



Course Enrichment Program on Simulation on Mechanical Engineering Applications and Virtual Manufacturing for CNC Machining

Course enrichment program was conducted for B.E. Mechanical students in the subject of CAD/CAM/CAE (MEC 702) by Prof. V Murali Mohan (Associate Professor, MED) and Prof. Sagar N. Sakharkar (Assistant Professor, MED) on September 16 and 23, 2017 under the guidance of Dr. Kaushal Prasad, Principal, and Dr. Milind S. Kirkire (Head, Mechanical Engineering Department).

The aim of this program was to enrich the students in the subject of CAD/CAM/CAE and to enhance the students' qualitative analysis abilities in mechanical based application software while working with different mechanical engineering applications (Thermal, Fluid Flow & Machine components).

Prof. V. Murali Mohan addressed the students on the importance of this course enrichment in the subject of CAD/CAM/CAE. Prof. Sagar N. Sakharkar demonstrated and explained step by step procedure of different machine parts simulations for various mechanical engineering applications using SOLID WORKS & MASTER CAM software which are popularly used in automotive industries.

To fulfil the objectives and outcomes of this enrichment programme, the following contents were delivered as mentioned below:

Course Name	Type of analysis	Software	Duration	Application
Simulation	Static Analysis	Solid Work 2012	45 Minutes	Hinge and Buckle machine part, fixed beam, shaft for buckle
	Thermal Analysis		45 Minutes	Steel plate cover and fin transformer, cantilever beam,
	Frequency Analysis		15 Minutes	Fork, wheel rim
	Pressure analysis		15 Minutes	Storage tank, pressure vessel
	Linear Dynamic Analysis		30 Minutes	Leaf spring, Helical spring, cantilever beam
Flow Simulation	Stream line path analysis		30 Minutes	Pipe, Jet pump, Venturi
	Pressure Analysis		15 Minutes	
	Velocity Analysis		15 Minutes	

	Mass flow rate analysis		15 Minutes	
	Convection heat transfer analysis		30 Minutes	Closed pipe
Virtual Manufacturing Using CNC	Lathe Machine Operations- Facing, Plain Turning, Taper Turning, Grooving, threading, boring, drilling, parting	MASTER CAM- X9	90 Minutes	Tool path simulation for Lathe Machine- Cast Cylindrical feed rod
	Mill Machine Operation- Contouring, facing, drilling, pockets, slots		90 Minutes	Tool path simulation for Mill Machine :Cast Rectangle thick plate
	CNC Program Generation (G & M Codes) - Lathe & Mill		30 Minutes	G & M codes

Total 93 final year students were actively participated and benefitted. Prof V. Murali Mohan & Prof. Sagar N Sakharkar thanked all the participants and the persons those who have helped directly and indirectly for successfully completion of this course enrichment.



Prof. S. N. Sakharkar during their demonstration of CNC Mill tool path Generation



Prof. S. N. Sakharkar during their demonstration of linear dynamic simulation on spring



Prof. S. N. Sakharkar showing flow simulation pressure analysis of Venturi