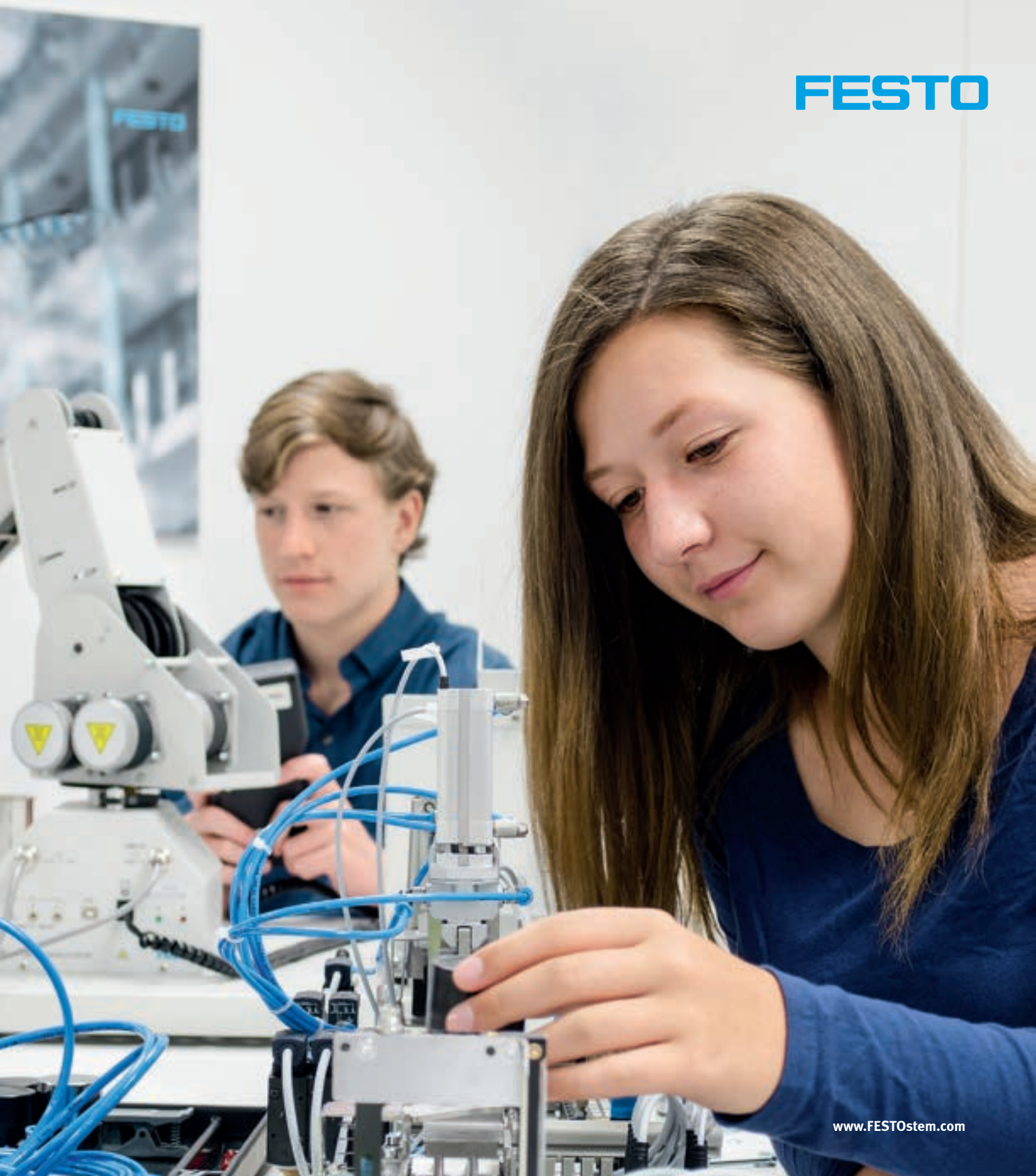
