SARDAR PATEL UNIVERSITY
Programme & Subject: M.Sc (Electronics)
Semester: III
Syllabus with Effect from: June - 2014

Paper Code: PS03EELE01	**Total Credit: 4**
Title Of Paper: Thin Film Technology	

Unit	Description in detail	Weightage (%)
I	Physical Vapor Deposition Methods – Direct, Flash, Electron Beam, Molecular Beam Epitaxy (MBE), Pulse Laser deposition Technique. Sputtering Yield and Influenced Factors D.C Sputtering, R.F Sputtering and Magnetron sputtering method-Chemical Vapor Deposition (CVD) method- Metal Organic Vapor Deposition (MOCVD) method.	25%
II	Vacuum Pumps- Rotary pump-Diffusion pump- Turbo Molecular pump and Cryo- pump Vacuum Gauges – Pirani gauge- Penning gauge. Substrate and Masks.	25%
III	Characterization techniques-X-Ray Diffraction, Electron Diffraction, Transmission and Scanning Electron Microscopy –Electron Probe Micro Analyzer (EPMA) and Electron Spectroscopy of Chemical Analysis (ESCA).	25%
IV	Thin Film Resistor- Materials – Design and Applications. Thin Film Capacitors Materials, Design and Applications – Transparent Conducting Oxide Thin Films and their applications. Thin Film Device- Diode-Transistor-Photoconductor. Thick Film Technology.	25%

Basic Text & Reference Books:-

- **Thin Film Technology and Applications.**
  K.L.Chopra and L.K.Malhotra, Tata Mc-Graw Hill, N.Delhi, (India)
- **Active and Passive Thin Film devices**
  J.J.Coutts., Acadamic Press,NY (USA)
- **Hand Book of Thin Film Technology**
  Leon I.Maissel and Reinhard Glang, Mc-Graw Hill Book.,NY (USA)
- **The Materials Science of Thin Films**
  Milton Ohring, Academic press, NY(USA)
- **Vacuum Science and Engineering**
  C.M.Vanatta, Mc-Graw Hill.,NY (USA)
- **Thin Film Phenomena**
  K.L.Chopra Mc-Graw Hill.,NY (USA)
- **Thin Film Hybrids**
  Malcolm R.Haskard, Prentice- Hall International (USA)
- **Handbook of Thick Film Hybrid Microelectronics**
  Charles A Harper, Mc-Graw Hill Book Co.,NY (USA)
- **Thin Film Processes**
  Johan. L.Vossen and Warner Kern, Acadamic Press,NY(USA)