

Lehigh Carbon Community College

Mechatronics Level 2

78 LAPs, 424 Hours

Part I – Mechanical Level 2

Intermediate Hydraulics (WB832-XA)

- Hydraulic DCV Applications
- Hydraulic Cylinder Applications
- Hydraulic Relief Valve Operation
- Hydraulic Check Valve Applications
- Accumulation Application

Mechanical 1 (WB502-XD)

- Spur Gear Drives (LAP 6)
- Multiple Shaft Drives (LAP 7)

Mechanical 2 (WB503-XD)

- Synchronous Belt Drives (LAP 3)
- Precision Shaft Alignment (LAP 5)
- Couplings (LAP 6)

Mechanical 3 (WB504-XD)

- Plain Bearings
- Ball Bearings
- Roller Bearings
- Antifriction Bearing Selection and Maintenance
- Gaskets and Seals
- Advanced Gear Drives
- Gear Drive Selection and Maintenance

Mechanical 4 (E19159-XA)

- Brakes and Clutches
- Brake/Clutch Selection and Maintenance
- Linear Ball Bearings
- Ball Screw Drives

Laser Shaft Alignment (W18433)

- Introduction to Laser Alignment
- Laser Alignment Operations

Vibration Analysis (W18435)

- Introduction to Vibration Analysis
- Vibration Condition Monitoring
- Vibration Analysis

Central Lubrication (EB563-XC)

- Introduction to Central Lubrication
- Lubrication Concepts
- Series / Progressive Lubrication Systems
- Troubleshooting Lubrication Systems
- Piston Distributor Lubrication Systems

Part II – Electrical Level 2

Electric Motor Control 2

- Braking Methods (WX17402)
- Reduced Voltage Starting Circuits (WX17403)
- Power Generation & Distribution (WX17403)
- Electronic Sensors (WX17404)
- Timers and Counters (WX17405)

Variable Frequency Drives Powerflex 4 (W17911)

- Introduction to Variable Frequency AC Drives
- Speed and Torque control
- Acceleration, Deceleration and Braking
- Fault Diagnostics and Troubleshooting

Rotating Electric Machines (WB862)

- Rotating Electric Motors
- DC Shunt & Compound Motors
- Motor Speed & Torque
- Motor Performance
- Split-Phase AC Motors
- Capacitor Start AC Motors
- Permanent Capacitor & Two Capacitor Motor Operation
- Three-Phase AC Induction Motors

DC Electronic Drives (E17422-XF)

- Introduction to DC Motor Control
- Basic DC Drives – SCR Control
- DC Spindle Drives
- Basic DC Axis Drives
- DC Pulse Width Modulation Drives
- Troubleshooting DC Drives

AC Electronic Drives (W17420-DG)

- Introduction to AC Drives
- Configuring A-B Powerflex 70 Drives
- A-B Powerflex 70 Control Parameters
- Communications and Diagnostics
- Troubleshooting A-B Powerflex 70
- Configuring and Troubleshooting A-B Powerflex 40
- Configuring and Troubleshooting Servo Drives

Part III – Controls Level 2

Analog Applications (E40661-AA)

- Analog Input Modules
- Input Configuration and Troubleshooting
- Analog Output Modules
- Output Configuration and Troubleshooting

ControlNet (W40665-CA)

- Industrial Communications Networks
- Devicenet I/O
- Devicenet Troubleshooting

Devicenet (E40667-DC)

- Industrial Communications Networks
- Remote I/O
- Produced Consumed Data and Messages

Ethernet (E40666-BA)

- Industrial Communications Networks
- Remote I/O
- Produced Consumed Data and Messages
- Troubleshooting Ethernet IP

AB5000 Panelview Operator (E40664-CB)

- Introduction to Panelview
- Panelview Application Editing 1
- Panelview Application Editing 2