

Mechanical Systems Reliability

Course Information

Developers: Industrial Machining Mechanic State Curriculum Committee

Gillian Gabelmann, Washburn Institute of Technology, Chaz Havens, Washburn Institute of Technology, Michael Edwards, Wichita Area Technical College, Mark Stukey, Wichita Area Technical College, Jerry Berry, Wichita Area Technical College

Developed Date: 01/27/2014

KBOR Facilitators: Rita Johnson/ Shirley Antes/ April Henry/ Lisa Beck

Business & Industry Liaison: Steve Reed – KASA Companies, Ronald Owings – Spirit Aerosystems and Mike Hart – Spirit Aerosystems

Credit Hours: 3

Description

This course provides understanding of mechanical energy transmission concepts along with lab experience to operate, install, analyze performance, and design mechanical drive systems using right angle gears, bearings and couplings. Students learn how to setup and operate laser shaft alignment and apply vibration analysis to various power transmission systems.

Competencies

1. Identify various types of plain bearings and their applications, installation, and maintenance.
2. Demonstrate how to install, maintain, and specify plain and anti-friction bearings.
3. Demonstrate selection, maintenance, and troubleshooting of a variety of couplings.
4. Calculate gear ratio, shaft speed, and torque of a gear drive system.
5. Select and identify gears for a given application
6. Explain laser shaft alignment principles and operation.
7. Demonstrate vertical parallel and vertical angular alignment.
8. Demonstrate horizontal parallel and horizontal angular alignment.
9. Explain vibration concepts, resonant frequency and sympathetic vibration.
10. Demonstrate velocity, acceleration and spike energy measurement with vibration meter.