METAL CUTTING AND MACHINE TOOLS

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TYPE OF COURSE: Rerun | Core | UG/PG
COURSE DURATION: 4 weeks (15 Feb’ 21 - 12 Mar’ 21)
EXAM DATE: 24 Apr 2021

PRE-REQUISITES: Nil
INTENDED AUDIENCE: Mechanical Engg, Manufacturing Engg, Industrial Engg
INDUSTRIES APPLICABLE TO: All metal cutting industries

COURSE OUTLINE:
This course would encompass a comprehensive study of metal cutting and machine tools. Within a limited time of 10 hours, this course would elaborate on the theory of metal cutting supplemented with numerical problems. Tool geometry, chip formation, cutting force calculations and measurement, tool wear and other aspects will be given due attention. This would be followed by a descriptive study of the machine tools like lathe, milling, grinding, drilling and shaping machines, followed by numerical problems.
A study would also be made on fixed automation, Computer numerical control (CNC) machines, gear cutting machines, non-traditional machine tools, Rapid prototyping, together with numerical problem solving.
There would be discussions on MCQ at the end of each week of lectures.

ABOUT INSTRUCTOR:

COURSE PLAN:

Week 1: Introduction, Geometry of single point turning tools A ,Geometry of single point turning tools B , Different types of cutting tools ,MCQ discussion
Week 2: Mechanism of chip formation ,Calculation of Cutting forces, Measurement of cutting forces ,Tool wear and tool life, MCQ discussion
Week 3: General purpose machine tools : Lathe, Milling machine and grinding machine,
Drilling and shaping machines, Alignment tests : Radial drilling machine, MCQ discussions :
Week 4: Gear cutting machines, Fixed automation, CNC machines
Non-traditional machine tools, rapid prototyping machines, MCQ discussions