Nebraska CTE

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

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
- **b** **Demonstrate basic programming concepts: variables, data structures, control structures, and syntax.** STS.HS.30.5.B
- **c** **Generate a mechanical solution for a robot to overcome a physical or simulated physics challenge.** STS.HS.30.5.C
- **d** **Generate a programming solution for a robot to overcome a physical or simulated autonomous challenge.** STS.HS.30.5.D
- **g** **Assemble various physical or simulated mechanisms to understand mechanical setups.** STS.HS.30.5.G
- **h** **Construct a physical or simulated fully functioning robot that has proof of concept through engineering documentation protocols.** STS.HS.30.5.H