POWDER METALLURGY

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IIT Madras

TYPE OF COURSE : New | Core_Elective | UG/PG
COURSE DURATION : 12 weeks (20 Jul' 20 - 11 Sep' 20)
EXAM DATE : 27 Sep 2020

PRE-REQUISITES : Basics of Materials Science & Engineering
INTENDED AUDIENCE : Any Interested Learners
INDUSTRIES APPLICABLE TO : Saint Gobain, Murugappa, Ashok Leyland, BHEL, Sandvik Asia Ltd, Avartana Metal Powders

COURSE OUTLINE :
Powder Metallurgy is a very useful manufacturing process which is being practiced in variety of industries for decades. It is a versatile process that can produce a solid, a component or a product in net shape or near net shape staring from a loose mass of powder. This course will not only provide a broad overview of the P/M process but will also deal with the relevant concepts in detail. The objective is to learn about the process and understand it in a scientific and systematic manner.

ABOUT INSTRUCTOR :
Dr. Ranjit Bauri is a Professor in the Dept. of Metallurgical and Materials Engineering, IIT Madras. He has more than a decade of experience in teaching and research. The broad areas of his expertise include Powder Metallurgy, Ceramics, Composite materials, Energy Materials, Aluminum alloys, Friction stir welding and processing, and Microscopy.

COURSE PLAN :
Week 1: Introduction to Powder Metallurgy, Definition, Why Powder Metallurgy
Week 2: Powder Fabrication
Week 3: Powder Fabrication, Powder Characterization
Week 4: Powder Characterization, Microstructure control
Week 5: Powder shaping and Consolidation
Week 6: Shaping and Compaction
Week 7: Compact characterization
Week 8: Sintering
Week 9: Sintering
Week 10: Full density processing
Week 11: Finishing operations
Week 12: Properties and Applications