**Smart Technology and Technical Mechatronics AST codes**

**SMT1.0 Networking**

1.1 Identify basic networking protocols and their uses and know when / how to apply them.

1.2 Recognize and implement methods of network security.

1.3 Configure setup and maintain a residential LAN (Local Area Network).

1.4 Configure setup and maintain a secure wireless network.

1.5 Identify and define network cabling characteristics and performance.

**SMT2.0 Audio / Video**

2.1 Implement, maintain and troubleshoot multi-room audio systems.

2.2 Install, configure and maintain a residential home theater system.

2.3 Configure and setup a mobile audio system.

2.4 Implement, maintain and troubleshoot multi-room video systems.

**SMT3.0 Telephony / VoIP**

3.1 Differentiate and describe POTS vs. VoIP delivery. Identify and troubleshoot common issues.

3.2 Describe and define fundamentals of telephone systems.

**SMT4.0 Security and Surveillance Systems**

4.1 Maintain, configure, and troubleshoot basic security systems and applications.

4.2 Describe basic security terminology and apply installation procedures and methodologies.

4.3 Identify, configure, install, maintain, and troubleshoot security and surveillance cameras.

**SMT5.0 Home Control and Management**

5.1 Identify user interfaces and their appropriate applications.

5.2 Define and recognize control systems which integrate subsystems in the home.

5.3 Identify commonly used communication protocols and their application.

5.4 Describe basic HVAC (Heating Ventilation and Air Conditioning) terminology and install control devices.

5.5 Describe basic lighting terminology and install peripheral control devices.

**SMT6.0 Troubleshooting Methodology and Documentation**

6.1 Identify and apply the fundamentals of troubleshooting and diagnostics.

6.2 Given a scenario, demonstrate how to apply troubleshooting skills to integrate subsystems.

6.3 List and describe the benefits of verification of installation.

6.4 Deliver appropriate manuals and documentation to the end user upon completion of installation.

**TMT1.0 Build, Program and Test Electronic Circuits**

1.1 Analyze common electrical components.

1.2 Control motion with servos.

1.3 Analyze rotational motion

1.4 Analyze aspects of light and sound.

**TMT2.0 Basic Principles of Electronics**

2.1 Analyze sine waves and square waves.

2.2 Calculate R/C circuits.

2.3 Evaluate synchronous and asynchronous communications.

2.4 Analyze Pulse Width Modulation.

**TMT3.0 Process Control**

3.1 Use servos to perform work.

3.2 Analyze Sensors.

3.3 Investigate decoders and multiplexers.

3.4 Interpret sequential and combinational logic circuits.

**TMT4.0 Renewable Energy**

4.1 Analyze solar power.

4.2 Analyze wind power.

4.3 Calibrate a temperature module and measure temperature.

4.4 Measure and log various light and fluid levels.

**TMT5.0 Robotics**

5.1 Analyze operation of servo motors.

5.2 Construct a robot.

5.3 Program a robot to react to tactile, light, and distance stimulation.

**TMT6.0 Oscilloscopes** Analyze various signals using an oscilloscope.