Nebraska CTE

Introduction to Mechatronics

Apply safety principles, practices, philosophy, and guidelines to the work environment. STS.HS.18.1	**a** Complete applicable safety assessment with 100% accuracy. STS.HS.18.1.A
	b Employ eye protection in compliance with Neb. Rev. Statute 79–715. STS.HS.18.1.B
	c Employ appropriate Personal Protective Equipment (PPE) while in the lab setting. STS.HS.18.1.C
	d Employ the safe application of tools and machines. STS.HS.18.1.D
	e Explain the main hazards that are possible in the lab setting. STS.HS.18.1.E
	f Demonstrate proper handling and storing of materials. STS.HS.18.1.F
Identify career opportunities in mechatronics. STS.HS.18.2	**a** Describe work behaviors needed to be employable. STS.HS.18.2.A
	b Identify employment trends in mechatronics. STS.HS.18.2.B
	c Identify the responsibilities and characteristics of professionals in mechatronics. STS.HS.18.2.C
	d Identify the training, education, certification, and licensing requirements for careers in mechatronics. STS.HS.18.2.D
Solve math functions and formulas to complete mechatronics job or workplace tasks. STS.HS.18.3	**a** Identify whole numbers, decimals, fractions, and complex numbers. STS.HS.18.3.A
	b Apply basic algebraic operations. STS.HS.18.3.B
	c Interpret scientific notation. STS.HS.18.3.C
	d Interpret engineering notation. STS.HS.18.3.D
Explain mechatronics systems. STS.HS.18.4	**a** Explain the theory and applications of hydraulics. STS.HS.18.4.A
	b Explain the theory and application of electronics. STS.HS.18.4.B
	c Explain the theory and application of pneumatics. STS.HS.18.4.C
	d Explain the theory and applications of control systems. STS.HS.18.4.D

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	e	**Explain the theory and applications of computer systems.** STS.HS.18.4.E
Demonstrate use of mechatronics communications. STS.HS.18.5	a	**Define mechatronics terminology.** STS.HS.18.5.A
	b	**Interpret the language of mechatronics.** STS.HS.18.5.B
	c	**Interpret electrical schematics, spec sheets, mechanical drawings, and hydraulic circuit diagrams.** STS.HS.18.5.C
	d	**Employ business and interpersonal communication appropriate to the work environment.** STS.HS.18.5.D
Construct a mechatronic device based upon given specifications. STS.HS.18.6	a	**Employ measurement tools.** STS.HS.18.6.A
	b	**Select fasteners to mount components.** STS.HS.18.6.B
	c	**Employ appropriate wires or tubing to make correct electrical, hydraulic, or pneumatic connections.** STS.HS.18.6.C
	d	**Employ best practices in laying out wires and tubes for neatness, security, and safe operation.** STS.HS.18.6.D
	e	**Adjust and calibrate subsystems by using interdisciplinary skills.** STS.HS.18.6.E
	f	**Explain construction, electrical, and mechanical blueprints.** STS.HS.18.6.F
Integrate instrumentation to identify and troubleshoot problems in a mechatronics system. STS.HS.18.7	a	**Employ meters to test resistance, voltage, and current to assess electrical equipment.** STS.HS.18.7.A
	b	**Perform precision measuring on mechanical, hydraulic, electronic, or pneumatic components.** STS.HS.18.7.B
	c	**Utilize data gained from instrumentation to develop troubleshooting options.** STS.HS.18.7.C