

Mission Statement: It is the mission of the Elba Central School District to actualize the phrase “Elba Equals Educational Excellence for Everyone.” We are committed to providing both quality and equity. Every student will have the opportunity to develop to the best of his/her ability.

Elba Standards: In addition to the knowledge and basic skills they need in order to participate in society, graduates of Elba Central School will develop:

1. Empowering skills: decision making, goal setting, creative thinking and problem solving abilities;
2. Communication and social interaction skills;
3. Technological literacy;
4. Total wellness (social, physical, emotional health and self-esteem);
5. The values necessary to participate in society.

As a result of achieving these outcomes, our students will embrace lifelong learning.

New York State Standards: MST

Standard 1: Students will use mathematical analysis, scientific inquiry, and engineering design, as appropriate, to pose questions, seek answers, and develop solutions.

Standard 2: Students will access, generate, process, and transfer information using appropriate technologies.

Standard 5: Students will apply technological knowledge and skills to design, construct, use, and evaluate products and systems to satisfy human and environmental needs.

Standard 6: Students will understand the relationships and common themes that connect mathematics, science, and technology and apply the themes to these and other areas of learning.

Standard 7: Students will apply the knowledge and thinking skills of mathematics, science, and technology to address real-life problems and make informed decisions.

National Standards:

Standard 1: Students will develop an understanding of the characteristics and scope of technology.

Standard 2: Students will develop an understanding of the core concepts of technology.

Standard 3: Students will develop an understanding of the relationships among technologies and the connections between technology and other fields of study.

Standard 4: Students will develop an understanding of the cultural, social, economic, and political effects of technology.

Standard 5: Students will develop an understanding of the effects of technology on the environment.

Standard 6: Students will develop an understanding of the role of society in the development and use of technology.

Standard 8: Students will develop an understanding of the attributes of design.

Standard 9: Students will develop an understanding of engineering design.

Standard 10: Students will develop an understanding of the role of troubleshooting, research and development, invention and innovation, and experimentation in problem solving.

Standard 11: Students will develop abilities to apply the design process.

Standard 12: Students will develop abilities to use and maintain technological products and systems.

Standard 13: Students will develop abilities to assess the impact of products and systems.

Standard 16: Students will develop an understanding of and be able to select and use energy and power technologies.

Standard 17: Students will develop an understanding of and be able to select and use information and communication technologies.

Performance Indicators:

Calculate voltage, resistance and current in an electrical circuit.

Describe the importance of basic electronic components.

Solder components to a circuit board.

Read schematic diagrams of electronic circuits.

Draw a series and parallel circuit.

Describe different energy sources.

Troubleshoot and repair electrical and electronic circuits.

Demonstrate correct and safe use of electrical equipment.

Assessment:	Acceptable Performance Level
Local Technology Exams	Score of 70% or higher
Projects	Score of 70% or higher

Scope: Students will get an introduction to the electronic industry through class work and projects. Safety is emphasized, as students will learn to operate the different tools and pieces of equipment needed in modern electronics. Approximately 90% of the students' time will be spent in the lab doing hands-on activities through the production of their projects. Other areas of discussion in electronics include energy sources, conduction, information, basic electricity, and troubleshooting.

Sequence:

- I. Introduction
 - a. Atoms, Electrons, and Electric Charges
 - b. Electric Circuits
 - c. Circuit Diagrams and Symbols
 - d. Safety Rules, Practices, and Devices
 - e. Occupations in Electricity and Electronics
- II. Electric Circuits and Devices
 - a. Voltage, Current, and Power
 - b. Conductors and Insulators
 - c. Resistance and Resistors
 - d. Ohm's Law and Power Formulas
 - e. Series Circuits
 - f. Parallel Circuits
 - g. Series-Parallel Circuits
 - h. Measuring Electrical Quantities
 - i. Capacitance and Capacitors
 - j. Magnetism

- k. Electromagnetism
- l. Electromagnetic Induction and Inductance
- III. Energy Sources
 - a. Chemical Cells and Batteries
 - b. Generators
 - c. Other Sources of Electric Energy
- IV. Semiconductors and Integrated Circuits
 - a. Semiconductors and Diodes
 - b. Transistors
 - c. Special Devices and Integrated Circuits
 - d. Printed Circuits
- V. Electrical Wiring: Materials, Tools, and Processes
 - a. Wiring and Cables
 - b. Wiring Tools and Devices
 - c. Soldering
- VI. Electricity at Work
 - a. Lamps and Lighting
 - b. Producing Chemical Reactions
 - c. Home Electrical Systems
 - d. Electric Motors
 - e. Producing Heat
 - f. Refrigeration and Air Conditions
 - g. The Automobile Electrical System
- VII. Electronics in an Information Age
 - a. Basic Concepts in Communication
 - b. Common Information Systems
 - c. Audio Systems
 - d. Radio and Satellite Communications
 - e. Television and Facsimile Systems
 - f. Digital Electronic Circuits
 - g. Fundamentals of Computers
 - h. Interacting with the Microcomputer
- VIII. Electricity and Industry
 - a. The Electric Power Industry
 - b. Research and Development in Electronics
 - c. Product Manufacturing
- IX. Testing and Troubleshooting
 - a. Electronic Test Instruments
 - b. Troubleshooting and Repair

Methodology: 75-90% Hands on and visual learning. Remaining learning will take place through reading, lectures and discussions.