Main Criteria: Forward Education
Secondary Criteria: New Mexico Content Standards
Subjects: Mathematics, Science, Technology Education
Grades: 11, 12, Key Stage 4

Forward Education

Autonomous Electric Vehicles of the Future

New Mexico Content Standards
Mathematics
Grade **11** - Adopted: **2012**

STRAND / CONTENT STANDARD	NM.MP.	Mathematical Practices
BENCHMARK / STANDARD	MP.1.	Make sense of problems and persevere in solving them.
BENCHMARK / STANDARD	MP.2.	Reason abstractly and quantitatively.
BENCHMARK / STANDARD	MP.3.	Construct viable arguments and critique the reasoning of others.
BENCHMARK / STANDARD	MP.4.	Model with mathematics.
BENCHMARK / STANDARD	MP.8.	Look for and express regularity in repeated reasoning.

STRAND / CONTENT STANDARD	NM.A.	Algebra
BENCHMARK / STANDARD	**A-CED.**	**Creating Equations**
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY		**Create equations that describe numbers or relationships.**
PERFORMANCE STANDARD / INDICATOR	A-CED.2.	Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.

STRAND / CONTENT STANDARD	NM.A.	Algebra
BENCHMARK / STANDARD	**A-REI.**	**Reasoning with Equations and Inequalities**
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY		**Understand solving equations as a process of reasoning and explain the reasoning.**
PERFORMANCE STANDARD / INDICATOR	A-REI.1.	Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.

STRAND / CONTENT STANDARD	**NM.F.**	**Functions**
BENCHMARK / STANDARD	**F-IF.**	**Interpreting Functions**
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY		**Analyze functions using different representations.**
PERFORMANCE STANDARD / INDICATOR	**F-IF.7.**	**Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.**
INDICATOR	F-IF.7(a)	Graph linear and quadratic functions and show intercepts, maxima, and minima.

STRAND / CONTENT STANDARD	**NM.F.**	**Functions**
BENCHMARK / STANDARD	**F-LE.**	**Linear, Quadratic, and Exponential Models**
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY		**Construct and compare linear and exponential models and solve problems.**
PERFORMANCE STANDARD / INDICATOR	**F-LE.1.**	**Distinguish between situations that can be modeled with linear functions and with exponential functions.**
INDICATOR	F-LE.1(a)	Prove that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals.

STRAND / CONTENT STANDARD	**NM.G.**	**Geometry**
BENCHMARK / STANDARD	**G-GPE.**	**Expressing Geometric Properties with Equations**
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY		**Use coordinates to prove simple geometric theorems algebraically**
PERFORMANCE STANDARD / INDICATOR	G-GPE.5.	Prove the slope criteria for parallel and perpendicular lines and use them to solve geometric problems (e.g., find the equation of a line parallel or perpendicular to a given line that passes through a given point).

New Mexico Content Standards

Mathematics

Grade **12** - Adopted: **2012**

STRAND / CONTENT STANDARD	**NM.MP.**	**Mathematical Practices**
BENCHMARK / STANDARD	MP.1.	Make sense of problems and persevere in solving them.
BENCHMARK / STANDARD	MP.2.	Reason abstractly and quantitatively.

BENCHMARK / STANDARD	MP.3.	Construct viable arguments and critique the reasoning of others.
BENCHMARK / STANDARD	MP.4.	Model with mathematics.
BENCHMARK / STANDARD	MP.8.	Look for and express regularity in repeated reasoning.
STRAND / CONTENT STANDARD	**NM.A.**	**Algebra**
BENCHMARK / STANDARD	**A-CED.**	**Creating Equations**
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY		**Create equations that describe numbers or relationships.**
PERFORMANCE STANDARD / INDICATOR	A-CED.2.	Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.
STRAND / CONTENT STANDARD	**NM.A.**	**Algebra**
BENCHMARK / STANDARD	**A-REI.**	**Reasoning with Equations and Inequalities**
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY		**Understand solving equations as a process of reasoning and explain the reasoning.**
PERFORMANCE STANDARD / INDICATOR	A-REI.1.	Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.
STRAND / CONTENT STANDARD	**NM.F.**	**Functions**
BENCHMARK / STANDARD	**F-IF.**	**Interpreting Functions**
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY		**Analyze functions using different representations.**
PERFORMANCE STANDARD / INDICATOR	**F-IF.7.**	**Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.**
INDICATOR	F-IF.7(a)	Graph linear and quadratic functions and show intercepts, maxima, and minima.
STRAND / CONTENT STANDARD	**NM.F.**	**Functions**
BENCHMARK / STANDARD	**F-LE.**	**Linear, Quadratic, and Exponential Models**

PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY		**Construct and compare linear and exponential models and solve problems.**
PERFORMANCE STANDARD / INDICATOR	**F-LE.1.**	**Distinguish between situations that can be modeled with linear functions and with exponential functions.**
INDICATOR	F-LE.1(a)	Prove that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals.