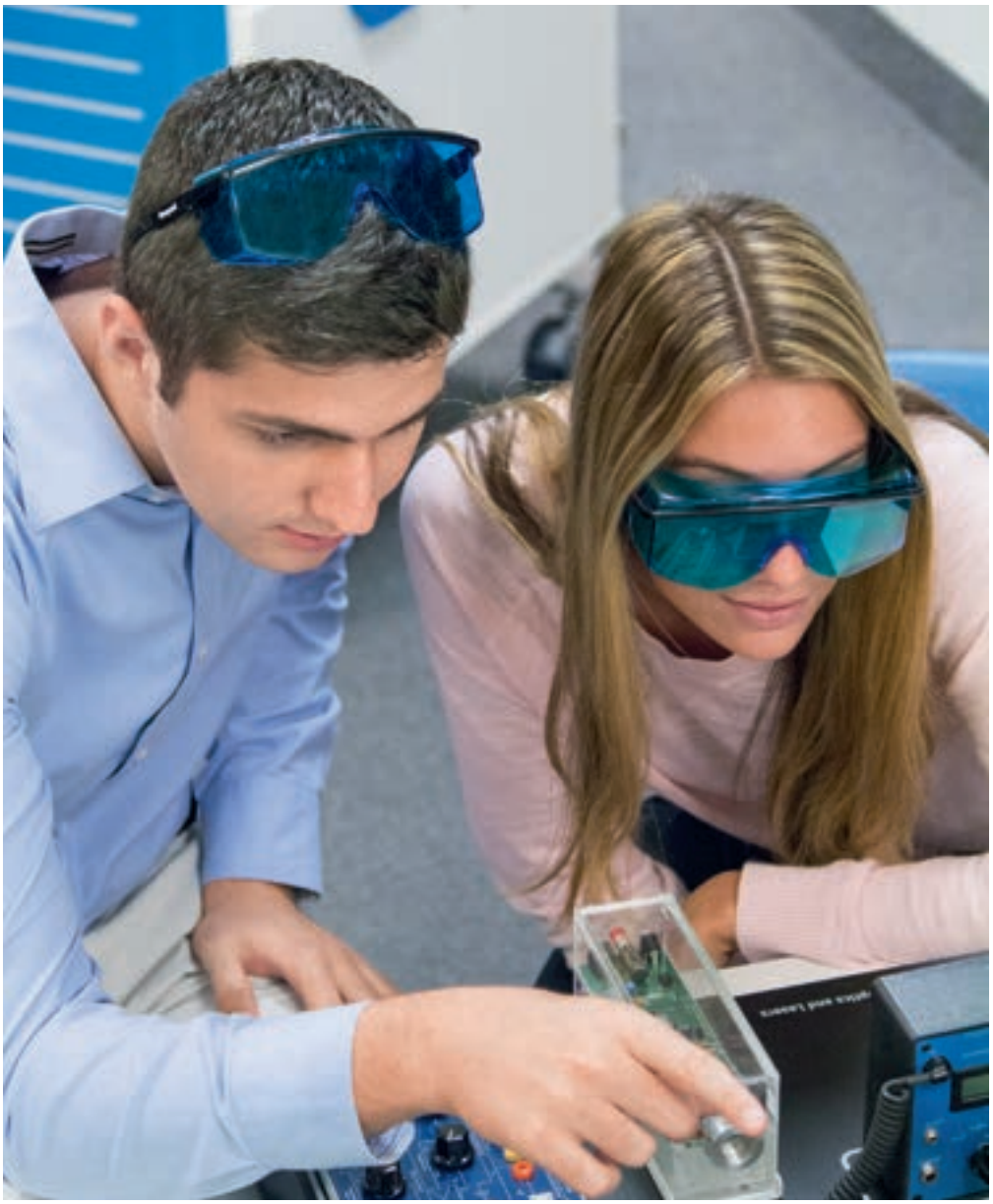
Integrative STEM



