

# Robotics

Apply safety principles, practices, philosophy, and guidelines to the work environment. STS.HS.30.1

- a Complete applicable safety assessment with 100% accuracy. STS.HS.30.1.A
- b Employ eye protection in compliance with Neb. Rev. Statute 79–715. STS.HS.30.1.B
- c Employ appropriate Personal Protective Equipment (PPE) while in the lab setting. STS.HS.30.1.C
- d Employ the safe application of tools and machines. STS.HS.30.1.D
- e Explain the main hazards that are possible in the lab setting. STS.HS.30.1.E
- f Demonstrate proper handling and storing of materials. STS.HS.30.1.F

Solve robotics-related mathematics. STS.HS.30.2

- a Solve calculations using whole numbers, decimals, fractions, and complex numbers. STS.HS.30.2.A
- b Solve basic arithmetic and measurement operations. STS.HS.30.2.B
- c Solve decimal/fraction conversions. STS.HS.30.2.C
- d Calculate area. STS.HS.30.2.D
- e Calculate circumference. STS.HS.30.2.E
- f Calculate average. STS.HS.30.2.F

Employ robotics-related science principles. STS.HS.30.3

- a Calculate fundamental electrical measurements using laws of electricity. STS.HS.30.3.A
- b Calculate torque. STS.HS.30.3.B
- c Calculate the center of gravity. STS.HS.30.3.C
- d Calculate mechanical advantage. STS.HS.30.3.D
- e Calculate gear ratios. STS.HS.30.3.E
- f Calculate angular momentum. STS.HS.30.3.F
- g Calculate trajectory. STS.HS.30.3.G

**Identify the different specialized areas of robotics.** STS.HS.30.4

**a Summarize each specialized field of robotics.** STS.HS.30.4.A

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**b Identify the diversity of the robotics usage.** STS.HS.30.4.B

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**c Identify the education, certification, or licensure required in a robotics-related career.** STS.HS.30.4.C

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**Design and assemble automation or robots that are functionally and mechanically correct.** STS.HS.30.5

**a Demonstrate use of a physical or simulated robot.** STS.HS.30.5.A

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**b Demonstrate basic programming concepts: variables, data structures, control structures, and syntax.** STS.HS.30.5.B

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**c Generate a mechanical solution for a robot to overcome a physical or simulated physics challenge.** STS.HS.30.5.C

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**d Generate a programming solution for a robot to overcome a physical or simulated autonomous challenge.** STS.HS.30.5.D

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**g Assemble various physical or simulated mechanisms to understand mechanical setups.** STS.HS.30.5.G

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**h Construct a physical or simulated fully functioning robot that has proof of concept through engineering documentation protocols.** STS.HS.30.5.H