

## **EE6508          POWER QUALITY**

Academic Unit:    3  
Prerequisite:      Nil  
Effective:          Acad Year 2006/07  
Last update:      January 2006

### **OBJECTIVE**

The objective of this course is to instil participating individuals with an in-depth knowledge in power quality. With reliability and availability largely guaranteed, power quality is becoming the primary concern in electric power distribution systems. This module introduces the new concept of power quality and quantifies the power quality disturbances that fall within the wider umbrella of electromagnetic phenomena. It aims to provide a strong foundation for a better understanding of the fundamentals behind each power quality problem in addition to reaching for innovative and economical solutions.

### **DESIRED OUTCOME**

Graduates of this module shall possess the necessary skills to handle power quality related problems. This involves identifying the cause or source of the problem and assessing the severity of each problem with respect to the vulnerability of the affected devices. Computer modelling and simulations for examining the system responses or to evaluate the effectiveness of various solutions are essential skills imparted to the participants. As technology advances and equipment become more sensitive, new innovative ideas and approaches are needed to arrive at the most economical solutions. Graduates expected to be conversant with power quality terminologies, and ready to tackle power quality related challenges.

### **OTHER RELEVANT INFORMATION**

This course is aimed for graduate students and/or practicing engineers working in electric power distribution related fields. Some knowledge of fundamentals of power systems and engineering mathematics is expected.

### **CONTENT**

Concept of Power Quality. Voltage Fluctuations and Variations. Transient Overvoltages. Harmonic Distortions.

### **ASSESSMENT SCHEME**

Continuous Assessment	20%
Final Examination	80%

### **TEXTBOOKS**

1. Dugan R C, McGranaghan M F, Santoso S, and Beaty H W, Electrical Power Systems Quality, Second Edition, McGraw-Hill, 2002.
2. Kennedy B W, Power Quality Primer, First Edition, McGraw-Hill, 2000.

### **REFERENCES**

1. Bollen M H J, Understanding Power Quality Problems: Voltage Sags and Interruptions, First Edition, IEEE Press; 2000.
2. Arrillaga J and Watson N R, Power System Harmonics, Second Edition, John Wiley & Sons, 2003.