

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](#)

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