0402426 Theory of Machines

(3 Credit hours, Prerequisite 0402203 Dynamics + 0403201 Engineering Drawing)

The course aims to give the student background knowledge on theoretical analysis of different practical mechanisms and machines. Topics on basic mechanisms including gears, cams, four bars linkages, slider crank mechanism, scotch yoke, quick return mechanism, toggle mechanism, Oldham coupling, Straight line mechanism, Pantograph, chamber wheel, Hook's coupling, constant velocity joints, intermittent motion mechanisms, Kinematics and synthesis of cams, spur gears, bevel, helical & worm gears, gear trains, and differential gears. Introduction to computer simulation of dynamical motions, instantaneous center of velocity & acceleration, complex number methods, force analysis of machinery, balancing of machinery, Governors and Gyroscopes.