SEMESTER	DEPARTMENT	COURSE TITLE
Eighth	Power Engineering	Power Quality and System Stability

COURSE CODE	HOURS: 3	COURSE SPECIFICATIONS
EP801	UNITS: 3	Theoretical Content

1. **Learn to Identify Power Disturbances, Their Causes and Their Impacts on Electrical Devices and Distribution Networks.**

➢ Load modeling.

➢ Power quality disturbances.

➢ Voltage sags and interruptions, Transient over-voltages, Harmonics, long duration voltage variations, voltage unbalance, voltage fluctuations and light flicker.

2. **Understand Causes and Effects of Harmonics, Non-Linear Loads and Their Contribution to Harmonics.**

➢ Causes and effects of harmonics.

➢ Non-linear loads.

➢ Converter configuration.

➢ Other sources of harmonics.

3. **Elimination/Suppression of Harmonics Using Different Types of Passive Power Filters.**

➢ Radio interference, supply standards, elimination/suppression of harmonics, classical solutions & their drawbacks, passive input filters, high power factor pre-regulator, switching control circuit, transformer connections.

4. **Elimination/Suppression of Harmonics Using Different Types of Active Power Filters.**

➢ Elimination/suppression of harmonics using different types of active power filters-topologies and their control methods.

➢ PWM converter as a voltage source active filter, current source active filter.

5. *Understand the Theory of Voltage Stability.*

➢ Understand the theory of frequency and angle voltage stability.

➢ Study the large and small signal disturbances on power system stability.

References:

1. *Electrical Power System Quality;* Rogger Dugan, McGraw-Hill, 2003.

2. *Power Quality in Electrical System;* Alexender Kusko.