

Engineering and Electronics Technology

AAS: Engineering and Electronics Technology

Competencies

General Education Competencies:

Upon completion of the **General Education Competencies:**

Students should prepare for twenty-first century challenges by gaining:

- A. Knowledge of human cultures and the physical and natural worlds through study in the sciences and mathematics, social sciences, humanities, languages, and the arts.
- B. Intellectual and practical skills, including
 - Inquiry and analysis
 - Critical and creative thinking
 - Written and oral communication
 - Quantitative literacy
 - Information literacy
 - Teamwork and problem solving
- C. Personal and social responsibility, including
 - Civic knowledge and engagement (local and global)
 - Intercultural knowledge and competence
 - Ethical reasoning and action
 - Foundations and skills for lifelong learning
- D. Integrative and applied learning, including synthesis and advanced accomplishment across general and specialized skills.

Core Competencies/Learning Outcomes:

1. Solve series and parallel circuits.
2. Exhibit a working knowledge of circuits involving resistance, capacitance, and inductance.
3. Analyze complex DC and AC series, parallel, and series/parallel circuits.
4. Analyze complex AC RCL Circuits.
5. Use input/output functions of logic circuits.
6. Exhibit a working knowledge of semi-conductor theory.

Electronics Track:

Technical Competencies/Learning Outcomes:

1. Analyze electronic circuits using tools, equipment, and instruments.
2. Identify safe work habits.
3. Analyze and troubleshoot power supplies, amplifiers, oscillators.
4. Analyze and troubleshoot medium and large scale digital circuits.

Computer Maintenance Track:

Technical Competencies/Learning Outcomes:

1. Diagnose, repair and service computer systems using tools, equipment and instruments.
2. Exhibit the ability to install computer hardware and software on computer systems.
3. Exhibit a working knowledge of processor architecture, and digital logic.
4. Install and configure network hardware.

Apprenticeship Track:

Technical Competencies/Learning Outcomes:

1. Exhibit a working knowledge of basic electrical skills and reading prints within their appropriate skill area.
2. Exhibit good work and safety habits.
3. Demonstrate the ability to work closely with the employer and employees.

Mechanical Track:

Technical Competencies/Learning Outcomes:

1. Describe the operation of mechanical drive systems.
2. Identify hydraulic and pneumatic components from their schematic symbols.
3. Describe the operation of hydraulic and pneumatic components.
4. Produce three-dimensional solid models using CADD software.
5. Read and correctly interpret blueprints.

Industrial Track:

Technical Competencies/Learning Outcomes:

1. Diagnose, repair and service industrial equipment and systems using tools, equipment and instruments.
2. Maintain and install industrial equipment.
3. Exhibit the ability to install and maintain electrical control systems.
4. Write and troubleshoot PLC programs.

Computer Aided Design Track:

Technical Competencies/Learning Outcomes:

1. Read and interpret machine drawings and simple electrical schematics.
2. Create orthographic projections from 3 dimensional solid models.
3. Create 3 dimensional and solid models of manufacturing components.
4. Apply proper dimensioning techniques to machine drawings.

Robotics and Automation Track:

Technical Competencies/Learning Outcomes:

1. Install, set up, troubleshoot, integrate, program, modify, test and operate robotic and automated systems.
2. Apply technical manual specifications.
3. Perform automated system design, maintenance, and repair of robotics and automated systems.
4. Set up automatic machines, processing equipment, and robots that work together as part of a totally automated system.

Communications Track:

Technical Competencies/Learning Outcomes:

1. Diagnose, repair and service Engineering communication systems using tools, equipment and instruments.
2. Exhibit a working knowledge of electronic communications circuits.
3. Identify transmission lines and antenna systems, television systems, digital communication systems, and telephone communication systems.
4. Read and analyze communication schematics, blueprints and Smith Charts.

Instrumentation Track:

Technical Competencies/Learning Outcomes:

1. Diagnose, repair and service industrial instrumentation systems using tools, equipment and instruments.
2. Operate and troubleshoot electronic instrumentation and related electromechanical or electrohydraulic equipment used in instrumentation systems.
3. Analyze and tune control loops.
4. Calibrate electrical and mechanical instruments used in instrumentation.

Medical Equipment and Instrumentation Track:

Technical Competencies/Learning Outcomes:

1. Evaluate general medical equipment in terms of performance and electrical safety.
2. Perform minor preventive maintenance procedures on general medical equipment.
3. Maintain records associated with general medical equipment.
4. Perform minor corrective maintenance on general medical equipment.
5. Interpret service literature and diagrams related to general medical equipment.

General Education Titles and Requirements Updated October 2011

6. Explain the purpose of general medical equipment.
7. Explain the operation of general medical equipment.
8. Assess general medical equipment performance and functionality using analyzers and simulators.
9. Utilize medical terminology accordingly.