



AMITY UNIVERSITY

FORMAT FOR COURSE CURRICULUM

Course Title: PROCESSING TECHNOLOGY OF MEMS AND NEMS

Course Code: **Credit Units:**4

L	T	P/ S	SW/F W	TOTAL CREDIT UNITS
3	0	2	-	4

Course Objectives: Understanding of the processing technologies of MEMS and NEMS, their concepts, fabrication of devices & characterization.

Pre-requisites: Basic understanding of MEMS and NEMS technologies.

Student Learning Outcomes:

- 1) Knowledge of lithography used for pattern transfer
- 2) Student will be able to understand MEMS device fabrication process

Course Contents/Syllabus:

	Weightage %
Module I	25
Descriptors/Topics Silicon wafer preparation, Lithography basics and techniques: optical, e-beam, x-ray, Micro molding, Hot embossing.	
Module II	25
Descriptors/Topics Silicon Etching techniques: isotropic and anisotropic etching,. Deposition techniques : CVD, PECVD, MOCVD surface and bulk micro machining.	
Module III	25
Descriptors/Topics MS contacts, Thermal évaporation, e- beam, sputtering ,electro- deposition	
Module IV	25

Wafer bonding: Low temperature glass bonding, electrostatic bonding, etc. need of packages. Package design considerations, packages for MEMS.

Pedagogy for Course Delivery:

- The class will be taught using theory using conventional text books
- Scientific research will be used for understanding the recent research.
- Course delivery will involve power point presentations and explanation on board as required.

Lab/Practicals details, if applicable:

List of Experiments:

- Fabrication of metal interconnections/layers on various substrates
- Electrical characterization of semi-conductor devices

Assessment/ Examination Scheme:

Theory L/T (%)	Lab/Practical/Studio (%)	End Term Examination
70	30	

Theory Assessment (L&T):

Continuous Assessment/Internal Assessment					End Term Examination
Components (Drop down)	A	CT	S/V/Q	Short project	EE
Weightage (%)	5	10	8	7	70

Lab/ Practical/ Studio Assessment:

Continuous Assessment/Internal Assessment					End Term Examination		
Components (Drop down)	Assignment	Class test	Attendance	Quiz/viva	External	Ex. Copy	Viva
Weightage (%)	5	15	5	5	70	10	20

Text & References:

- VLSI Fabrication Principles – S.K. Gandhi.
- Semiconductor Technologies – V. Bruch , V. Garshenim, A. Kurnosou.