Faculty of Engineering & Materials Science

EDPT 602 – "Engineering Design II"

German University in Cairo

الجامعة الألمانية بالقاهرة

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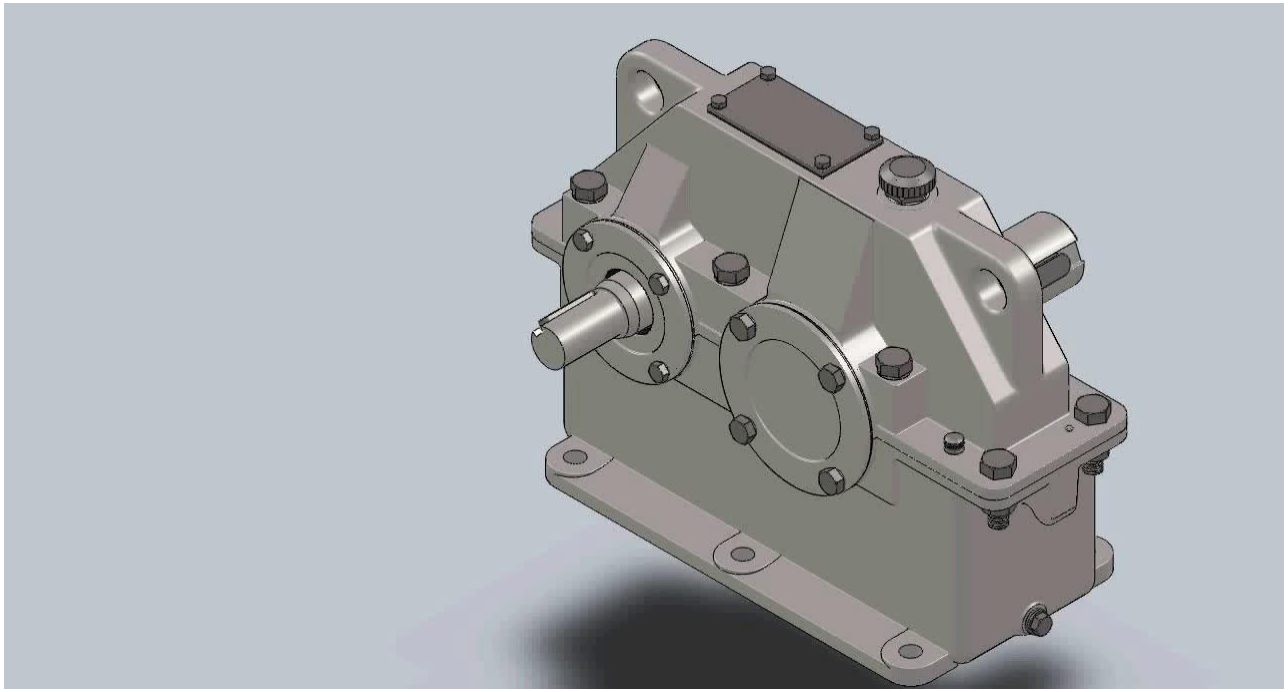


