Course Code : **EC 741**

Course Title : **Micro Electromechanical Systems**

Credit Hours : **3**

Course Description

MEMS technology, MEMS revolution and advantages, Description of MEMS, applications, MEMs fabrication techniques, Nature of the piezoelectricity and piezoresistivity and their applications in the microsensors, The MEMS inductor and capacitors, Identification of the microsensors, The scaling effects, The microassembly, Overview of Microrobotics, Robotic assembly and testing

Course Objectives

Description of MEMS, advantages, technology, and applications
MEMs fabrication techniques
Nature of the piezoelectricity and piezoresistivity
Identification of the microsensors, microacuators
The scaling effects
Knowledge and understanding of the microassembly
Gaining an experience of the microrobotics

Course Topics

Week no. 1: MEMS technology

Week no. 2: MEMS revolution and advantages

Week no. 3: Description of MEMS, applications.

Week no. 4: MEMs fabrication techniques

Week no. 5: Nature of the piezoelectricity and piezoresistivity and their applications in the microsensors

Week no. 6: The MEMS inductor and capacitors

Week no. 7: The MEMS inductor and capacitors / 7^{th} week evaluation.

Week no. 8: Identification of the microsensors

Week no. 9: Identification microacuators

Week no. 10: The scaling effects

Week no. 11: The microassembly

Week no. 12: The microassembly / 12^{th} week evaluation

Week no. 13: The microassembly

Week no. 14: Overview of Microrobotics

Week no. 15: Robotic assembly and testing

Week no. 16: Final Examination

References

- V. K. Varadan, K.J. Vinoy, “RF MEMS and Their Applications”, 2003.
- S. Beeby, G. Ensell, M. Kraft, N. White, “MEMS Mechanical Sensors”, British Library 2004.
- J.D. Santo “RF MEMS Circuit Design For Wireless Communications”, 2008.