

Forming - Web course

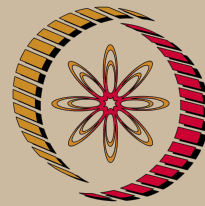
COURSE OUTLINE

Stress strain relations, stress and strain transformations, elastic and plastic behaviour, yield criteria, elementary principles of metal forming – cold, hot and warm working, effect of parameters such as temperature, strain rate, friction.

Process description and analysis of forging, rolling, extrusion, drawing and sheet metal forming processes such as deep drawing, bending, shearing and blanking, powder forming and special forming methods.

COURSE DETAIL

Sl. No.	Module	Hours
1	Stress-strain behaviour of materials, Stress and strain, Mohr's circles, stress-strain relations – elastic, strain energy, plasticity, yield criteria.	7
2	Forming – fundamentals, classification, flow stress, flow curves, effect of parameters such as strain rate, temperature etc, workability, anisotropy.	7
3	Deformation zone geometry, friction, residual stress.	2
4	Forging.	4
5	Rolling.	4
6	Extrusion.	5
7	Wire Drawing.	4
8	Deep drawing of sheet metals.	3
9	Other sheet metal working.	3
10	Defects in metal forming processes.	1
11	Powder forming and other non-conventional forming methods.	2



NP-TEL

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<http://nptel.iitm.ac.in>

Mechanical Engineering

Pre-requisites:

- Engineering Metallurgy
- Strength of Materials

Additional Reading:

1. A.S.M. Handbook – Vol. 14, Forming and Forging, ASM International
2. Metal Forming Handbook, Schuler, Springer Berlin Heidelberg.
3. Metal Forming Science and Practice, Ed. John G Lenard, Elsevier Science Ltd., U.K.

Coordinators:

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References:

1. Mechanical Metallurgy, S.I. Metric edition, George E. Dieter, McGraw Hill Book Company.
2. Metal Forming: Mechanics and Metallurgy by William F. Hosford and Robert M.Caddell, PTR Prentice-Hall(USA)
3. Metal Forming Analysis, R.H.Wagoner and J.L.Chenot, Cambridge University Press, New York, U.S.A.
4. Metal Forming Practice, Heinz Tschaetsch, Springer-Verlag Berlin Heidelberg.