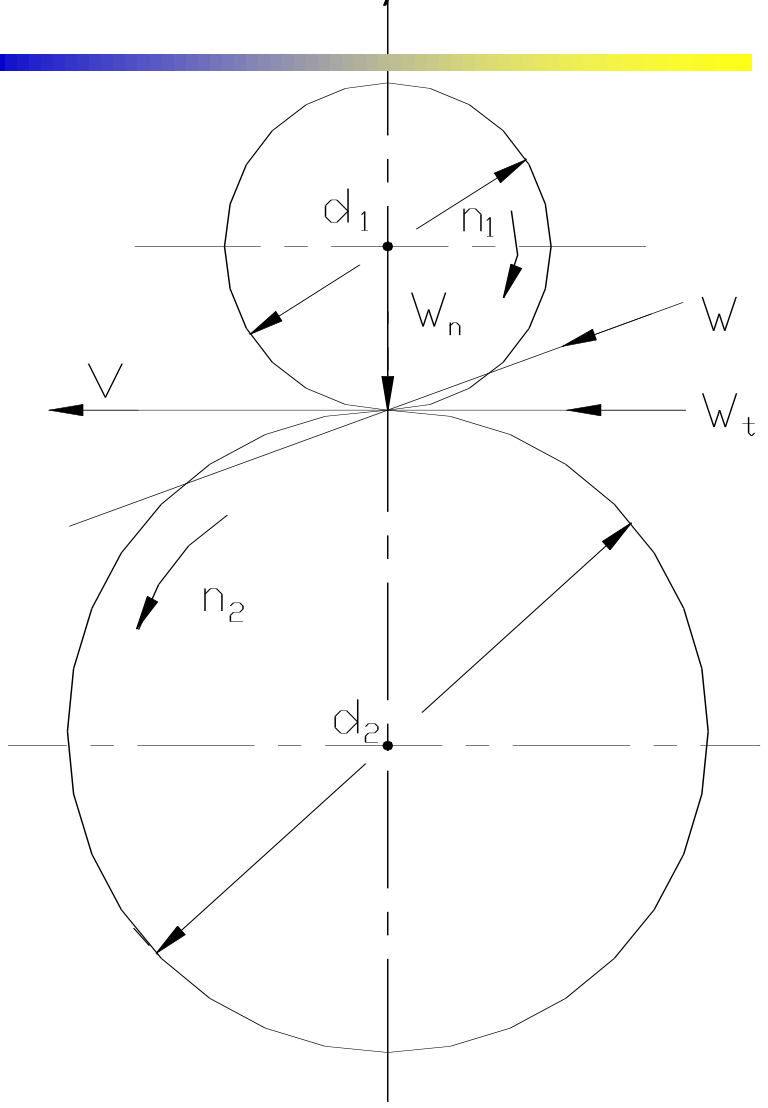
SPUR Gears (Fundamental Relations)

$m = d / N$

$V = \omega_1 r_1 = \omega_2 r_2$

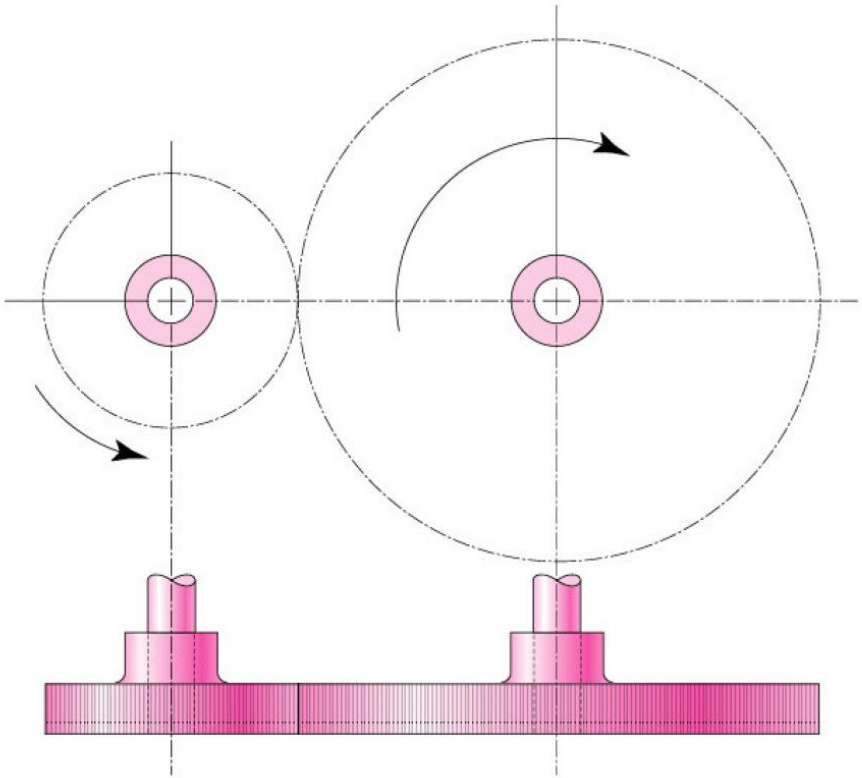
$d_1 = mN_1$

$$\frac{d_1}{d_2} = \frac{n_2}{n_1} \quad , \quad \frac{d_1}{d_2} = \frac{N_1}{N_2}$$



