Integrative STEM Education

CNC Lathe

Highlights

- Design CAD models
- Generate/execute programs on the CNC lathe
- Design and create a prototype of a trophy
- Use a digital caliper
- Program in G & M code
- Create a travel-size chess set
- Design innovative solutions to real-world problems, challenges, and needs

STEM Connections

In the STEM CNC Lathe course, students discover how the four disciplines connect as they design and produce prototypes. Once they are familiar with how the CAD/CAM software interacts with the CNC lathe, they'll have the opportunity to design innovative solutions to real-world problems, challenges, and needs.

Science

- Density, volume, force, and pressure
- Mechanics
- Electronics

Technology

- Windows-based GUI
- 2D and 3D software applications
- CNC lathe machine
- Digital caliper
- G & M Code

Engineering

- Design and development of parts and products
- Design evaluation and design changes to improve products
- Application of orthographic projection concepts to 2D standard views and isometric views
- Engineering design process

Math

- Units of measurement
- Subtracting material
- Perpendicularity
- X-Y-Z coordinate systems
- Angular measurements
- Geometry

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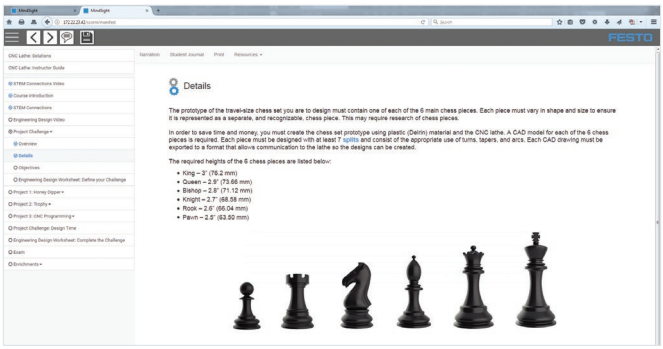
STEM CNC Lathe

The purpose of the STEM Computer Numerical Control (CNC) Lathe course is to provide learners the opportunity to design, create, and evaluate prototypes: all very important steps in the manufacturing process.

Learners will be challenged to design and prototype products by taking on the role of a CNC designer/programmer. Learners must adhere to the specifications and constraints given, as well as explore and practice the CAD/CAM software, and the interactions with a CNC machine, to be the designers of new products.

MindSight LMS



Upon completion of the STEM CNC Lathe course, students will be able to:

- Recognize the function and features of a CNC lathe machine.
- Identify CNC lathe cutting tools and tool posts.
- Design digital models using a stand-alone CAD/CAM system
- Generate PART programs
- Select the correct cutting tool based on design specifications
- Position the cutting tool on a CNC lathe
- Execute programs on the CNC lathe using CNC lathe software
- Operate a CNC lathe machine using various workpieces
- Identify basic motion types in a CNC machine
- Develop CNC programs in G & M code
- Demonstrate quality control checks using a digital caliper
- Apply the engineering design process

Equipment and Supplies

- Multimedia presentation
- MindSight installation and user guide
- CNC Lathe software
- 5300 CNC Lathe (plus accessories)
- Venier caliper
- Machinist scale
- Scissors
- Rubber mat
- Workpieces: Delrin 0.75” x 3.0” white
- Workpieces: Delrin 0.75” x 3.0” black
- Safety glasses

For more information or to set up a complimentary consultation:

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