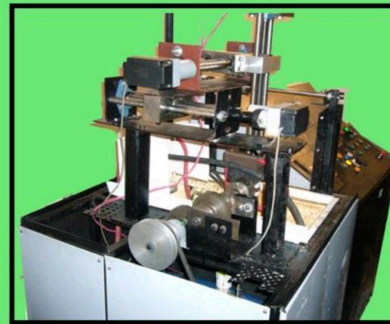
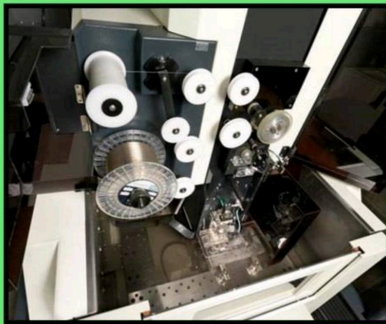


I

Name NITYA MISHRA
Roll no. 04 Year-20 21 20 22
Exam seat no. _____

A LABORATORY MANUAL
FOR
ADVANCED MANUFACTURING PROCESSES
CODE-22563



Prof. Sudhir Thakre



Lagdu Singh Charitable Trust, s (Regd.)

THAKUR POLYTECHNIC



Vision



"We will empower youth by imparting quality technical education and strive to prepare students with excellent technical skills".

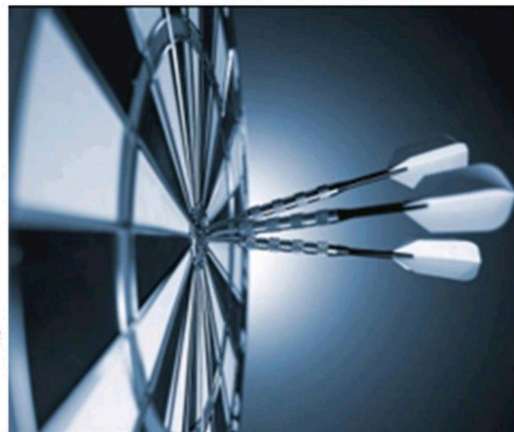
We will offer value added quality technical education & excellent academic training to our students.

We will provide state of art infrastructure with latest facilities.

We will strengthen industry institute interaction.

We will make continual improvement in all institutional activities.

Mission



A Laboratory Manual for

Advanced Manufacturing

Processes

Subject code- 22563

Mechanical Engineering Semester-V



Lagdu Singh Charitable Trust,s (Regd.)

THAKUR POLYTECHNIC

GUIDELINES FOR TEACHERS

Teachers shall discuss the following points with students before start of practicals of the subject

1. **Learning Overview:-** To Develop better understanding of importance of the subject. To know related skills to be developed such as intellectual skills and Motor Skills.
2. **Know your machine shop work:-** To understand the layout of machine shop, specifications of Equipment/Instruments/Materials, procedure, working in groups, planning time etc. Also to know total amount of work to be done in the machine shop
3. Teacher shall ensure that required equipment are in working condition before start of experiment, also keep operating instruction manual available.
4. Explain prior concepts to the students before starting of each experiment.
5. Involve students activity at the time of conduct of each experiment.
6. Teacher shall assess the performance of students continuously as per norms prescribed by MSBTE.
7. Teacher should ensure that the respective skills and competencies are developed in the students after the completion of the practical exercise.
8. Teacher may provide additional knowledge and skills to the students even though not covered in the manual but are expected from the students by the industries.
9. Teachers shall ensure that industrial visits recommended in the manual are covered.
10. Teacher should enlist the skills to be developed in the students that are expected by the industry.
11. Teacher should give more focus on hands on skills and should actually share the same.

INSTRUCTIONS FOR STUDENTS

Students shall read the points given below for understanding the theoretical concepts & practical applications.

1. Listen carefully to the lecture given by teacher about importance of subject, curriculum philosophy graphical structure, skills to be developed, information about equipment, instruments, procedure method of continuous assessment, tentative plan of work in laboratory and total amount of work to be done in a year
2. Students shall undergo study visit of the laboratory for types of equipment, instruments, material to be used, before performing experiments.
3. Read the write up of each experiment to be performed, a day in advance
4. Understand the purpose of experiment and its practical implications
5. Student should not hesitate to ask any difficulty faced during conduct of practical/exercise.
6. Student shall visit the recommended industries and should study the knowhow of the shop floor practices and the operations of machines
7. Student shall develop maintenance skills as expected by the industries.
8. Student shall attempt to develop related hands-on-skills and gain confidence.
9. Student should develop the habit of not to depend totally on teachers but to develop self learning techniques.
10. Student should develop habit to submit the practical's exercise continuously and progressively on the scheduled dates and should get the assessment done.

