Course Outline: Power Transmission Devices

In this fee-based, not-for-credit course the students will learn about the large variety of mechanical devices used to move products at various speeds and direction in a manufacturing facility. Troubleshooting and repairing of mechanical devices will be emphasized.

**Dates/Days:** Monday - Thursday  
**Time:** 3:00 – 6:30 pm  
**Length:** 10.5 hours  
**Location:** Fresno City College CACT

**Topical Outline**

- Belt drives transmit force by friction  
- Power is equal to the force times the speed of the belt  
- Terms used to describe power transmission devices  
- Chain drives compared to belt drives  
- Chain drive terminology, and types of chains  
- Gear drives, both enclosed and customized open  
- Tooth contour and diametral pitch  
- Worm gear drives, both single and double reduction  
- Adjustable-Speed drives, applications and maintenance  
- Aligning shafts, and need for shaft alignment  
- Aligning multiple machines  
- Laser alignment applications  
- Shaft coupling devices  
- Clutches and brakes  
- Clutch operating methods, and troubleshooting techniques
Student Learning Outcomes

- Identify conventional belt sizes A, B, C, D, E
- Understand the applications of timing belts
- Identify the adjustment procedures for manually adjustable sheaves
- Correctly install and adjust various sizes of V-Belts
- Identify and measure pitch diameter of a chain drive
- Understand the applications of chain drives
- Identify the three common sprocket shapes, type A, type B, type C
- Understand the correct procedures when installing a chain drive
- Identify the tooth contour and calculate the diametral pitch of a gear
- Identify spur gears and understand their operating characteristics
- Identify helical gears and understand their operating characteristics
- Identify worm gears and understand their operating characteristics
- Identify possible causes of gear tooth deformation
- Understand gear drive installation procedures
- Understand the need for shaft alignment
- Identify the most common shaft couplings and their applications
- Understand the operating methods of manual, electrical, hydraulic and pneumatic clutches

This material was developed and written for the Centers for Applied Competitive Technologies at Fresno City College, Fresno, CA.
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