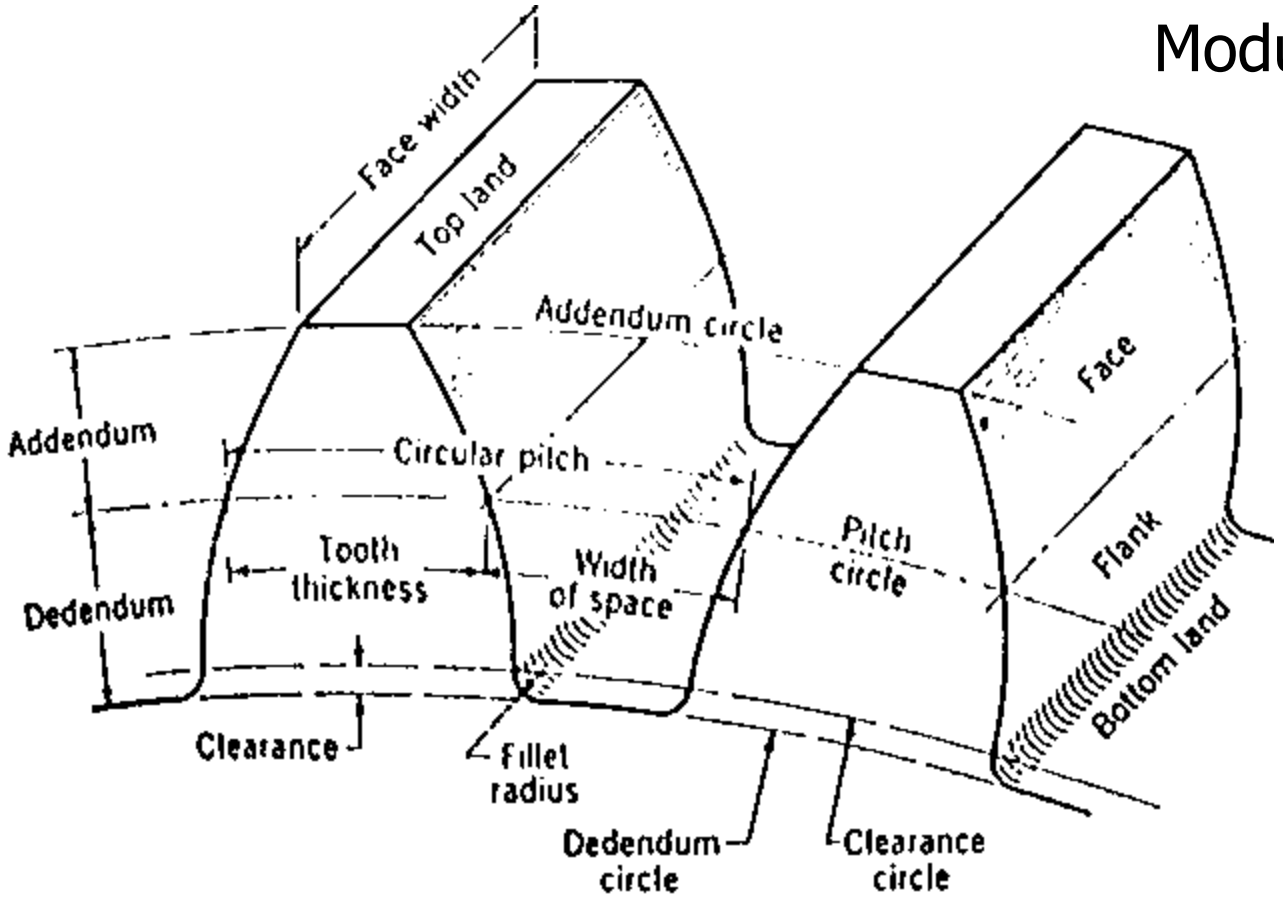
SPUR Gears (Fundamental Relations)

