



Field 018: Engineering and Technology Education REPA Educator Standards

Standard 1: Nature of Engineering and Technology

Engineering and technology education teachers have a broad and comprehensive understanding of the historical, cultural, political, societal, and economic roles of engineering and technology, including:

- 1.1** the interrelationships among technology, science, mathematics, and engineering
- 1.2** the historical, cultural, political, societal, and economic contexts of engineering and technology
- 1.3** the effects of engineering and technology on the environment
- 1.4** the role of society and government in regulating and influencing engineering and technology
- 1.5** the role of business, business management, and professionalism in engineering and technology

Standard 2: The Engineering Design Process

Engineering and technology education teachers have a broad and comprehensive understanding of the characteristics of the engineering design process and its role in technology systems, including:

- 2.1** the systems model and steps in the engineering design process
- 2.2** applications of the engineering design process
- 2.3** troubleshooting technology systems
- 2.4** the role of research and development, innovation, and experimentation in technology systems
- 2.5** the role of quality control in technology systems

Standard 3: Energy Systems and Power Systems

Engineering and technology education teachers have a broad and comprehensive understanding of tools, equipment, materials, and procedures used in energy systems and power systems and the scientific and engineering principles underlying these systems, including:

- 3.1** principles of science and engineering in energy and power systems
- 3.2** tools, equipment, and materials used in energy and power systems
- 3.3** processes and procedures used in energy and power systems

Standard 4: Communication Systems

Engineering and technology education teachers have a broad and comprehensive understanding of tools, equipment, materials, and procedures used in communication systems and the scientific and engineering principles underlying these systems, including:

- 4.1** principles of science and engineering in communication systems
- 4.2** tools, equipment, and materials used in communication systems
- 4.3** processes and procedures used in communication systems

Standard 5: Transportation Systems

Engineering and technology education teachers have a broad and comprehensive understanding of tools, equipment, materials, and procedures used in transportation systems and the scientific and engineering principles underlying these systems, including:

- 5.1** principles of science and engineering in transportation systems
- 5.2** tools, equipment, and materials used in transportation systems
- 5.3** processes and procedures used in transportation systems

Standard 6: Manufacturing Systems

Engineering and technology education teachers have a broad and comprehensive understanding of tools, equipment, materials, and procedures used in manufacturing systems and the scientific and engineering principles underlying these systems, including:

- 6.1** principles of science and engineering in manufacturing systems
- 6.2** tools, equipment, and materials used in manufacturing systems
- 6.3** processes and procedures used in manufacturing systems

Standard 7: Construction Systems

Engineering and technology education teachers have a broad and comprehensive understanding of tools, equipment, materials, and procedures used in construction systems and the scientific and engineering principles underlying these systems, including:

- 7.1** principles of science and engineering in construction systems
- 7.2** tools, equipment, and materials used in construction systems
- 7.3** processes and procedures used in construction systems

Standard 8: Biotechnology Systems and Medical Systems

Engineering and technology education teachers have a broad and comprehensive understanding of the basic tools, equipment, materials, and procedures used in biotechnology systems and medical systems and the scientific and engineering principles underlying these systems, including:

- 8.1** principles of science and engineering in biotechnology systems and medical systems and in biotechnology and medical products
- 8.2** tools, equipment, and materials used in biotechnology systems and medical systems
- 8.3** processes and procedures used in biotechnology systems and medical systems
- 8.4** legal and ethical considerations in biotechnology systems and medical systems

Standard 9: Instruction and Assessment in Engineering and Technology Education

Engineering and technology education teachers have a broad and comprehensive understanding of content-specific instruction and assessment in engineering and technology education, including:

- 9.1** the Indiana Academic Standards for Technology Education
- 9.2** the ITEA/CTTE/NCATE Curriculum Standards and the ISTE National Educational Technology Standards
- 9.3** instructional strategies and resources for promoting students' understanding of concepts and skills related to engineering and technology and their relationship to other academic fields
- 9.4** strategies and skills for planning and designing engineering and technology education instruction, including the use of techniques and approaches that meet the needs of diverse learners
- 9.5** instructional strategies to promote student learning and to foster the development of critical-thinking, problem-solving, and performance skills in engineering and technology education
- 9.6** communication methods that promote student learning and foster active inquiry, interaction, and collaboration in the engineering and technology education classroom
- 9.7** strategies and skills for selecting, adapting, and using technological resources to support teaching and learning about engineering and technology
- 9.8** ways to design, create, and manage safe and effective laboratories and learning environments that promote students' success
- 9.9** strategies and skills for effectively assessing students' understanding and mastery of concepts and skills essential to engineering and technology as well as relevant out-of-content-area concepts
- 9.10** strategies and skills for using assessment data to adjust and modify instruction for diverse learners