

GUJARAT TECHNOLOGICAL UNIVERSITY
M.E. Mechanical (Production Engg.)
Semester: I

Subject Name: **Design of Machine Tools (Major Elective - I)**
Subject Code: **712805**

Sr. No.	Course Content
1	Machine Tool Drive: Working and auxiliary motion in machine, Machine tool drives, Hydraulic transmission, Mechanical transmission, General requirements of machine tool design, Layout of machine tools.
2	Regulation of Speed and Feed Rates: Aim of speed feed regulation, stepped regulation of speed, design of speed box, Design of feed box, Special cases of gear box design, regulation of speed and feed rates.
3	Design of Machine Tool Structure: Fundamentals of machine tool structures and their requirements, Design criteria of machine tool structure, Static and dynamic stiffness, Design of beds and columns, Design of housing models, Techniques in design of machine tool structure.
4	Design of Guide-ways and power Screws: Function and type of guide-ways, design of slide-ways, Protecting devices for slide-ways, Design of power screws. Design of antifriction recirculating ball type lead screw, linear motion.
5	Design of Spindles and Spindle Supports: Materials for spindles, Design of spindles, Antifriction bearings, Sliding bearings.
6	Dynamics of Machines Tools: General procedure of assessing dynamic stability of EES, Cutting processing, Closed loop system, Dynamic characteristics of cutting process, Stability analysis.
7	Machine tool testing

Reference Books:

1. Machine Tool Design- N.K. Mehta Tata McGraw Hill
2. Design Principles of Metal Cutting Machine tool- F.Koenigsberger-Pergamon press
3. Machine Tool design Handbook CMTI Bangalore
4. Sen and Bhattacharya,, “Principles of Machine Tools”, New Central Book Agencies,1975.
5. Boothroyd,G., “Fundamentals of Metal Machining and Machine Tools”, Mc Graw hill,1985.
6. Acherkan,, “Machine Tool Design”, Vol 2 & 3, MIR Pub, 1973.