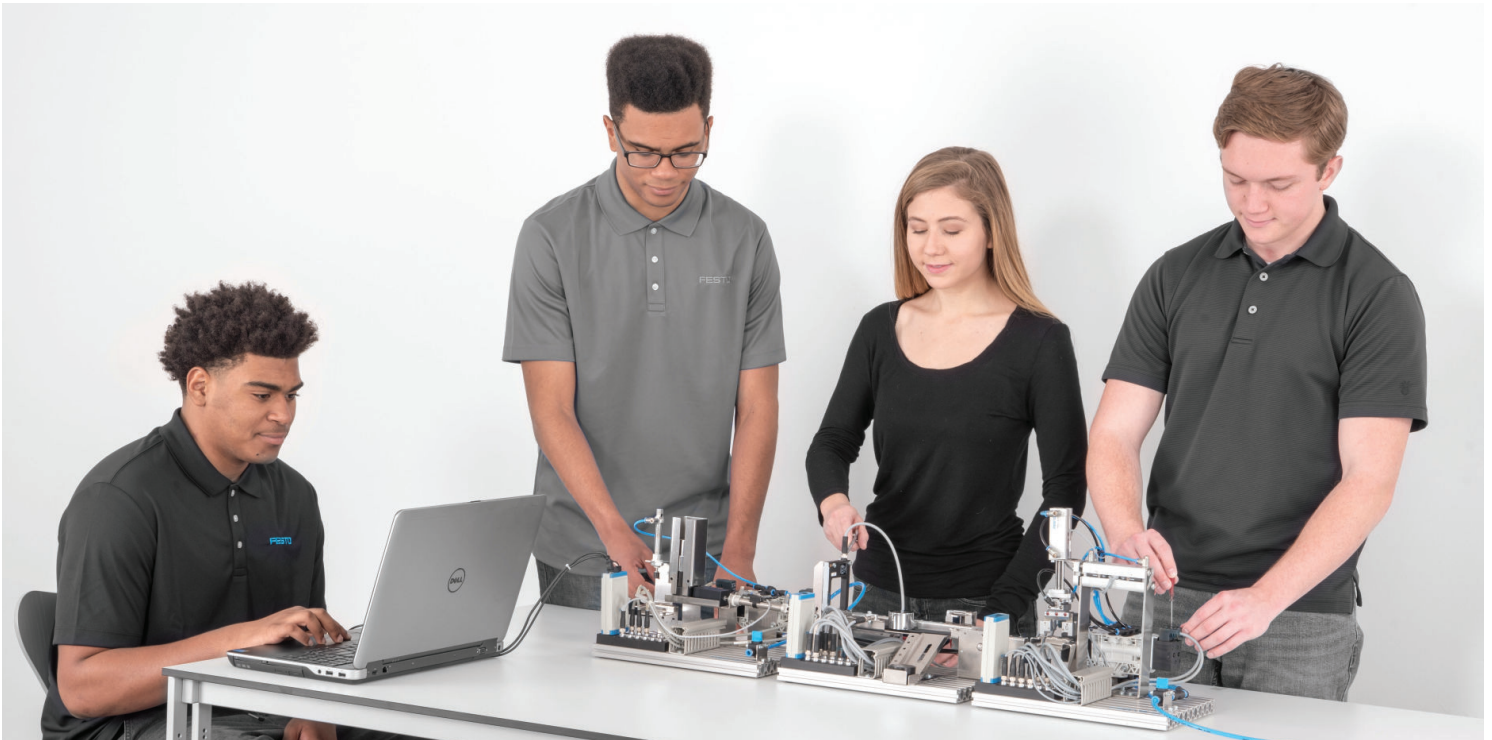


Integrative STEM Education

Exploring Mechatronics

FESTO



Highlights

- Design an automated order-fulfillment mechatronics system
- Use FluidSIM software to create electropneumatic circuits
- Design innovative solutions to real-world problems, challenges, and needs

STEM Connections

In this course, students discover how the four disciplines connect as they explore the interaction between mechanics, electrical engineering, electronics, and computer engineering. They'll have the opportunity to design innovative solutions to real-world problems, challenges, and needs.

Science

- Pneumatics
- Physics
- Boyle's Law
- Electromagnets
- Electric current
- Voltage
- Electronics
- Energy conversion
- Electropneumatics
- Mechanics

Technology

- Mechatronics stations
- Sensors and Motors
- Transducers
- Solenoids
- Switches and Relays

Engineering

- Programmable logic circuits
- Electronic circuits
- Pneumatic circuits
- Electropneumatic circuits
- Engineering design process
- Schematic diagrams

Math

- Units of measure
- Algebra
- Proportionality
- Ladder logic
- Truth tables
- Boolean algebra

Integrative STEM Education

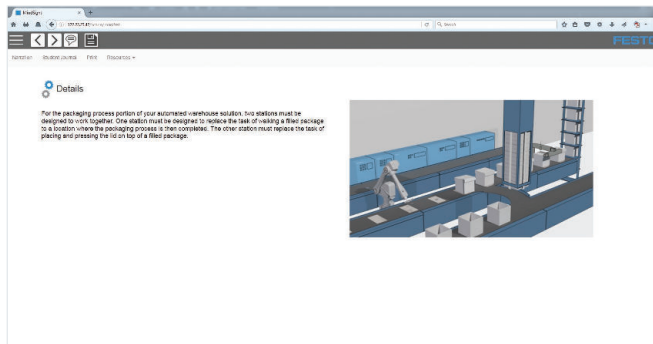
Exploring Mechatronics

STEM Exploring Mechatronics

The purpose of the STEM Exploring Mechatronics course is to provide learners the opportunity to explore automation technology and the mechatronic systems essential for efficient manufacturing.

Students will be challenged to design an automated system by taking on the role of a mechatronics engineer. They must adhere to the specifications and constraints given and explore the interaction between mechanics, electrical engineering, electronics, and computer engineering disciplines to develop task-handling systems that help speed up time-consuming processes or processes that are unsafe for a human to perform.

MindSight LMS



Upon completion of the STEM Exploring Mechatronics course, students will be able to:

- Identify the function of a pneumatic system
- Explain the purpose of the Stacking Magazine, Conveyor, and Handling stations
- Identify the components of the Stacking Magazine, Conveyor, and Handling stations
- Explain the functionality of pneumatic and electrical components
- Identify the elements of electropneumatic systems
- Navigate FluidSIM
- Create and simulate electropneumatic circuits
- Identify the structure of a PLC (Programmable Logic Controller)
- Analyze logic circuits
- Develop sequence programs
- Run control programs using MecLab
- Apply the engineering design process

Equipment and Supplies

- Multimedia Presentation
- MindSight Installation and User Guide
- Stacking Magazine station
- Conveyor station
- Handling station
- Compressor
- Three (3) EasyPort mini
- Three (3) Power supply
- Workpieces
- Tools
- Screw set
- FluidSim v. 4.5

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