RGPV ME 7 SEM CBGS SYLLABUS
Elective –III ME- 7004 (1) Machine Tool Design

1. Classification, General Requirements and Design Recommendations of Machine Tools. Cutting forces in various machining processes and power requirements of various Machine Tools such as Lathe Machine, Drilling Machine, Shaping Machine, Milling Machine, Grinding Machine and Broaching Machine.
2. Kinematics of Machine Tool Drives, Classification, selection of maximum and minimum cutting speeds and feeds, series of spindle speed, standard series and value of common ratio, determining common ratio and transmission ratio for drives powered by multispeed electric motor, Semigraphical method for transmission ratio, structures deviating from normal uniform structures, gear box layout and teeth calculations, step less regulations- Electrical and Mechanical.
3. Design aspects of Machine Tool Elements, Framework, Guides, Spindle Bearing and Power Screws
4. Lubrication and Rigidity in Machine Tools, Introduction, Steps in selecting proper lubrication oil, Frictional conditions of working, Specifications of lubrication oil, Rigidity of Machine Tool Units, Rigidity of recirculating ball Screw Assembly, overall static rigidity of machine tools, dynamic rigidity of machine tools
5. Stick slip vibration in machine tools, Vibration isolated tool holders, Forced vibrations in machine tools, Shock Absorber self excited vibrations or chatter.

References:

1. Ghosh and Bhattacharya, Machine Tool Design
2. Acherken, Design of Machine Tools, Mir Publications.