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 Full Subject Matter Competencies for Biological Sciences 6–12 and OSAT Competencies for Biological Sciences

Oklahoma Subject Matter Competencies	OSAT Competencies
Biological Science Content	
a. Structure and function in living systems	0006 Understand basic chemistry and biochemistry, and use this understanding to analyze the role of biologically important elements and compounds in living organisms. 0007 Understand the functions and interrelatedness of cell structures, and identify the structural features of different types of cells. 0008 Understand the processes of photosynthesis and cellular respiration and their relationships to cell structure and function. 0009 Understand the cell cycle, the stages and end products of meiosis and mitosis, and the role of cell division in unicellular and multicellular organisms. 0010 Understand the structure and function of DNA and RNA. 0012 Understand concepts, principles, and applications of classical and molecular genetics. 0015 Understand the requirements of life and the organization of organisms.

Oklahoma Subject Matter Competencies	OSAT Competencies
	0016 Understand matter and energy in organisms. 0017 Understand regulatory processes in organisms. 0018 Understand reproduction, development, and life cycles of organisms. 0019 Understand human biology.
b. Reproduction and heredity	0009 Understand the cell cycle, the stages and end products of meiosis and mitosis, and the role of cell division in unicellular and multicellular organisms. 0010 Understand the structure and function of DNA and RNA. 0011 Understand the procedures involved in the isolation, manipulation, and expression of genetic material and the application of genetic engineering in basic and applied research. 0012 Understand concepts, principles, and applications of classical and molecular genetics. 0018 Understand reproduction, development, and life cycles of organisms.
c. Regulation and behavior	0007 Understand the functions and interrelatedness of cell structures, and identify the structural features of different types of cells. 0015 Understand the requirements of life and the organization of organisms. 0016 Understand matter and energy in organisms. 0017 Understand regulatory processes in organisms. 0019 Understand human biology.

Oklahoma Subject Matter Competencies	OSAT Competencies
d. Population and ecosystem	0020 Understand the characteristics of populations and communities, and use this knowledge to analyze population growth and community interactions. 0021 Understand the characteristics of ecosystems and major biomes. 0022 Understand the flow of energy and matter through living systems and between living systems and the physical environment. 0023 Understand concepts of human ecology and the impact of human decisions and activities on the abiotic and biotic environments.
e. Diversity and adaptation of organisms	0013 Understand the processes of natural selection and biological adaptation. 0014 Understand the principles of classification and taxonomy. 0015 Understand the requirements of life and the organization of organisms. 0016 Understand matter and energy in organisms. 0017 Understand regulatory processes in organisms. 0018 Understand reproduction, development, and life cycles of organisms. 0019 Understand human biology.
f. The cell	0006 Understand basic chemistry and biochemistry, and use this understanding to analyze the role of biologically important elements and compounds in living organisms. 0007 Understand the functions and interrelatedness of cell structures, and identify the structural features of different types of cells.

Oklahoma Subject Matter Competencies	OSAT Competencies
	0008 Understand the processes of photosynthesis and cellular respiration and their relationships to cell structure and function. 0009 Understand the cell cycle, the stages and end products of meiosis and mitosis, and the role of cell division in unicellular and multicellular organisms.
g. The molecular basis of heredity	0010 Understand the structure and function of DNA and RNA. 0011 Understand the procedures involved in the isolation, manipulation, and expression of genetic material and the application of genetic engineering in basic and applied research. 0012 Understand concepts, principles, and applications of classical and molecular genetics.
h. Biological adaptation	0013 Understand the processes of natural selection and biological adaptation.
i. The interdependence of organisms	0020 Understand the characteristics of populations and communities, and use this knowledge to analyze population growth and community interactions. 0021 Understand the characteristics of ecosystems and major biomes. 0022 Understand the flow of energy and matter through living systems and between living systems and the physical environment. 0023 Understand concepts of human ecology and the impact of human decisions and activities on the abiotic and biotic environments.
j. Matter, energy, organization in living systems	0006 Understand basic chemistry and biochemistry, and use this understanding to analyze the role of biologically important elements and

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	compounds in living organisms. 0007 Understand the functions and interrelatedness of cell structures, and identify the structural features of different types of cells. 0008 Understand the processes of photosynthesis and cellular respiration and their relationships to cell structure and function. 0015 Understand the requirements of life and the organization of organisms. 0016 Understand matter and energy in organisms. 0017 Understand regulatory processes in organisms. 0019 Understand human biology. 0022 Understand the flow of energy and matter through living systems and between living systems and the physical environment.
k Behavior of organisms	0016 Understand matter and energy in organisms. 0017 Understand regulatory processes in organisms. 0018 Understand reproduction, development, and life cycles of organisms. 0019 Understand human biology. 0020 Understand the characteristics of populations and communities, and use this knowledge to analyze population growth and community interactions.
Science Concepts	
a. System, order, and organization	0001 Understand unifying concepts among the sciences and the relationships that connect science and technology.