Speed ratio:



SPUR Gears (Terminology)

Module (m)



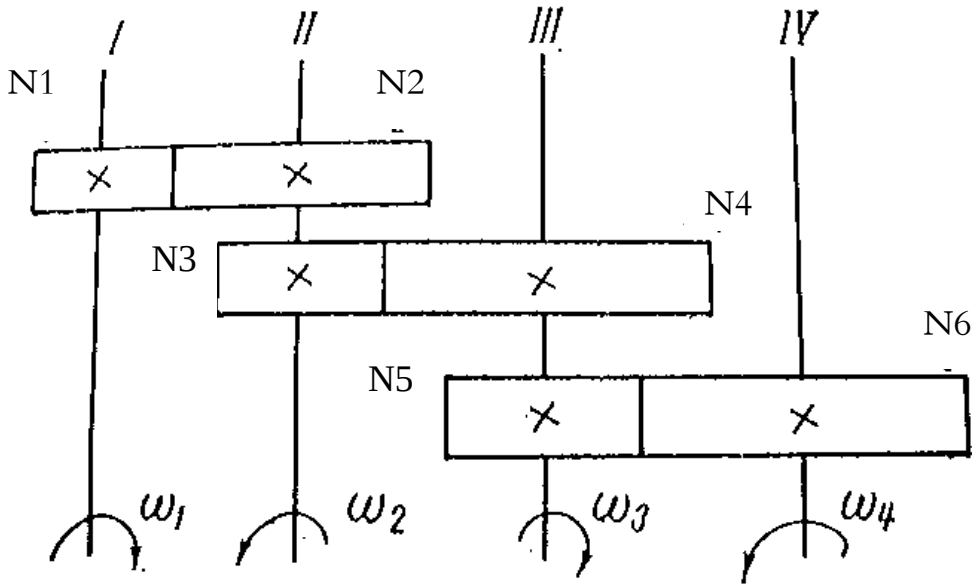
SPUR Gears (Multi-Step Drive)

