10 ME 32D METAL FORMING TECHNOLOGY
III B.Tech II Semester
(with effect from the academic year 2012-2013)

Credits: 4

Lectures/week: 4 Hrs.   *Sessional Marks: 40*
University Exam:3 Hrs   *End Examination Marks: 60*

UNIT-I

Metal Forming : Classification of Forming processes – Mechanics of metal working - The slab method – uniform deformation energy method – Temperature in metal working – fundamentals of Hot working – Strain rate effects – Friction and lubrication – Concept of work ability and Residual stress.

UNIT-II

Rolling : Principle – Typical Rolling Shapes – Rolling Stand arrangement – Hot Rolling – Cold Rolling – Forces and Geometrical relationships in rolling – Determination of roll separating force – Power losses in bearings – roll passes – Draught – Rolling of rounds – defects in rolled products.

UNIT-III

Extrusion: Principle – Typical extrusion shapes – Classification – Direct extrusion – Indirect extrusion – Extrusion equipment –typical extrusion dies – Determination of work load form energy consideration – Determination of frictional power loss – Hot extrusion – Cold extrusion – Hydrostatic extrusion – Extrusion of tubing – Production of seamless pipe and tubing – Defects in extrusion.

UNIT-IV

Forging : Principle – Forging operations – Forging equipment; board hammer, steam hammer, crank press, hydraulic press, - forging types; Smith forging, Drop forging, Press forging, Upset forging, Swapping, Roll forging, force required for forging a disc – Forging defects.

UNIT-V

Drawing : Principle – Rod and wire drawing – Wire drawing equipment – Determination of drawing force and power in drawing – determination of maximum allowable reduction – Tube drawing – Defects in wire drawing.

TEXT BOOKS:

1.   Manufacturing Technology, Foundry, and welding   : P.N.Rao

2.   Manufacturing Science   : Amitabha Ghosh &Ashok Kumar Malik

REFERENCES:

1.   Mechanical Metalluragy, Material Science & Metallurgy   : George E, dieter

(East west press Pvt.Ltd.)
2.   Metal forming process and analysis   : Betzael Avitzur
3.   Metal forming process   : G.R.Nagpal

(Khanna publishers)