www.FESTOstem.com

Integrative STEM Education

Making connections through a learning cluster environment



Integrative STEM education is about intentionally combining math and science concepts with technology and engineering skills to solve problems. Students who engage in integrative STEM projects in order to solve authentic problems develop communication and collaboration skills, as well as sustained interest in STEM disciplines and increased competency levels.

The “learning cluster” approach of our Integrative STEM solution is inherently flexible and allows a STEM classroom to consist of modules from all clusters, specific clusters, or a variety of each.

Each course in our STEM solution allows students the opportunity to explore real-world problems, reflect on the problem-solving process, develop design solutions, and solve problems in science, technology, engineering, and math fields.

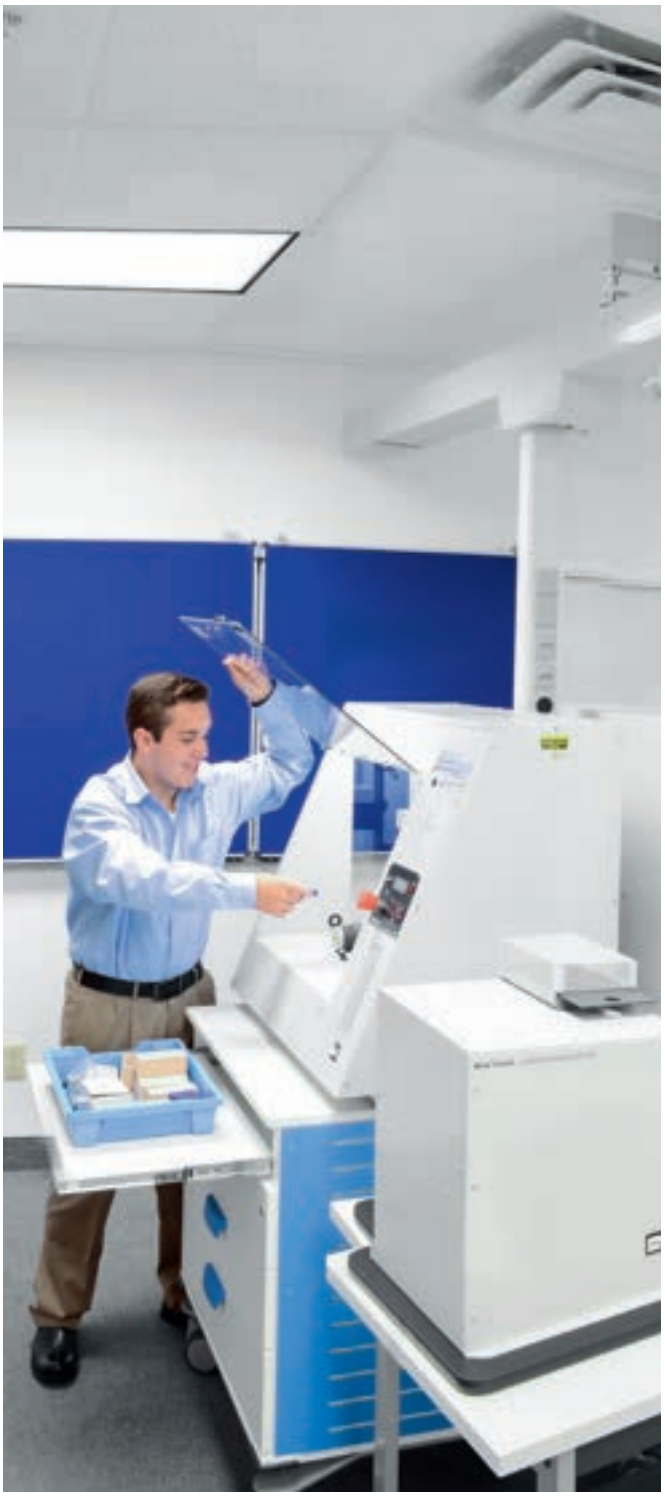
Our goal is to provide students the opportunity and inspiration to explore the concepts related to the STEM clusters in a hands-on, “learn-by-doing” environment where they can confidently develop solutions to real-world problems.

