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Accredited By NAAC
(2009)

SU/BOS/Engg/10620 Date : 05/02/2013

The Principal,
All affiliated Colleges of Engineering
Shivaji University, Kolhapur

Sub-: Regarding inclusion of the Elective subject/Paper ß Electrical power quality harmonicsÞ in Semester-VIII Group B of B.E. Electrical under the Faculty of Engineering & Technology.

Sir/Madam,

With reference to the subject mentioned above, I am directed to inform you that the University authorities have granted approval for inclusion of Elective subject/Paper ßElectrical power quality harmonicsÞ in Semester-VIII Group B of B.E. Electrical under the Faculty of Engineering & Technology. The syllabi shall be as mentioned below.

Elective II: Electrical Power Quality and Harmonics

Lecture Hours per Week: 4 Maximum Mark: 100

1. **Introduction to Power Quality:** Desirable features of Electric Power Supply, Power Quality related issues in the Distribution Systems, Loads & their Characteristics, Electromagnetic Phenomena, Voltage sags / Swells, Wave form Distortions, unbalance, Flicker, notches, unbalance and load balancing
2. **Fundamentals of Harmonis:** Nonlinear loads generating harmonics, their adverse effects on Power Apparatus, types & characterization, THD's, Influence on Power Factor and interference with Communications networks and Harmonic Indices.
3. **Harmonics Suppression Filters:** Shunt Passive Filters, Design considerations and case studies, Voltage / Current Source Active Filters - types: Shunt, Series and Hybrid types their characteristics and comparison
4. **Mitigation of Voltage Sags and Interruptions:** End User issues, UPS Systems, Ferro resonant Transformers, Super Conducting Storage Devices, Dynamic Voltage Restorer and Application of DSTATCOM
5. **Harmonics Measurement:** Instrumentation Techniques, Analogue and Digital Methods. Presentation of Harmonic Data and Interpretation, Case Studies, Harmonic Standards and future trends
6. **Power Quality Monitoring :** PQ Analysers, Acceptability of Power Supply-Tolerance envelops of CBEMA & ITIC, Reliability Indices, Typical wiring and grounding problems, grounding practices and the use of Signal Reference Grid

Contd...

References:

1. "Electrical Power Systems Quality" Roger C.Dugan, Mark F.Mc Granton & H. Wayne Beety-McGraw Hill
2. "Power System Harmonics" J.Arnillaga, DA Bradey, & P S Bodger-John Willey sons
3. "Power System Harmonics - Fundamentals, Analysis & Filter Design" George E. Wakiel - Springer
4. "Uninterrupted Power Supplies & Active Filters" All Emadi, Abdolhorein Nastri & Stoyon B Bekiarov, CRC Press
5. "Electronic Power Distribution Reliability" 2nd Edition Richard E Brown CRC Press
6. "IEEE Recommended Practice for Power & Grounding Electronic Equipment", IEEE Publication 1999.

The above syllabi shall be implemented from academic year 2012- 13 onwards. This syllabi is also available on university website www.unishivaji.ac.in.

You are therefore requested to bring this to the notice of all teachers & Students concerned.

Thanking you.

Yours faithfully,
Sd/-
Dy. Registrar

Copy f.w.cs.to
1) Dean, Faculty of Engineering & Technology
2) Chairman, BOS in Electrical Engineering
For information

Copy to:
1) O.E.- 4 Section
2)Appointment Section.
3) Affiliation Section.
4)Computer centre

For information and necessary action.