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**Course Code: TCA – S102T**

**Breakup:**

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**Course Name: Workshop Concepts**

**Course Details:**

Historical perspectives; Classification of Manufacturing process.

**Machining:** Basic principles of lathe machine & operations performed on it. Basic description of machines & operations of shaper-planer, drilling, milling, grinding. Unconventional machining processes, Machine tools.

**Casting processes:** pattern & allowances. Moulding sands & its desirable properties. Mould making with the use of a core. Gating system. Casting defects & remedies. Cupola furnace. Die-casting & its uses.

**Metal forming:** Basic metal forming operations & uses of such as-forging, rolling, wire & tube drawing/making & extrusion, & its products/applications, press work & die & punch assembly, cutting & forming, its application. Hot working vs Cold working. Powder metallurgy: powder metallurgy process & its applications, plastic-products manufacturing, galvanizing & electroplating.

**Welding:** Importance & basics concepts of welding, classification of welding processes. Gas welding, types of flames, Electric arc welding. Resistance welding. Soldering & brazing and its uses. Modern trends in manufacturing, Automation. Introduction to NC/CNC/DNC, FMS, CAD/CAM, CIM and factory of future.

**Text Books and References:**

1. Chapman, W A J & Arnold, E “Workshop Technology ; vol. I, II & III” Viva Low Priced Student Edition.
  2. Raghuwanshi, B S “Workshop Technology ; vol. I & II” Dhanpat Rai & Sons
  3. Chaudhary, Hajra “Elements of Workshop Technology ; vol. I & II” Media Promoters & Publishers
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# INTRODUCTION

The study deals with several aspects of workshops practices also for imparting the basic working knowledge of the different engineering materials, tools, equipment, manufacturing processes, production criteria's, characteristics and uses of various testing instruments and measuring or inspecting devices for checking components or products manufactured in various manufacturing shops in an industrial environment.

# MANUFACTURING ENGINEERING

- Manufacturing is derived from the Latin word **manufactus** which means made by hand.
- Present time it involves making products from raw material by using various manufacturing processes.
- It is therefore a study of the manufacturing processes required to make parts and to assemble them in machines.
- The study of manufacturing reveals those parameters which can be most efficiently being influenced to increase production and raise its accuracy.

# **CLASSIFICATION OF MANUFACTURING PROCESSES**

Manufacturing process is classify as follows:

1. Primary Shaping Processes
2. Machining Processes
3. Joining Processes
4. Surface Finishing Processes
5. Change in Properties