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	0007 Understand the functions and interrelatedness of cell structures, and identify the structural features of different types of cells. 0015 Understand the requirements of life and the organization of organisms. 0020 Understand the characteristics of populations and communities, and use this knowledge to analyze population growth and community interactions. 0021 Understand the characteristics of ecosystems and major biomes.
b. Evidence, models, and explanation	0001 Understand unifying concepts among the sciences and the relationships that connect science and technology. 0002 Understand the nature of science and the historical and contemporary contexts of biological study. 0003 Understand the process of scientific inquiry and the role of observation, experimentation, and communication in explaining natural phenomena. 0004 Understand principles of measurement and the processes of gathering, interpreting, and communicating scientific data.

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c. Constancy, change, equilibrium, and measurement	0001 Understand unifying concepts among the sciences and the relationships that connect science and technology. 0004 Understand principles of measurement and the processes of gathering, interpreting, and communicating scientific data. 0007 Understand the functions and interrelatedness of cell structures, and identify the structural features of different types of cells. 0010 Understand the structure and function of DNA and RNA. 0013 Understand the processes of natural selection and biological adaptation. 0015 Understand the requirements of life and the organization of organisms. 0017 Understand regulatory processes in organisms. 0019 Understand human biology. 0020 Understand the characteristics of populations and communities, and use this knowledge to analyze population growth and community interactions. 0021 Understand the characteristics of ecosystems and major biomes. 0022 Understand the flow of energy and matter through living systems and between living systems and the physical environment. 0023 Understand concepts of human ecology and the impact of human decisions and activities on the abiotic and biotic environments.
d. Form and function	0001 Understand unifying concepts among the sciences and the relationships that

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	connect science and technology. 0006 Understand basic chemistry and biochemistry, and use this understanding to analyze the role of biologically important elements and compounds in living organisms. 0007 Understand the functions and interrelatedness of cell structures, and identify the structural features of different types of cells. 0008 Understand the processes of photosynthesis and cellular respiration and their relationships to cell structure and function. 0010 Understand the structure and function of DNA and RNA. 0012 Understand concepts, principles, and applications of classical and molecular genetics. 0015 Understand the requirements of life and the organization of organisms. 0016 Understand matter and energy in organisms. 0017 Understand regulatory processes in organisms. 0018 Understand reproduction, development, and life cycles of organisms. 0019 Understand human biology.
e. Abilities of technological design	0001 Understand unifying concepts among the sciences and the relationships that connect science and technology. 0005 Understand equipment, materials, chemicals, and organisms used in biological studies and the application of procedures for their proper, safe, and legal use.

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	0011 Understand the procedures involved in the isolation, manipulation, and expression of genetic material and the application of genetic engineering in basic and applied research. 0023 Understand concepts of human ecology and the impact of human decisions and activities on the abiotic and biotic environments.
f. Understanding about science and technology	0001 Understand unifying concepts among the sciences and the relationships that connect science and technology. 0002 Understand the nature of science and the historical and contemporary contexts of biological study. 0011 Understand the procedures involved in the isolation, manipulation, and expression of genetic material and the application of genetic engineering in basic and applied research.
g. Science as a human endeavor	0002 Understand the nature of science and the historical and contemporary contexts of biological study. 0003 Understand the process of scientific inquiry and the role of observation, experimentation, and communication in explaining natural phenomena.
h. Nature of science	0001 Understand unifying concepts among the sciences and the relationships that connect science and technology. 0002 Understand the nature of science and the historical and contemporary contexts of biological study. 0003 Understand the process of scientific inquiry and the role of observation, experimentation, and communication in explaining natural phenomena. 0004 Understand principles of measurement