$i_1 = i_{I\text{-}II} = n_I / n_{II} = N_2 / N_1 = d_2 / d_1$

$i_2 = i_{II\text{-}III} = n_{II} / n_{III} = N_4 / N_3 = d_4 / d_3$

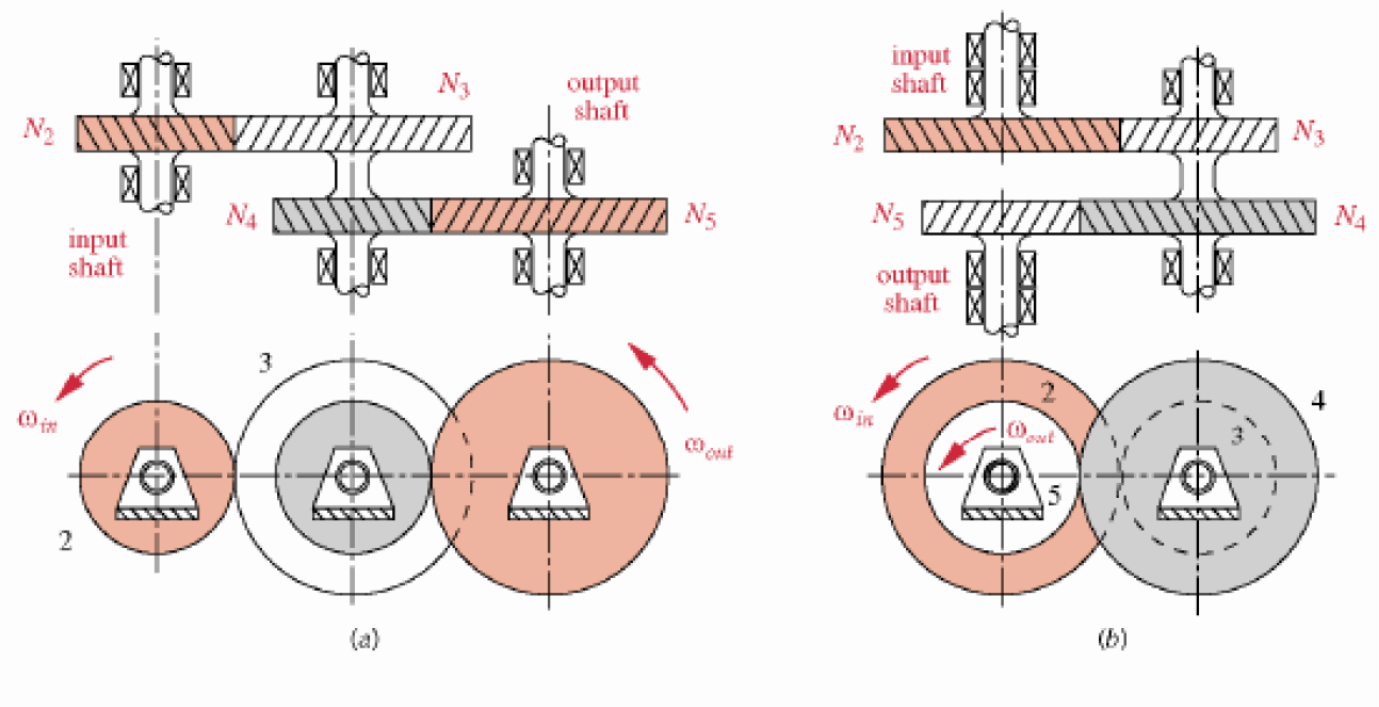
$i_3 = i_{III\text{-}IV} = n_{III} / n_{IV} = N_6 / N_5 = d_6 / d_5$

$i_1 i_2 i_3 = n_I / n_{IV} = N_2 N_4 N_6 / N_1 N_3 N_5$



SPUR Gears

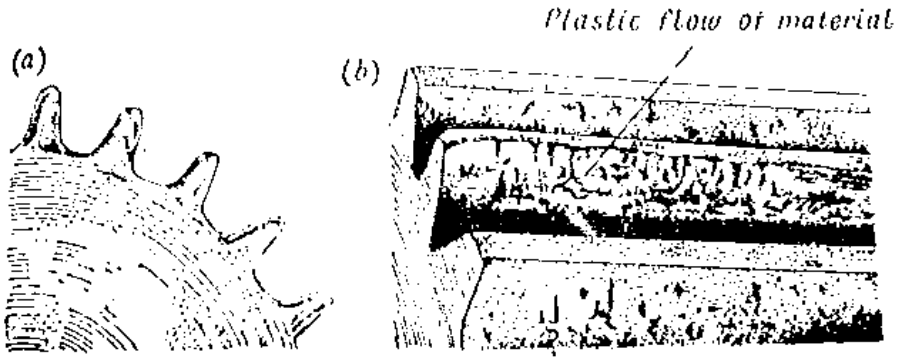
Compound Gear Trains



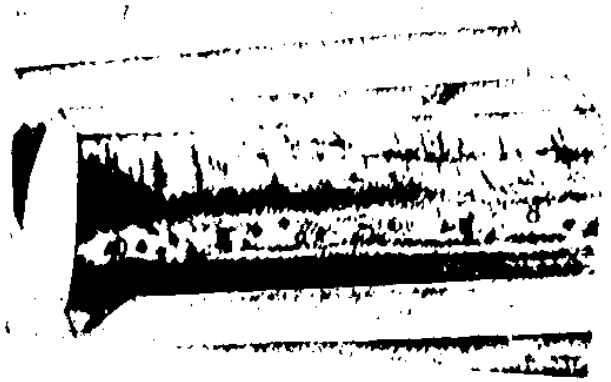
SPUR Gears (Failure)

1- Tooth Breakage.

2- Tooth Wear.



3- Pitting.



Thank You