

**Certification Examinations for Oklahoma Educators (CEOE)
Framework Development Correlation Table**

The Framework Development Correlation Table provides information about possible alignment of some of the knowledge and skills contained within the CEOE framework for a test field with other conceptualizations of the knowledge and skills of a field. It was produced using Oklahoma and educator association standards documents that were publicly available at the time of framework development. In the preparation of the Correlation Table, the alignment of a CEOE test competency with standards documents was indicated if the content of a standard was covered, in whole or in part, by the CEOE test competency. For some CEOE test competencies, multiple standards from Oklahoma, or other documents were aligned with the content of a CEOE test competency. An indication of alignment in the Correlation Table does not necessarily imply complete congruence of the content of a CEOE test competency with the standard.

Matrix Showing Match between NCATE Curriculum Guidelines for Physics and CEOE Competencies

NCATE Curriculum Guidelines	CEOE Competencies
4.1 Provide all students with a holistic, interdisciplinary understanding of science, as well as to:	
a. Relate science to contemporary events, research results, and the students' daily lives.	0001 Connections among mathematics, science, and technology 0002 Historical and contemporary contexts of the study of physics
b. Provide students with information about career opportunities in science and technology.	0002 Historical and contemporary contexts of the study of physics
4.2 Fulfill the professional and legal obligations of science teaching.	0010 (OPTE) Effects of teacher choices and actions on students, parents, and professionals, the modification of these actions, and promotion of continued professional growth 0011 (OPTE) Comprehension of the "Oklahoma Criteria for Effective Teaching Performance" and its incorporation into instructional strategies 0013 (OPTE) Legal aspects of teaching, including student and family rights and teacher rights and responsibilities

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4.3 Establish and maintain safety in classroom, field and storage areas.	0005 Proper use of equipment, materials, and chemicals in physics
4.4 Use a variety of instructional strategies, science curricula and community resources, as well as to:	
a. Adapt instruction to the needs of wide range of learner abilities, backgrounds and goals.	0002 (OPTE) Differing student approaches to learning and instructional opportunities that are adaptable to individual differences
b. Plan instruction based on the prior knowledge and conceptualizations of the students.	0005 (OPTE) Application of curriculum goals, the educational process, subject matter, student ability, and the community to instruction, and adaptation of instruction based on assessment and reflection 0006 (OPTE) Curriculum integration and instructional strategies to encourage student critical thinking, problem solving, and performance and technological skills
c. Use electronic educational technology, including computers, interactive video, telecommunications and others.	0001 Connections among mathematics, science, and technology 0006 (OPTE) Curriculum integration and instructional strategies to encourage student critical thinking, problem solving, and performance and technological skills 0007 (OPTE) Effective communication techniques fostering classroom inquiry, collaboration, and supportive interaction
4.5 Design and implement laboratory and field-based learning activities which will:	
a. Foster the development of student research skills in the laboratory and field.	0003 The process of scientific inquiry and experimentation 0004 Processes of collecting, organizing, and analyzing scientific data

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<p>b. Apply basic statistical methods and processes of data analysis to interpret scientific phenomena.</p>	<p>0004 Processes of collecting, organizing, and analyzing scientific data</p>
<p>4.6 Foster the development of decision-making and value-analysis skills needed to explore issues and relationships involving scientific, technological, societal and individual human issues and cultural values.</p>	<p>0001 Connections among mathematics, science, and technology</p> <p>0002 Historical and contemporary contexts of the study of physics</p> <p>0026 Types, characteristics, and applications of nuclear reactions, and methods of initiating and controlling them</p>
<p>4.7 Use techniques for assessing student outcomes which are aligned with instruction and consistent with contemporary assessment goals.</p>	<p>0005 (OPTE) Application of curriculum goals, the educational process, subject matter, student ability, and the community to instruction, and adaptation of instruction based on assessment and reflection</p> <p>0008 (OPTE) Assessment strategies to evaluate and modify the teaching/learning process</p>
<p>4.8 Apply contemporary research findings to the teaching and learning of science.</p>	<p>0006 (OPTE) Curriculum integration and instructional strategies to encourage student critical thinking, problem solving, and performance and technological skills</p> <p>0010 (OPTE) Effects of teacher choices and actions on students, parents, and professionals, the modification of these actions, and promotion of continued professional growth</p>