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	and the processes of gathering, interpreting, and communicating scientific data.
i. Nature of scientific knowledge	0001 Understand unifying concepts among the sciences and the relationships that connect science and technology. 0002 Understand the nature of science and the historical and contemporary contexts of biological study. 0003 Understand the process of scientific inquiry and the role of observation, experimentation, and communication in explaining natural phenomena. 0004 Understand principles of measurement and the processes of gathering, interpreting, and communicating scientific data.
j. History of science	0002 Understand the nature of science and the historical and contemporary contexts of biological study.
k. Historical perspectives	0002 Understand the nature of science and the historical and contemporary contexts of biological study. 0011 Understand the procedures involved in the isolation, manipulation, and expression of genetic material and the application of genetic engineering in basic and applied research. 0012 Understand concepts, principles, and applications of classical and molecular genetics. 0013 Understand the processes of natural selection and biological adaptation. 0014 Understand the principles of classification and taxonomy. 0023 Understand concepts of human ecology and the impact of human decisions and

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	activities on the abiotic and biotic environments.
l. Personal health	0002 Understand the nature of science and the historical and contemporary contexts of biological study. 0019 Understand human biology.
m. Personal and community health	0002 Understand the nature of science and the historical and contemporary contexts of biological study. 0011 Understand the procedures involved in the isolation, manipulation, and expression of genetic material and the application of genetic engineering in basic and applied research. 0012 Understand concepts, principles, and applications of classical and molecular genetics. 0019 Understand human biology. 0023 Understand concepts of human ecology and the impact of human decisions and activities on the abiotic and biotic environments.
n. Population, resources, and environments	0020 Understand the characteristics of populations and communities, and use this knowledge to analyze population growth and community interactions. 0021 Understand the characteristics of ecosystems and major biomes. 0022 Understand the flow of energy and matter through living systems and between living systems and the physical environment. 0023 Understand concepts of human ecology and the impact of human decisions and activities on the abiotic and biotic environments.

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o. Population growth	0020 Understand the characteristics of populations and communities, and use this knowledge to analyze population growth and community interactions. 0023 Understand concepts of human ecology and the impact of human decisions and activities on the abiotic and biotic environments.
p. Natural hazards	0021 Understand the characteristics of ecosystems and major biomes. 0023 Understand concepts of human ecology and the impact of human decisions and activities on the abiotic and biotic environments.
q. Natural resources	0021 Understand the characteristics of ecosystems and major biomes. 0022 Understand the flow of energy and matter through living systems and between living systems and the physical environment. 0023 Understand concepts of human ecology and the impact of human decisions and activities on the abiotic and biotic environments.
r. Risk and benefits	0002 Understand the nature of science and the historical and contemporary contexts of biological study. 0011 Understand the procedures involved in the isolation, manipulation, and expression of genetic material and the application of genetic engineering in basic and applied research. 0019 Understand human biology. 0023 Understand concepts of human ecology and the impact of human decisions and activities on the abiotic and biotic environments.

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s. Environmental quality	0021 Understand the characteristics of ecosystems and major biomes. 0022 Understand the flow of energy and matter through living systems and between living systems and the physical environment. 0023 Understand concepts of human ecology and the impact of human decisions and activities on the abiotic and biotic environments.
t. Natural and human-induced hazards	0019 Understand human biology. 0021 Understand the characteristics of ecosystems and major biomes. 0022 Understand the flow of energy and matter through living systems and between living systems and the physical environment. 0023 Understand concepts of human ecology and the impact of human decisions and activities on the abiotic and biotic environments.
u. Science and technology in society	0001 Understand unifying concepts among the sciences and the relationships that connect science and technology. 0002 Understand the nature of science and the historical and contemporary contexts of biological study. 0003 Understand the process of scientific inquiry and the role of observation, experimentation, and communication in explaining natural phenomena. 0005 Understand equipment, materials, chemicals, and organisms used in biological studies and the application of procedures for their proper, safe, and legal use. 0011 Understand the procedures involved in

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	the isolation, manipulation, and expression of genetic material and the application of genetic engineering in basic and applied research. 0023 Understand concepts of human ecology and the impact of human decisions and activities on the abiotic and biotic environments.
v. Science and technology in local, national, and global challenges	0001 Understand unifying concepts among the sciences and the relationships that connect science and technology. 0002 Understand the nature of science and the historical and contemporary contexts of biological study. 0003 Understand the process of scientific inquiry and the role of observation, experimentation, and communication in explaining natural phenomena. 0011 Understand the procedures involved in the isolation, manipulation, and expression of genetic material and the application of genetic engineering in basic and applied research. 0019 Understand human biology. 0023 Understand concepts of human ecology and the impact of human decisions and activities on the abiotic and biotic environments.