STEM Learning Clusters

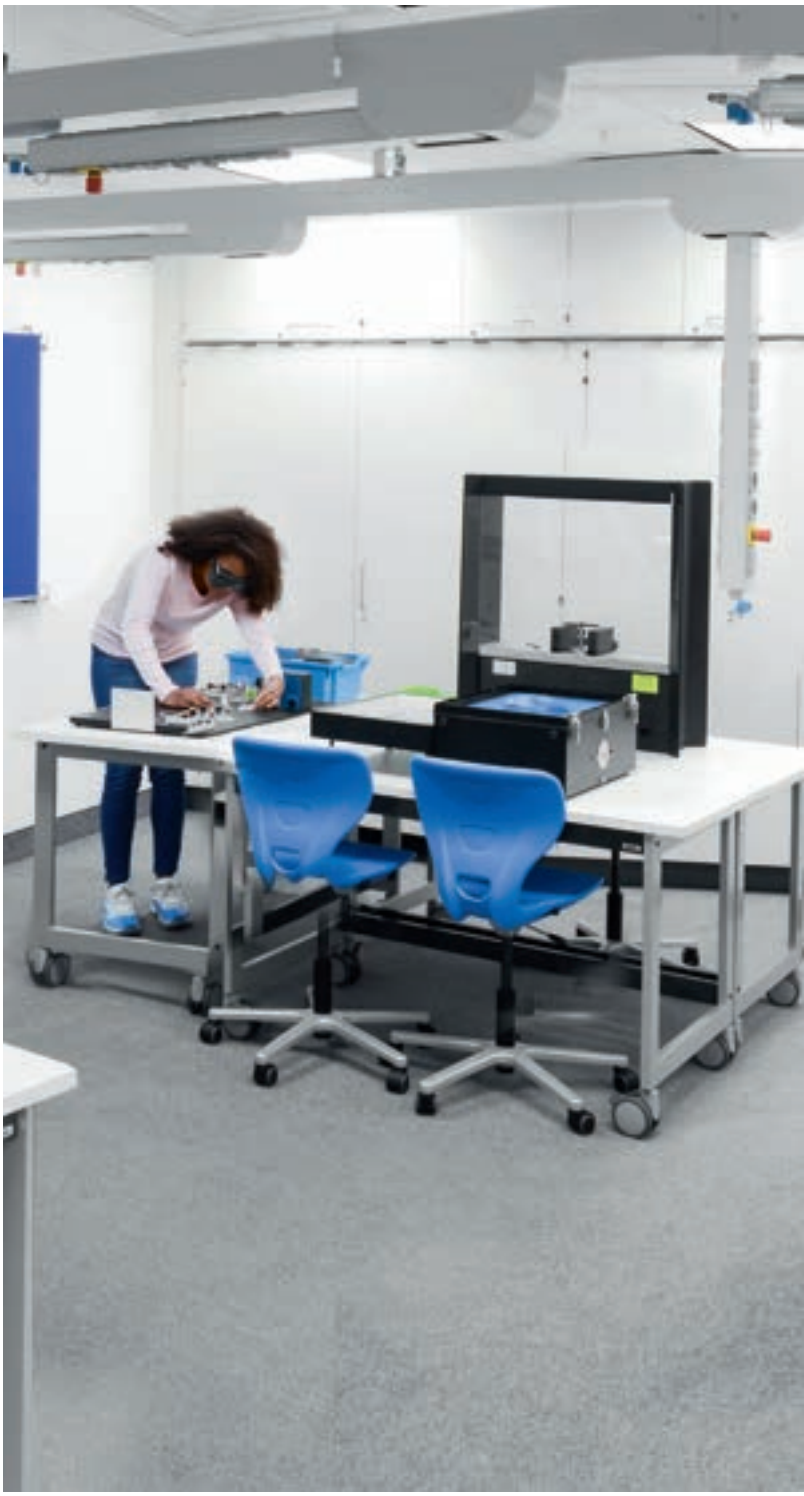
- Advanced Manufacturing
- Mechatronics
- Environmental Discovery

