SEMESTER	***DEPARTMENT***	***COURSE TITLE***
Sixth	*Power Engineering*	*Power Systems I*
COURSE CODE	***HOURS:*** 3	***COURSE SPECIFICATIONS***
EP605	***UNITS:*** 3	*Theoretical Content*

1. ***Understanding Network Theorems.***
   - Understanding network modelling parameters.
   - Thevenin and Norton Theorem.
   - Reciprocity and Compensation.
   - Maximum Power transfer theorem.

2. ***Identification of Four Terminal Network Parameters.***
   - Define ABCD parameters as they apply to four terminal networks.
   - Define the Image Impedance
   - Define the Iterative Impedance
   - Demonstrate their use in calculations of circuits' conditions.
   - Repeat the exercises for more complex networks.

3. ***Power Transformer Parameters:***
   - Define voltage and currents in circuits using transformers of ratio not equal to unity and verify transformation rules of voltage, currents and impedance.
   - Understand the purpose of the open and short circuit test on a transformer and define its parameters.

4. ***Transmission Lines Properties:***
   - Design a simple 'LONG' and 'MEDIUM' length transmission lines of at least ten nodes.
   - Calculate the voltage distribution down the line.
   - Repeat for a 'LONG' line using suitable capacitors and inductors.

5. ***Use of AC – Bridges in Determination of Inductance, Capacitance and Resistance:***
   - Understand the theory and selection of component values for use with; Maxwell-Wien.
   - Repeat using the Anderson Bridge.
   - Repeat using the Hay's Bridge.

- Identify the special properties and use off the Schering Bridge and demonstrate it's use.
- Understand the theory of measuring very low resistances using the Kelvin double Bridge.

References:

1. ***Elements of power system,*** by W. Stevenson.
2. ***Power System Analysis,*** John Grainger and William D. Stevenson JR. 1994Company,