Manufacturing Technologies

Instructors:
Fabrizio Quadrini, Denise Bellisario

Course Format:
6 Hours Lecture

Period:
Semester II

Language:
English

Recommended Previous Knowledge:
Basics of physics and chemistry.

Contents:
Fundamentals of materials: structure of metals, mechanical behavior, material testing, physical properties, heat treatment.
Manufacturing of metals: fundamental of metal-casting, metal-casting processes and equipment, bulk forming (rolling, forging, extrusion and drawing), sheet-metal forming, sintering, fundamentals of machining, cutting-tools, machining processes (turning, drilling, milling).
Manufacturing of plastics and composites: structure and properties of polymers, properties and applications of composite materials, forming and shaping of plastics, processing composite materials.
Joining processes and advanced machining: fusion-welding, solid-state welding, adhesive-bonding, fastening, laser-beam machining, electron-beam machining, water jet and abrasive water-jet machining, electrical-discharge machining.

Learning Outcomes:
Learning the basic elements of material processing and manufacturing systems for metals.

Reading Resources:
“Manufacturing Engineering and Technology”, Serope Kalpakjian and Steven R. Schmid, Prentice Hall

Performance Record:
Oral examination

Workload:
9 credits

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