

# GUJARAT TECHNOLOGICAL UNIVERSITY

## Master of Engineering (VLSI System Design)

### Semester – III

**Subject Code: 734202**

**Subject Name: IC Fabrication Technology (Major Elective -IV)**

Sr. No.	Course Content
1	Introduction
2	Material Properties, Crystal Growth or Wafer Preparation, Wet Cleaning and Dry Cleaning Technology : Related Facility Systems, Wafer Specification, Electrostatic Discharge Damage, RCA Cleaning, Protection Network, IMEC Cleaning, Soft Errors, Clean Room
3	Oxidation: Thermal Oxidation, CVD Oxidation, Plasma Oxidation, Growth Kinetics, Oxidation Technology for low Contamination levels, Segregation Co-efficient, Oxidation Induced Effects, Isolation in active device.
4	Photolithography: Optical Lithography, E-Beam Lithography, Ion Beam Lithography
5	Diffusion: Conventional Furnace Technique, Ion-Implantation Technique, Solid solubility, Role of Oxygen in diffusion, Ion Implantation: Low Current, High Current , Effects, Applications
6	Metallization: Single Level, Multi Level , Electromigration, PVD, Evaporation, Sputtering, Junction Spiking, Electromigration, CVD: Epitaxial Growth , Non Epitaxial Growth
7	Etching :Intorduction, Wet Chemical, Dry Physical, Plasma, Eutectic Temperature, Measurement: Thickness, resistivity

#### Text/References

1. S. M. Sze, *VLSI Technology*, Second Edition, MH, 1988.
2. S. K. Gandhi, *VLSI Fabrication Principles*, Second Edition, Wiley, 1994.
3. D. Nagchoudhari, *Principles of Microelectronics Technology*, Wheeler, 1998
4. S. A. Campell, *The Science and Engineering of Microelectronics Fabrication*, OUP, 1996
5. P. Van Zant, *Microchip Fabrication: A Practical Guide to Semiconductor Processing*, Third Edition, MH, 1997.