ME 4001D, Machine Design II

Tutorial on "**Selection and design of roller chains**"
Date: 26/September/2023

1. A single-strand chain No. 12A is used in a mechanical drive. The driving sprocket has 17 teeth and rotates at 1000 rpm. What is the factor of safety used for standard power rating? Neglect centrifugal force acting on the chain.

2. It is required to design a chain drive to connect a 10 kW, 900 rpm petrol engine to a conveyor. The driving sprocket is mounted on engine shaft. The driven sprocket is mounted on conveyor shaft. The conveyor shaft should run between 225 to 245 rpm. The service conditions involve moderate shocks. (i) Select a proper roller chain and give a list of its dimensions. (ii) Determine the pitch circle diameters of the driving and driven sprockets. (iii) Determine the number of chain links. (iv) Specify the correct centre distance between the axes of sprockets. Create an alternative design for the above application, which will result in compact construction using multi-strand chain. For this design, (v) Select the roller chain with multi-strand construction, (vi) Determine the number of chain links, (vii) Specify the correct centre distance between the axes of sprockets.