Module 1 - Loads Analysis

ME4020 - Applied Machine Design

Mechanical Engineering

Tennessee Technological University

Gears Review

Gears Review

- Overview
- Law of Gearing
- Gears and Loads
- Examples

Overview

Primary Purpose:

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Applications:

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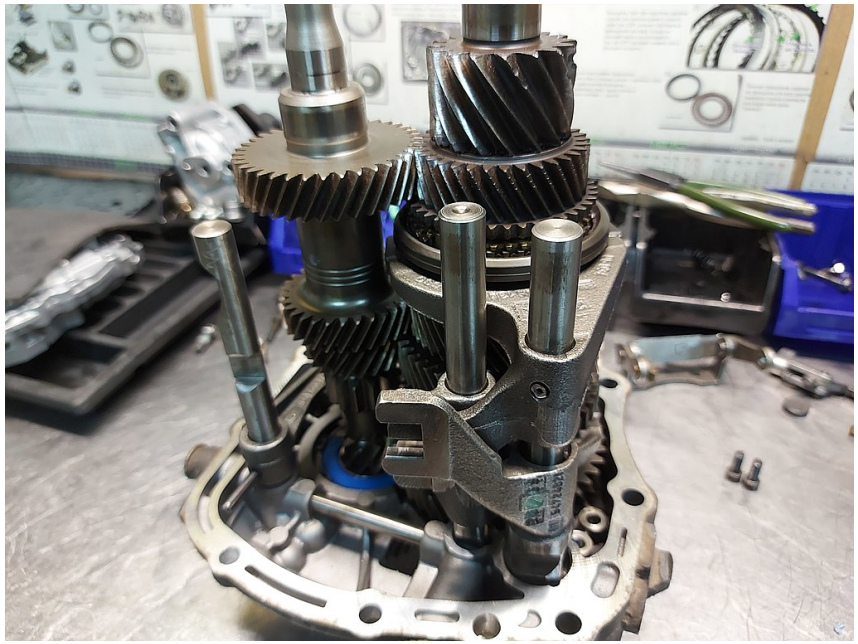
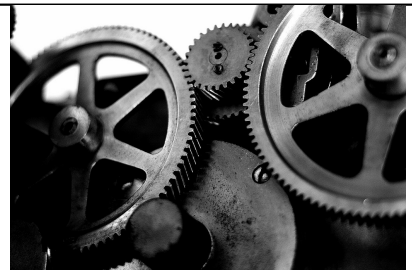
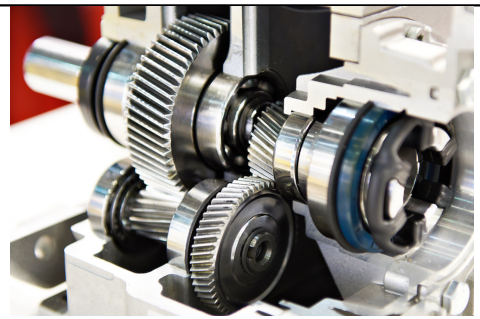


Overview

Common Gear Types

— Type —	— Example —	— Application —	— Pros/Cons —
			
			
			

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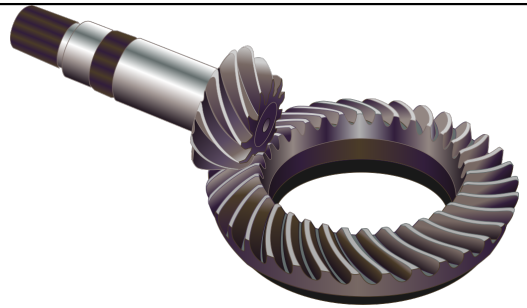
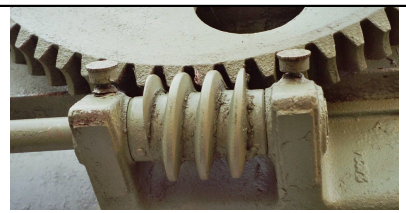
Overview

Common Gear Types

— Type —	— Example —	— Application —	— Pros/Cons —
			
			
			

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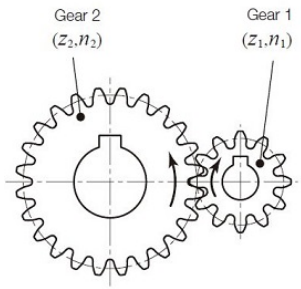
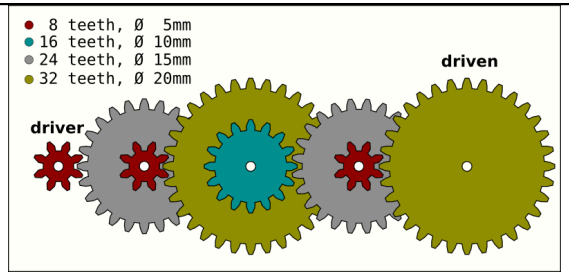
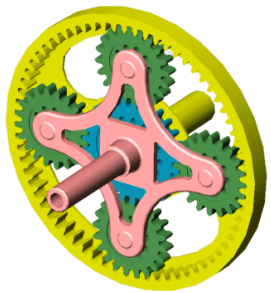
Overview

Classification of Gear Train

— Type —	— Example —	— Application —	— Pros/Cons —
			
			
			

Overview

Alternatives:

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Pros

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Cons

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Law of Gearing

Velocity of Contact: $v = r_A \omega_A = r_B \omega_B$

Law of Gearing: $P_{in} = P_{out} \implies \frac{\omega_A}{\omega_B} = \frac{r_B}{r_A} = \frac{N_B}{N_A}$

Transmission Ratio: $R = \frac{\omega_A}{\omega_B} = \frac{N_B}{N_A}$

Power in Rotation: $P = T\omega$

Law of Gearing

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Gears and Loads

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Examples

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