Flexible Classroom

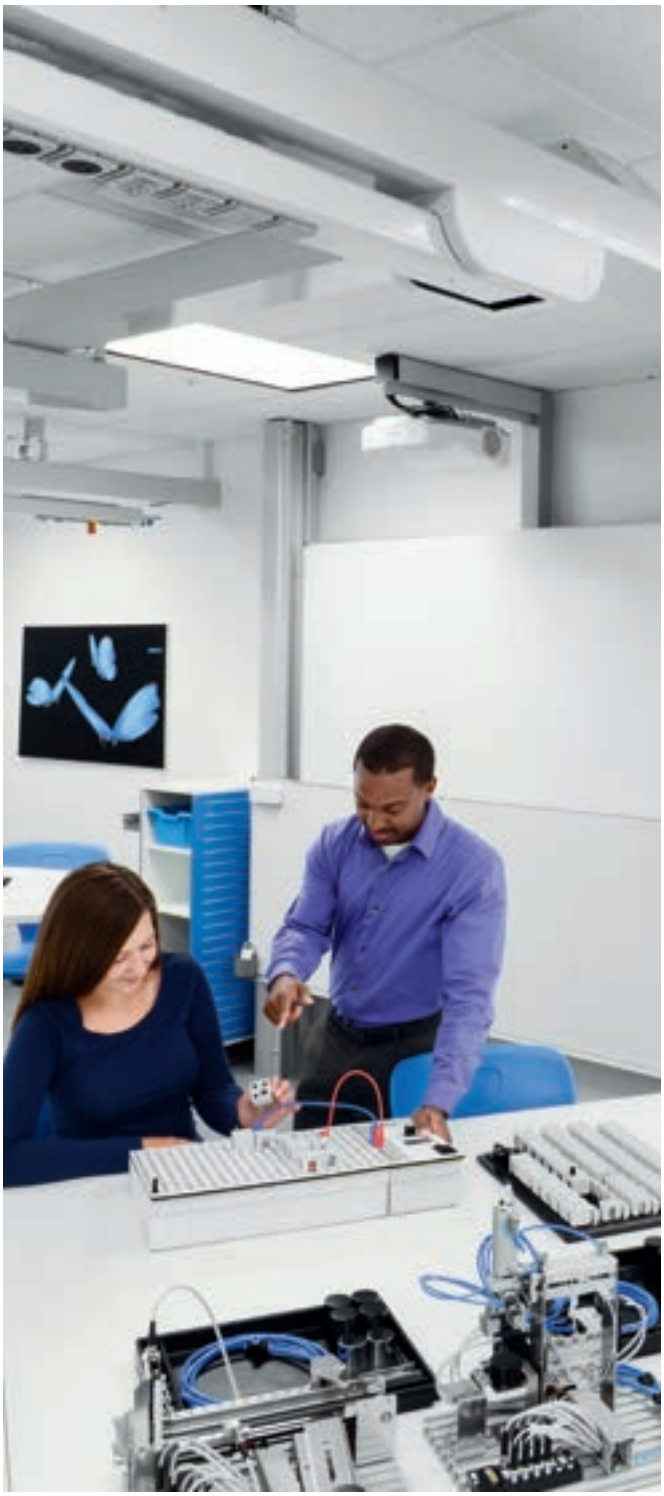
Customized to needs and budget



Mobile furniture with overhead, flexible power system



Open, collaborative floorplan



Flexible set-ups

STEM Course Structure

“How” we teach optimizes “what” we teach

The STEM courses are designed with an emphasis on project-based learning with real-world scenarios. Each STEM course is presented with a Project Challenge, whose overarching path is proposed to students at the start of the course. Students then use the Engineering Design Process to complete various Support Projects as they progress on the Challenge path.

