

Manufacturing Technologies

Instructor:

Fabrizio Quadrini

Course Format:

6 Hours Lecture

Period:

Winter Semester

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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