

Course Type	Course Code	Name of Course	L	T	P	Credit
DP	MEC 308	Computer Aided Manufacturing lab	0	0	3	3

**Course Objective**

- The course is focused on basic understanding of different parts and its functioning of computer aided manufacturing. It consist one project based on the understanding of the components of CAM.

**Learning Outcomes**

Upon successful completion of this course, students will:

- Have a clear understanding of different mechanism, functioning, of CAM components.
- Be able to develop motion control and equipment based on multi-motion control

Unit No.	Topics to be Covered	Laboratory	Learning Outcome
E1	Training of CNC milling and turning	1	Part programming, simulation and machining on turning and milling on Flexturn and Flexmill
E2	Profile cutting on unconventional machines	1	CAD design and profiling on different materials and different shapes. Study of the speed of work on different unconventional machining
E3	Training and generation of G-codes of simple to complex shapes	1	Master CAM training, code generation for different controllers
E5	3D Profiling and machining on VMC	1	Initial setup of the workpiece and tool, zero setting, tool compensation, applying Gcodes and performance of the VMC in wet machining condition on soft metals like aluminum and mild steel
E6	Learning of disassembly and assembly of CNC VMC and CNV VMC with fourth axis	1	Learning basics of the disassembly and assembly of a cnc machining center. Connections between stages, stepper motors, controllers and power supply integration with the computer.
E7	Generation of microfeatures on high precision micromachining center	1	Understanding difference between a conventional cnc machine and a high precision machining center. Zero setting technique with a micro tool of size up to 50 microns, Generation of microfeature on the machine and its study on a 3D profilometer for dimensional accuracy and surface morphology.
E8	Learning and study of pneumatic based actuators	1	Study of actuator based motion and its control
E9	Learning and study of electrical based actuators	1	Study of actuator based motion and its control

**Reference Books:**

- CAD/CAM: Computer-Aided Design and Manufacturing, MP Groover and EW Zimmers, Pearson Education
- Computer Aided Manufacturing, PN Rao, NK Tewari and TK Kundra Mc Graw Hill education