NCATE Curriculum Guidelines	CEOE Competencies
<p>4.9 Use effective classroom management techniques to establish and maintain an environment conducive to learning science.</p>	<p>0001 (OPTE) Student learning and development and learning opportunities that support student intellectual, social, and physical development at all grade levels</p> <p>0002 (OPTE) Differing student approaches to learning and instructional opportunities that are adaptable to individual differences</p> <p>0003 (OPTE) Application of motivational and behavioral practices to create positive learning environments</p> <p>0004 (OPTE) Comprehension of lifelong learning, making learning enjoyable, and the willingness to change to promote student learning and development</p> <p>0005 (OPTE) Application of curriculum goals, the educational process, subject matter, student ability, and the community to instruction, and adaptation of instruction based on assessment and reflection</p> <p>0006 (OPTE) Curriculum integration and instructional strategies to encourage student critical thinking, problem solving, and performance and technological skills</p> <p>0007 (OPTE) Effective communication techniques fostering classroom inquiry, collaboration, and supportive interaction</p>

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10.1 Understand and develop the major concepts and principles of physics, including concepts in:	
a. mechanics	0006 Concepts of motion in one and two dimensions, solving of problems related to motion 0007 Characteristics of forces, methods of measuring force, and solving problems involving force 0008 The laws of motion, including relativity 0009 Uniform circular and simple harmonic motion 0010 Concepts of energy, work, and power, and principles of conservation of energy and momentum 0011 Dynamics of rotational motion and the properties of fluids
b. electricity and magnetism	0014 Electric charge, electric fields, electric potential, and capacitance 0015 Components and properties of direct current circuits 0016 Magnetic fields and electromagnetic induction 0017 Alternating currents and the operation of conductors, semiconductors, and superconductors
c. thermodynamics	0012 Concept of heat energy and the laws of thermodynamics 0013 The kinetic-molecular theory and its relationship to thermodynamics

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d. waves	0018 Waves and problems involving wave motion 0019 Principles of wave reflection, refraction, diffraction, interference, polarization, dispersion, and the Doppler effect 0020 Characteristics of sound waves and their production and transmission
e. optics	0021 Characteristics and production of electromagnetic waves 0022 Principles and applications of lenses and mirrors 0023 The photoelectric effect, quantum theory, and the dual nature of light and matter
f. atomic and nuclear physics	0024 Physical models of atomic structure and the nature of elementary particles 0026 Types, characteristics, and applications of nuclear reactions, and methods of initiating and controlling them
g. radioactivity	0025 Principles of radioactivity, types and characteristics of radiation, radioactive decay and its detection
h. relativity	0008 The laws of motion, including relativity 0026 Types, characteristics, and applications of nuclear reactions, and methods of initiating and controlling them

NCATE Curriculum Guidelines	CEOE Competencies
i. quantum mechanics	0023 The photoelectric effect, quantum theory, and the dual nature of light and matter 0024 Physical models of atomic structure and the nature of elementary particles 0025 Principles of radioactivity, types and characteristics of radiation, radioactive decay and its detection 0026 Types, characteristics, and applications of nuclear reactions, and methods of initiating and controlling them
10.2 Develop student understanding of the interconnectedness of the sciences, and relate the major concepts of biology, chemistry and the earth/space sciences to the teaching of physics.	0001 Connections among science, mathematics, and technology 0002 Historical and contemporary contexts of the study of physics
10.3 Apply mathematics, including statistics, calculus and introductory differential equations to investigations in physics and the analysis of data.	0003 The process of scientific inquiry and experimentation 0006 Concepts of motion in one and two dimensions, solving of problems related to motion 0004 Processes of collecting, organizing, and analyzing scientific data

NCATE Curriculum Guidelines	CEOE Competencies
10.4 Relate the concepts of physics to contemporary, historical, technological and societal issues.	0001 Connections among science, mathematics, and technology 0002 Historical and contemporary contexts of the study of physics
10.5 Locate resources, design and conduct inquiry-based, open-ended investigations in physics, interpret finding, communicate results and make judgements based on evidence.	0003 The process of scientific inquiry and experimentation 0004 Processes of collecting, organizing, and analyzing scientific data 0005 Proper use of equipment, materials, and chemicals in physics