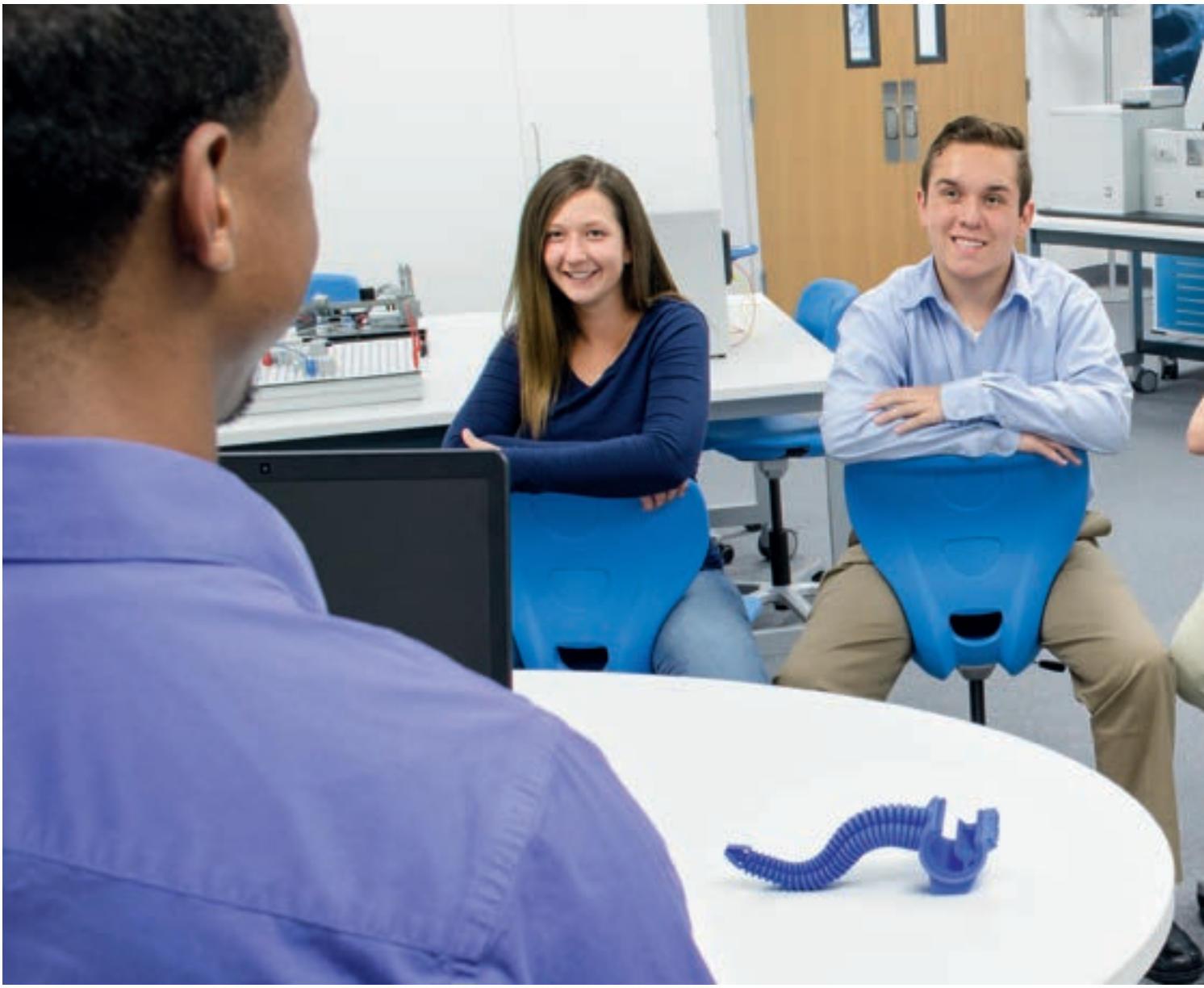
Due to the exploratory nature of the projects, screens are marked with navigation icons to further guide students along the Project Challenge path.

The Support Projects build the knowledge and skills necessary for students to ultimately develop a solution for the Project Challenge, using an engineering design worksheet to document and monitor their progress along the way. To complete the Support Projects, students explore topic-specific resources, acquiring the relevant information, skills, and activities that enable them to design, construct, or resolve their Project Challenge.

The four STEM disciplines are integrated into the resources using representative icons, allowing students to recognize at a glance which subjects relate to the on-screen information. The icons are gray by default. A blue icon indicates that the content is associated with that discipline.

21st century teaching strategies

Student engagement through mixed formats and multimedia



Inspiring Innovation

The STEM classroom's bright, open floor plan engages students in the educational experiences, inspiring an innovative approach to their own learning that allows them to take ownership of their outcomes.

