AE-308: Advanced Manufacturing Technology										
L	**T**	**P**	Credit	Area		**CWS**	**PRS**	**MTE**	**ETE**	**PRE**
3	0/1	2/0	4	DEC		15/25	25/-	20/25	40/50	-

Objectives: This course aims to understand the functioning of new machining processes working on principle of non-thermal energy, Electro-chemical machines, laser beam machines, fabrication of semiconductors

AE-308: Advanced Manufacturing Technology		Contact Hours
Unit-1	**NEWER MACHINING PROCESSES** (Non-thermal energy) – Abrasive machining – water jet machining - ultrasonic machining– construction working principle – steps - types – process parameters – derivations – problems, merits, demerits and applications.	**8**
Unit-2	**NEWER MACHINING PROCESS** – Wire cut EDM -– ECG - Electric discharge machining – construction – principle – types – control - circuits – tool design – merits, demerits & applications.	**6**
Unit-3	**NEWER MACHINING PROCESS** – Laser beam machining – Electron beam machining – Plasma arc machining – Ion beam machining – construction working principle types – process parameter – derivations – problems, merits, demerits and applications.	**6**
Unit-4	- **NEWER MACHINING PROCESS** chemical machining – electro chemical machining- construction – principle – types – control - circuits – tool design – merits, demerits & applications	**8**
Unit-5	**FABRICATION OF MICRO DEVICES Semiconductors** – films and film depurification – Oxidation - diffusion – ion implantation – etching – metallization – bonding – surface and bulk machining – LIGA Process – Solid free form fabrication.	**8**
Unit-6	**MICROFABRICATION TECHNOLOGY** Wafer preparation – monolithic processing – moulding – PCB board hybrid & mcm technology – programmable devices & ASIC – electronic material and processing. –steriolithography SAW devices, Surface Mount Technology	**6**
	Total	**42**

Reference Books:	
1	SeropeKalpakjian& Steven Schmid- Manufacturing Processes for Engineering Materials (5th Edition)– 2003,ISBN-13: 978-0132272711/ISBN-10: 0132272717
2	Julian W. Gardner,"Micro sensors Mems & smart devices—2002", Wiley-Blackwell, ISBN-13: 978-0471861096
3	Grahem T. Smith, "Advanced machining", I.F.S. UK 1989, ISBN-10: 0903608952/ ISBN-13: 978-0903608954
4	Jaeger R.C., "Introduction to microelectronic fabrication", Addison Wesley, 1988., ISBN-10: 0201444941/ISBN-13: 978-0201444940

Course Outcomes

CO1	To study newer machining processes(Abrasive machining – WJM - USM,CHM – ECM) with all details
CO2	To study newer machining processes(EDM, ,W EDM,) with all details
CO3	To study newer machining processes(LBM,EBM,PAM,IBM,) with all details
CO4	To study fabrication of micro devices semiconductors in detail
CO5	To study microfabrication technology with processing and technology
CO6	To study newer machining processes(ECDM, ECM) with all details

CO-PO/PSOMatrix

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	3	2	2	0	0	0	0	0	0	2	2	1	1
CO2	3	3	2	3	1	0	0	0	0	0	0	1	2	1	1
CO3	3	3	3	3	1	0	0	0	0	0	0	2	3	3	2
CO4	3	3	3	3	1	0	0	0	0	0	0	1	3	3	2
CO5	2	2	2	2	2	0	0	0	0	0	0	1	2	2	2