

ME 515 Manufacturing Laboratory

(0-0-6-6)

Measurement of cutting forces, surface roughness, tool wear, temperature in machining. Experiments in rolling. Measurement of microhardness. Ring compression test for the estimation of friction in metal forming. Open-die forging and load evaluation. Hydraulic and pneumatic systems. Sensors and transducers. Study of robots. Design of simple electronic circuits. Microprocessors and PLCs for manufacturing applications. Electrochemical machining, laser and plasma cutting. Vacuum coating.

Computer Aided Design (CAD), Computer Aided Process Planning (CAPP) and manufacturing of products using Subtractive and Additive Manufacturing processes. Inspection of the products manufactured by Subtractive and Additive Manufacturing. Comparative analysis of the products realized through two routes of manufacturing.

References

1. I. Zeid, CAD/CAM theory and practice, McGraw-Hill Higher Education, 1991
2. C. K. Chua and K. F. Leong, 3D printing and additive manufacturing, World Scientific Publishing Company, 2014.