

VEER SURNDRA SAI UNIVERSITY OF TECHNOLOGY, BURLA, ODISHA

Lesson Plan

Semester:2nd Semester Master of Technology (PECD), Session: 2016-17

Subject: power quality (Theory)

Branch: Electrical Engineering,

Name of Faculty: Dr. Santi Behera

| Class No. | Module No. | Topics to be Covered  | Signature of Faculty |
|-----------|------------|---|----------------------|
| 1         | I          | PQ Definitions and Standards  |                      |
| 2         | I          | IEEE and IEC PQ Standards,  |                      |
| 3         | I          | General Classification of PQ Phenomena  |                      |
| 4         | I          | PQ Monitoring and Measuring Available monitoring techniques and their drawbacks |                      |
| 5         | I          | Commercial power quality monitors   |                      |
| 6         | I          | Power quality monitors sensitivity PQ Problems Identification                   |                      |
| 7         | I          | PQ Phenomena Classification Identification .                                    |                      |
| 8         | I          | Localization of PQ problems   |                      |
| 9         | I          | Different PQ classification techniques  |                      |
| 10        | I          | case studies  |                      |
| 11        | II         | Harmonic Sources  |                      |
| 12        | II         | Effects of harmonics  |                      |
| 13        | II         | Analysis of harmonics   |                      |
| 14        | II         | Modeling of harmonics   |                      |
| 15        | II         | Harmonic Distortion Mitigation Voltage vs. Current Distortion                   |                      |
| 16        | II         | Harmonics vs. Transients  |                      |
| 17        | II         | Harmonic Sources from Commercial and Industrial Loads                           |                      |
| 18        | II         | Time domain versus frequency domain   |                      |
| 19        | II         | Harmonic filters (passive, active and hybrid)                                   |                      |
| 20        | II         | case studies  |                      |
| 21        | III        | Voltage Sag   |                      |
| 22        | III        | Swell and Interruptions   |                      |
| 23        | III        | Transient Over-voltages   |                      |
| 24        | III        | Sources of Sags and Interruptions   |                      |
| 25        | III        | <i>Fundamental Principles of Protection</i>                                     |                      |
| 26        | III        | Motor-Starting Sags,  |                      |
| 27        | III        | Utility System FaultClearing  |                      |
| 28        | III        | Issues, and Case Studies  |                      |
| 29        | III        | <i>Sources of Protection</i>  |                      |
| 30        | III        | Switching Transient Problems with Loads   |                      |
| 31        | IV         | Voltage Flicker   |                      |
| 32        | IV         | Voltage Unbalance   |                      |
| 33        | IV         | Voltage Regulation  |                      |
| 34        | IV         | Sources of voltage flicker  |                      |
| 35        | IV         | Effects of voltage flicker  |                      |
| 36        | IV         | mitigation techniques of voltage flicker  |                      |
| 37        | IV         | Sources of voltage unbalance  |                      |
| 38        | IV         | Effects and mitigation techniques Devices for Voltage Regulation                |                      |
| 39        | IV         | Utility Voltage Regulator Application   |                      |
| 40        | IV         | End-User Capacitor Application  |                      |

Signature of Faculty

Date:

Countersignature of HOD