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## **Engineering Design with CNC Laser**

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McAllen High School

**NSF-RET: ENHANCING TEACHER KNOWLEDGE & SKILLS  
IN MODERN MANUFACTURING**

Summer 2019

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## Goals

- Continue on the Engineering Design
- Continue on Design Drawings in both orthographic and isometric view
- Expand on Fusion360 by introducing CAM
- Introduce CNC CO2 laser technology
- Introduce and allow students to practice using proprietary CO2 laser software
- Introduce proper safety with CNC laser technology
- Have students fabricate a design on a CNC laser

# Engineering Design with CNC Laser



- Students will:
  - Learn how to manufacture parts with CNC Laser
  - Design Drawings in orthographic and isometric view
  - Design a coaster or robotic part using Fusion360
  - Understand and practice proper safety with CNC machines
  - Fabricate design on a CNC laser
  - Measure parts within tolerance
- Lesson completed
  - January 2020

# Assessment

- Pre-activity assessment
  - Students will be tested CNC CO<sub>2</sub> laser technology, safety, terminology, and measurement
- Post-activity assessment
  - Students will be retested on the components of CNC laser technology
- Student success
  - Student growth will be determined by comparing pre-assessment and post-assessment data.
  - Students will have a completed coaster or robotic part created



# Engineering Design with CNC Laser

- Supplies

- Orion Motor Tech 40W CO2 Laser Engraving Cutting Machine \$399.99
- [https://www.amazon.com/Orion-Motor-Tech-Engraving-Engraver/dp/B01AJGFS7Y/ref=sr\\_1\\_59\\_sspa?keywords=laser+cutter&qid=1562805877&s=gateway&sr=8-59-spons&psc=1](https://www.amazon.com/Orion-Motor-Tech-Engraving-Engraver/dp/B01AJGFS7Y/ref=sr_1_59_sspa?keywords=laser+cutter&qid=1562805877&s=gateway&sr=8-59-spons&psc=1)
- 50 of 4 x 4 inch wood plates \$16.99 x 4 = \$67.96
- [https://www.amazon.com/ilauke-Unfinished-Painting-Staining-Coasters/dp/B07P7VCKV2/ref=sr\\_1\\_5?keywords=laser+wood+pieces&qid=1562809099&s=gateway&sr=8-5](https://www.amazon.com/ilauke-Unfinished-Painting-Staining-Coasters/dp/B07P7VCKV2/ref=sr_1_5?keywords=laser+wood+pieces&qid=1562809099&s=gateway&sr=8-5)
- Anytime Tools calipers \$35 x 5 = \$175
- [https://www.amazon.com/Anytime-Tools-Caliper-Reading-Standard/dp/B00B5XJW7I/ref=sr\\_1\\_3?keywords=dial+calipers&qid=1562807548&s=gateway&sr=8-3](https://www.amazon.com/Anytime-Tools-Caliper-Reading-Standard/dp/B00B5XJW7I/ref=sr_1_3?keywords=dial+calipers&qid=1562807548&s=gateway&sr=8-3)

**Total Funds needed: \$650**

**Items will be purchased with consumable budget.**