

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. Advance Manufacturing System (Branch Code - 50)

Year – II (Semester – III) (W.E.F. June 2013)

Major Elective-IV

2. Subject: Micro and Nano Manufacturing System (735003)

Sr. No.	Course Content	Hours
1	Scope of Nano Technology: Nano technology Concepts and Applications, Micro- and Nanofabrication, Nano technology in India, Scope for Microfabrication, Rise Nano technology Fields, Commercialization Issues of Micro-Nano Technology	8
2	Microfabrication: Mechanical Micromachining, Physical Fabrication Methods, Lithography, Processing Setup, Nano Lithography & Manipulation, Precision Micro- and Nanogrinding , Use of Spectrometers & Microscopes	12
3	Laser-Based Micro and Nanofabrication, Pulsed Water Drop Micromachining, Nano Materials, Synthesis of Nano materials, Bio Materials, Nano Composites, Development of Nano Particles	12
4	Innovative Applications on Present Devices: Nanochips, Nanotubes and Nanowires, Integration of chips and microprocessors, Technology Support, Meeting Social Needs	12
5	Nano Design & CAD: Computer Aided Nano Design, VLSI product detailing Finite Element Analysis of Microstructures, 3-D Molecular Modeling	12

Textbooks:

1. Microfabrication & Nanomanufacturing by Mark J. Jackson
2. ASM handbook on machining

References:

1. Springer's Hand book of Nano-technology - Bharat Bhusan (Ed.)
2. Nanotechnology and nanoelectronics – WR Fahrner, Springer International
3. Z. Cui, Nanofabrication, Springer ,2008
4. Gabor L. Hornyak, H.F. Tibbals, Joydeep Dutta, and John J. Moore, Introduction to Nanoscience and Nanotechnology, CRC Press, Boca Raton, 2009.