



# MANIPAL UNIVERSITY JAIPUR

School of Electrical, Electronics & Communication Engineering (SEEC)

Department of Electronics & Communication Engineering  
Course Hand-out

Micro Electro and Mechanical System and Technology | EC1690 | 3 Credits | [3 0 0 3]

Session: Jan 15 – May 15 | Faculty: Nitin Gupta |

**A. Course Outcomes:** At the end of the course, students will be able to

- [1551.1] Illustrate the manufacturing methods and their underlying scientific principles in the context of technologies used in mechanical structure integration along with electronic circuit fabrication.
- [1551.2] Apply knowledge of micro-sensors for the development of smart microsystem technology in real time problems and enable to develop employability skills.
- [1551.3] Explain the bulk micromachining and surface micromachining concept for MEMS device fabrication processes.
- [1551.4] Contrast characteristics of various advance materials used for MEMS functional device fabrication.
- [1551.5] Understanding the various design parameters of MEMS sensors.

**B. SYLLABUS**

Historical Background of MEMs, Bulk Micromachining, surface micromachining, Micro cantilevers as test structures, sensors and actuators, Design of MEMS pressure sensors, accelerometer, RF MEMS Devices, biosensors.

**C. TEXT BOOKS**

1. S. D. Senturia, "*Microsystem Design*", Kluwer Academic Publishers, 2001.
2. M. Madou, "*Fundamentals of Microfabrication*", CRC Press, 1997.

**D. REFERENCE BOOKS**

1. H. Bao, "*Micromechanical Transducers: Pressure sensors, accelerometers, and gyroscopes*" Elsevier, New York, 2000.
2. W. Wang & S. A. Soper, "*Bio-MEMS Technologies and Applications*", CRC Press.