Encouraging Problem-Solving

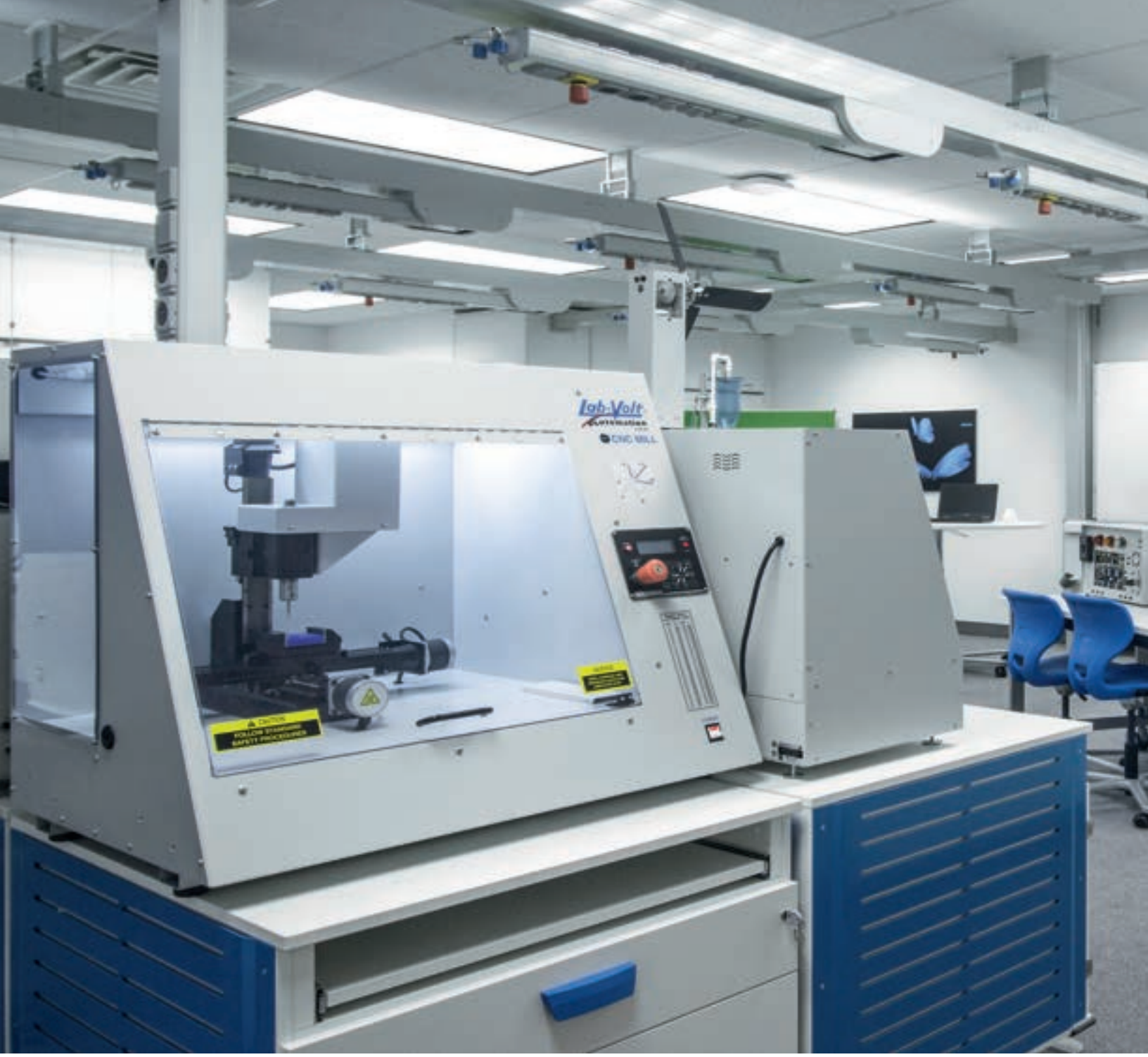
Learning by doing evolves from trying and failing, and then solving each problem until success is ultimately achieved. The hands-on STEM equipment and projects safely encourage students to persevere and problem-solve to achieve their goals, resulting in learning that endures.

Developing Critical Thinking

The open STEM classroom environment allows students to interact with each other, within and across projects, seeking mutual insight, encouragement, and assistance. Such interaction enables students to develop critical thinking skills as they develop project solutions.

Fostering Creativity

Our adaptable classroom design is open, bright, and colorful creating a “youth-appealing” space that inspires interest, creativity, and collaboration and accommodates different learning and teaching styles, allowing students to work alone, in pairs, or collaboratively in brainstorming groups.


Lab-Volt
Automation
CNC MILL

Learning Cluster:

Advanced Manufacturing

The integration of real and virtual worlds, the advancement of sensors, and the use of innovative technologies to improve products and processes have together contributed to a rapidly-changing manufacturing landscape.

The Advanced Manufacturing cluster uses hands-on training systems to teach the foundations of advanced manufacturing through practical applications that emphasize innovation, problem-solving, and critical thinking.

