Course code	Course Name:	L-T-P-Credits	Year of Introduction
ME238	ADVANCED MACHINE TOOLS LAB	0-0-3-1	2016

Prerequisite: Nil

Course Objectives:

- Introduction to various Machining process.
- To familiarization with the fundamentals of CNC Machine.
- To introduce the student to CNC operations.

List of Exercises/ Experiments (Minimum 10 are mandatory)

1. Bolt Making on Lathe Machine
   Equipment: Cutting Saw, Center Lathe, Pedestal Grinder, HSS Tool Bit And Straight Or Right Hand Tool Holder, Center Drill, Live Center, Stock and Die, Metal Work Vice.

2. Study of Drilling Machines.
   Equipment: Radial Drilling Machine.

3. Study of Nomenclature of Drill Bit.
   Equipment: Drill Bit.

4. To Drill the Given Work Piece as Required.
   Equipment: Mild Steel Work Piece, Drill Bit, Lot Drill Bit, Drill Chuck.

5. Study of Shaping Machines.
   Equipment: Shaper Machine.

6. To Perform V- Machining on the Given Work Piece.
   Equipment: Shaper Machine, Punching Machine, Steel Rule, Hammer, Shaper Tool, Try Square.

7. To Perform U-Cut on the Given Work Piece.
   Equipment: Shaper machine, Steel rule, Hammer, Shaper tool, Try Square.

8. Study of Slotting Machines
   Equipment: Slotter.

9. To make a Slot on the Given Work Piece.
   Equipment: Slotting Machine, Steel rule, Hammer, Shaper tool, Try Square.

10. To Cut External Key Way Using Slotter.
    Equipment: Slotting Machine, Steel Rule, Hammer, Shaper Tool, Try Square.

11. Study of Milling Machines.
    Equipment: Milling Machine.

12. To Perform Plane Milling Operation on the Given Specimen.
    Equipment: Milling Machine, Work Piece, Steel Ruler.

13. To Make Spur Gear on a Given Work Piece.
    Equipment: Steel Rule, Milling Cutter, Spanner, Mandrel, Dog Carrier.

14. To make Bevel Gear on a Work Piece.
    Equipment: Steel Rule, Milling Cutter, Spanner, Mandrel, Dog Carrier.

15. Study and Demonstration of CNC Machine.
    Equipment: CNC Machine.

16. To Program and Run Milling Operation Using CNC Machine.
    Equipment: CNC Machine, Computer.

17. To Program and Execute Turning Operation Using CNC Lathe.
    Equipment: CNC Machine, Computer.

18. Study of Cutting Process.
    Equipment: Variety of Cutting Equipment.

19. Study of CNC Plasma Arc Cutting (working principle and procedure only).

Course Outcome:

Upon successful completion of the course, the student will be able to :

i. Machine the given work piece to specified dimensions.
ii. Understand the fundamentals of CNC machining.

Text Book(s):

- Chapman; Workshop Technology, Vol II; ELBS.
- HMT; Production Technology; Tata McGraw Hill.
- Yoram Koren; Numerical Control of Machine Tools; McGraw-Hill.
- Acharkan. N.; Machine Tool Design Vol. 1 to 4; MIR Publication.