Robotics 1 (Aug 2018) Proficiency Scales

Robotics 1		
Learning Goal: Strand 1 Safety		
Level 4	**The student:** ● Evaluate new lab – robotics system installations and applications for potential safety issues – needed protective measures and practices.	**Activities/Tasks:** ● Give student a drawing, blueprint, or computer simulation of a lab – robotics system installation and have them identify hazards, safety protocols needed, and safety measures needed.
Level 3	**The student:** ● Explain safety hazards of their classroom lab including specific hazards and safety practices required by each student operated machinery item in their classroom.	**Activities/Tasks:** ● Pass lab safety test with a 100 percent score.
Level 2	**The student:** ● Identify – recognize general safety hazards associated with electricity, machinery and robotic devices.	**Activities/Tasks:** ● Safety demonstrations - briefings on electricity, robotics systems, and lab machinery. ● Separate briefings on safe operation of the exact equipment installed in classroom lab.
Level 1	With help, partial success of Level 2 content.	- - - - - - - - - - - - - - - - - - - -

Robotics 1 (Aug 2018) Proficiency Scales

Robotics 1		
Learning Goal: Strand 2 Robotics History - core		
Level 4	**The student:** ● Use knowledge of Robotics History along with Asimov Laws and the Alan Turing test theorize the capabilities of robots in 10-20-50 and 100 years.	**Activities/Tasks:** ● Research paper ● Robot design project.
Level 3	**The student:** ● Discuss Asimov Laws of Robotics and the Alan Turing Artificial Intelligence test	**Activities/Tasks:** ● Show current and past examples of Artificial Intelligence. ● Classroom discussion of the importance of Asimov laws and implications if they are ignored. ● Discuss the 3 "D's" (Dirty, Dull, Dangerous) of robot tasks.
Level 2	**The student:** ● Identify definition of a robot ● Explain engineering fields that robotics is comprised of.	**Activities/Tasks:** ● Have students select a moving-mobile robot and then figure out what engineering fields and skills were required to design it. ● Research what types of items (Siri, automation, drones) can be defined as a robot.
Level 1	With help, partial success of Level 2 content.	- - - - - - - - - - - - - - - - - - - -

Robotics 1 (Aug 2018) Proficiency Scales

Robotics 1		
Learning Goal: Strand 3 Robot System Components		
Level 4	**The student:** ● Combine robot system component knowledge with logic and math skills to select type of component(s) needed to create an robot to perform a task – solve a problem.	**Activities/Tasks:** ● Robot design computer or web-based simulations ● Robot competition construction lab exercises.
Level 3	**The student:** ● Identify robot system components by appearance, function, use and operating environment.	**Activities/Tasks:** ● Pass computer or web-based robot component exercises. ● Perform basic measurements using hands on lab.
Level 2	**The student:** ● Identify robot system components by appearance and purpose.	**Activities/Tasks:** ● Computer or web-based robot system component operation and use (drill and practice) exercises. ● Hands on lab where students identify robot system components and match them to their uses.
Level 1	With help, partial success of Level 2 content.	- - - - - - - - - - - - - - - - - - - -

Robotics 1 (Aug 2018) Proficiency Scales

Robotics 1		
Learning Goal: Strand 4 Standard 1: Basic Electrical Theory		
Level 4	**The student:** ● Use knowledge of ohm's law to design an electrical circuit to provide correct voltage and current required for a task.	**Activities/Tasks:** ● Electronics design computer or web-based simulations ● Electronics design – circuit construction lab exercises.
Level 3	**The student:** ● Perform ohm's law calculations for series and parallel circuits.	**Activities/Tasks:** ● Pass computer or web-based ohm's law simulation exercises. ● Calculate voltage, current and resistance values of a circuit utilizing ohm's law.
Level 2	**The student:** ● Identify basic theory terminology, characteristics of series and parallel circuits and how ohm's law is used to predict circuit operation.	**Activities/Tasks:** ● Computer or web-based basic theory terminology (drill and practice) exercises. ● Hands on lab where students learn theory concepts of series and parallel circuits.
Level 1	With help, partial success of Level 2 content.	- - - - - - - - - - - - - - - - - - - -

Robotics 1 (Aug 2018) Proficiency Scales

Robotics 1		
Learning Goal: Strand 4 Standard 2: Electrical Test Equipment		
Level 4	**The student:** ● Combine electronic test equipment usage knowledge with logic and math skills to diagnose or reverse engineer electrical – electronic items.	**Activities/Tasks:** ● Reverse engineering computer or web-based simulations ● Reverse engineering lab exercises.
Level 3	**The student:** ● Student will be able to use electronic test equipment to power and or measure resistance, voltage and current.	**Activities/Tasks:** ● Pass computer or web-based simulation exercises. ● Perform basic measurements using hands on lab.
Level 2	**The student:** ● Identify – standard electronic test equipment (multimeter, bench power supply) and their uses (settings	**Activities/Tasks:** ● Computer or web-based test equipment identification and settings exercises. ● Hands on practice using standard electronic test equipment.
Level 1	With help, partial success of Level 2 content.	- - - - - - - - - - - - - - - - - - - -

Robotics 1 (Aug 2018) Proficiency Scales

Robotics 1		
Learning Goal: Strand 5: Programming		
Level 4	● Student can build a program using if - else, looping, and switch control structures to accomplish a complex assigned task.	● Write a simple game or business app
Level 3	● Student can use switch statements to control program flow.	● Create a state machine using switch statements
Level 2	● Student can use looping control structures.	● Iterate using loops
Level 1	Student can compare values using relational operators.	Write “if - else” statements