List of Practicals and Progressive Assessment Sheet

Sr. No	Practical Outcomes (PrOs)	Page No.	Date of sub-mission	Asses-ment Marks (50)	Dated sign. of teacher	Remarks(if any)
1.	Prepare a job using Abrasive Jet Machining/ Observe the same in the industry.					
2.	Prepare a job using Electro Discharge Machining wire cut type/ Observe the same in the industry.					
3.	Prepare a job using Electro Chemical Machining/ Observe the same in the industry.					
4.	Make a job on milling machine which includes plain milling, slotting by using end mill cutter or slitting saw, or side and face milling cutter.					
5.	Make a gear blank on lathe and produce a gear on milling machine by using dividing head.					
6.	Prepare a job or assembly of jobs like Gear and shaft assembly, Shaft and keyway which involves operations like end mill, turning, grinding operations.					
7.	A simple dry run job on CNC lathe machine and verification on simulation software.					
8.	One simple part on a CNC lathe machine and verification on simulation software.					
9.	One simple dry run job on CNC milling machine and verification on simulation software.					
10.	One simple part on a CNC milling machine and verification on simulation software.					
11.	Write a report on a industrial visit to observe robotic system in industry.					
Total						

Experiment No. 5

1.0 Title: Prepare assembly job of gear and shaft which involves operations like end mill, turning, grinding operations.

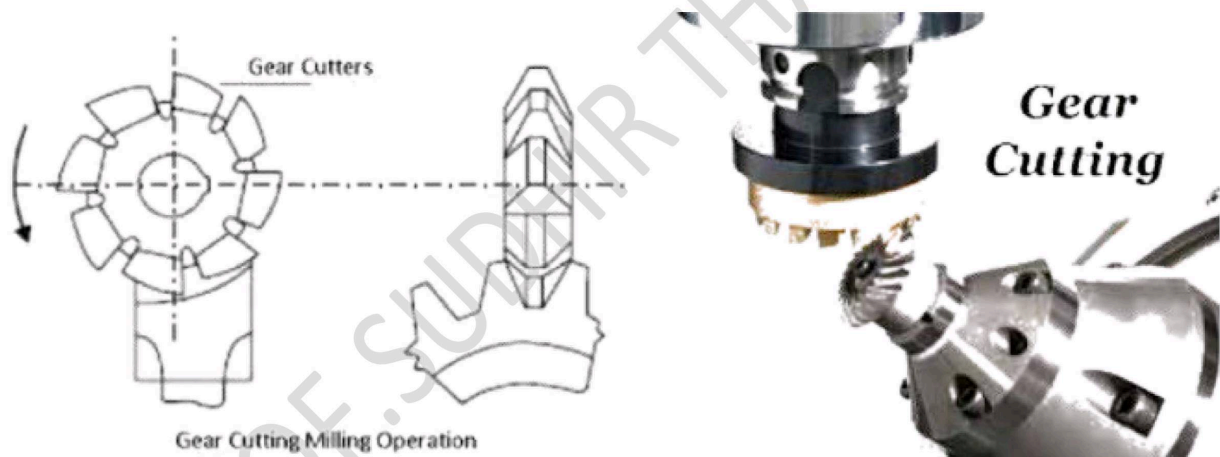
2.0 Prior Concepts: Introduction of gear manufacturing, advantages, male part, female part, tolerance, types of tolerance, steps involved in the gear manufacturing, turning operations, grinding operations, milling operations etc.

3.0 Aim: Make an assembly job of gear and shaft to achieve required fit

4.0 Material Specification: _____

Mild Steel, Cast Iron, Alloy of iron and steel, Magnetic alloy

5.0 Job Drawing:



6.0 Procedure:

Sr.no	Operation	Tools/Equipment
1.	Cut the M.S. bar to the required length	Power hacksaw
2.	Hold the work piece in 3 jaw chuck and true it with the help of marking block	3-jaw chuck, scale, Marking block
3.	Carry out the facing operation on one side and reverse the side and carry out facing to maintain the length	3-jaw chuck, V-tool, caliper
4.	Turn the diameter to the required dimension	3-jaw chuck, V-tool,
5.	Remove the job from the lathe and clamp it on milling	vice

	machine vice	Vice
6.	Mount the cutter on the arbor and set it in position with respect to work piece	Cutter size <u>50mm inner dia</u> Arbor/collet size <u>50mm</u>
7.	Test the cutter for run	on a sample work piece to check the cutter tool and its positioning.
8.	Cut the keyway to the required depth	to gain required size of teeth on a gear.
9.	Check the width of keyway by gauge	Slip gauge
10.	Make assembly of gear and shaft with the help of key	a key is used to fix shaft and gear by holding them together that causes less chance of slip between them

7.0 Conclusion: _____

They do several important jobs, but most important, they provide a gear reduction in motorized equipment.

This is key because, often, a small motor spinning very fast can provide enough power for a device, but not enough torque

Marks	Dated signature of teacher



CNC Lathe Machine