TK2861.B628 2007)

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1. Wildi Theodore, Electrical Machines, Drives and Power Systems, 6th Edition, Pearson/Prentice-Hall, 2006. (TK2182.W673 2006)
2. Weedy B M, Cory B, “Electric Power Systems”, 5th Edition, John Wiley, 2012. (TK1001.W394 2012)
3. Anderson Paul M, Power System Protection, McGraw-Hill, IEEE Press, 1999. (TK1010.A548)