Courses in this cluster include:

- Aerodynamics
- CNC Lathe
- CNC Mill
- Computer-Aided Design with 3D Printing
- Engineering and Stress Analysis
- Exploring Electricity
- Fiber Optics and Lasers
- Introduction to Process Engineering
- Plastics

Learning Cluster:

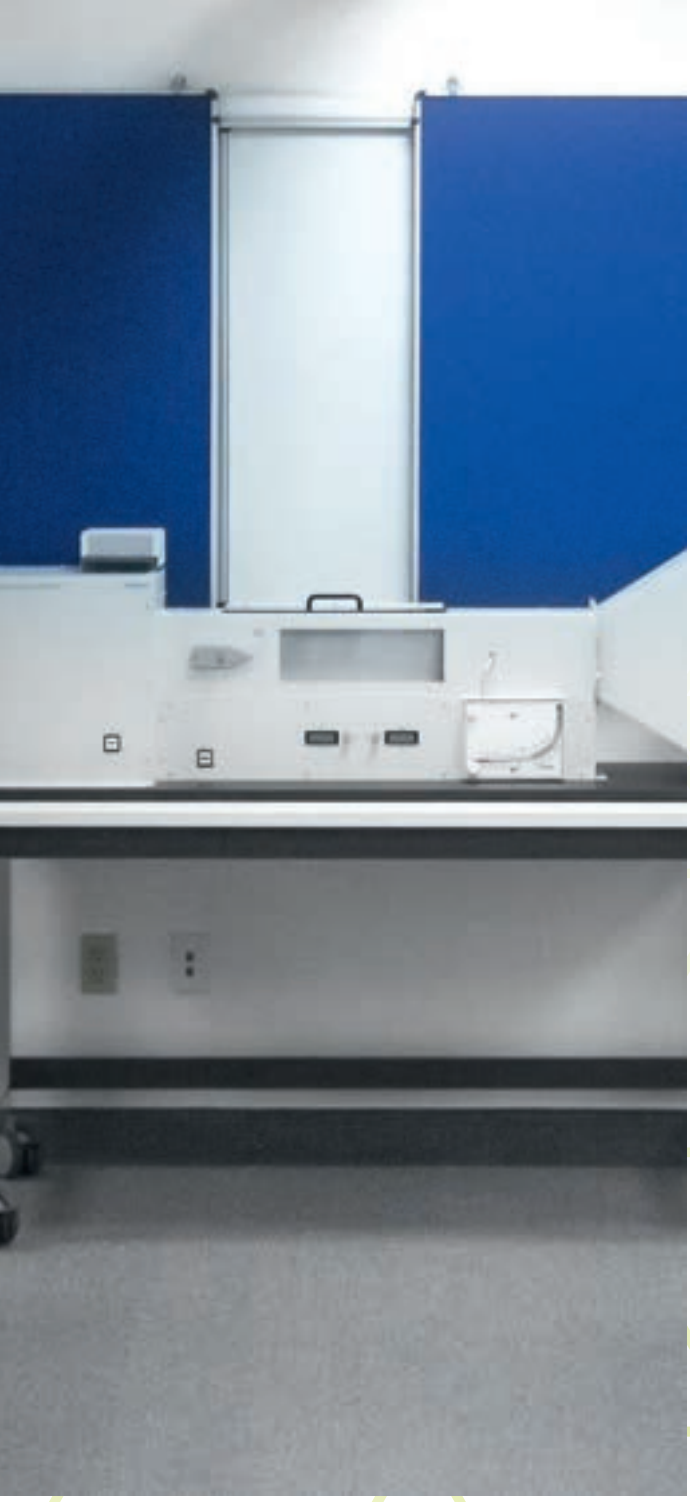
Mechatronics

Mechatronics is a multidisciplinary field that integrates a combination of mechanical, electronics, and computer sciences.

Our Mechatronics cluster presents an innovative, problem-based approach to teaching mechatronics that incorporates hands-on trainers and robotics.

Courses in this cluster include:

- Automation and Robotics
- Exploring Mechanisms
- Exploratory Electronics
- Exploring Mechatronics



Learning Cluster:

Environmental Discovery

Environmental Discovery connects students to the world around them, both natural and man-made.

Students examine the variables behind environmental issues in order to understand how and why these issues exist and to develop reasoned solutions.

The Environmental Discovery cluster explores the impact of conservation and sustainability using hands-on, interactive, problem-based learning.

Courses in this cluster include:
- Environmental Technology: Water
- Alternative Energy

Festo Didactic Inc.

Eatontown, NJ 07724
USA
Phone: +1-732-938-2000
Toll Free: +1-800-522-8658
Fax: +1-732-774-8573

www.FESTOstem.com

did1156 en 11/2017 Festo Didactic Inc.