STRAND / CONTENT STANDARD	**NM.G.**	**Geometry**
BENCHMARK / STANDARD	**G-GPE.**	**Expressing Geometric Properties with Equations**
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY		**Use coordinates to prove simple geometric theorems algebraically**
PERFORMANCE STANDARD / INDICATOR	G-GPE.5.	Prove the slope criteria for parallel and perpendicular lines and use them to solve geometric problems (e.g., find the equation of a line parallel or perpendicular to a given line that passes through a given point).

New Mexico Content Standards

Science

Grade **11** - Adopted: **2013**

STRAND / CONTENT STANDARD	**NGSS.HS-PS.**	**PHYSICAL SCIENCE**
BENCHMARK / STANDARD	**HS-PS1.**	**Matter and Its Interactions**
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY		**Students who demonstrate understanding can:**
PERFORMANCE STANDARD / INDICATOR	HS-PS1-4.	Develop a model to illustrate that the release or absorption of energy from a chemical reaction system depends upon the changes in total bond energy.

STRAND / CONTENT STANDARD	**NGSS.HS-PS.**	**PHYSICAL SCIENCE**
BENCHMARK / STANDARD	**HS-PS3.**	**Energy**
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY		**Students who demonstrate understanding can:**
PERFORMANCE STANDARD / INDICATOR	HS-PS3-3.	Design, build, and refine a device that works within given constraints to convert one form of energy into another form of energy.

STRAND / CONTENT STANDARD	**NGSS.HS-PS.**	**PHYSICAL SCIENCE**

BENCHMARK / STANDARD	**HS-PS4.**	**Waves and Their Applications in Technologies for Information Transfer**
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY		**Students who demonstrate understanding can:**
PERFORMANCE STANDARD / INDICATOR	HS-PS4-2.	Evaluate questions about the advantages of using a digital transmission and storage of information.

STRAND / CONTENT STANDARD	**NGSS.HS-LS.**	**LIFE SCIENCE**
BENCHMARK / STANDARD	**HS-LS2.**	**Ecosystems: Interactions, Energy, and Dynamics**
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY		**Students who demonstrate understanding can:**
PERFORMANCE STANDARD / INDICATOR	HS-LS2-7.	Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.

STRAND / CONTENT STANDARD	**NGSS.HS-ESS.**	**EARTH AND SPACE SCIENCE**
BENCHMARK / STANDARD	**HS-ESS2.**	**Earth's Systems**
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY		**Students who demonstrate understanding can:**
PERFORMANCE STANDARD / INDICATOR	HS-ESS2-4.	Use a model to describe how variations in the flow of energy into and out of Earth's systems result in changes in climate.

STRAND / CONTENT STANDARD	**NGSS.HS-ESS.**	**EARTH AND SPACE SCIENCE**
BENCHMARK / STANDARD	**HS-ESS3.**	**Earth and Human Activity**
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY		**Students who demonstrate understanding can:**
PERFORMANCE STANDARD / INDICATOR	HS-ESS3-1.	Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity.
PERFORMANCE STANDARD / INDICATOR	HS-ESS3-2.	Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios.

PERFORMANCE STANDARD / INDICATOR	HS-ESS3-3.	Create a computational simulation to illustrate the relationships among management of natural resources, the sustainability of human populations, and biodiversity.
PERFORMANCE STANDARD / INDICATOR	HS-ESS3-4.	Evaluate or refine a technological solution that reduces impacts of human activities on natural systems.
PERFORMANCE STANDARD / INDICATOR	HS-ESS3-6.	Use a computational representation to illustrate the relationships among Earth systems and how those relationships are being modified due to human activity.
STRAND / CONTENT STANDARD	**NGSS.HS-ETS.**	**ENGINEERING DESIGN**
BENCHMARK / STANDARD	**HS-ETS1.**	**Engineering Design**
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY		**Students who demonstrate understanding can:**
PERFORMANCE STANDARD / INDICATOR	HS-ETS1-1.	Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.
PERFORMANCE STANDARD / INDICATOR	HS-ETS1-2.	Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.
PERFORMANCE STANDARD / INDICATOR	HS-ETS1-3.	Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics, as well as possible social, cultural, and environmental impacts.
STRAND / CONTENT STANDARD	**NM.SS.**	**SCIENCE AND SOCIETY**
BENCHMARK / STANDARD	**HS-SS.**	**Science and Society**
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY		**Students who demonstrate understanding can:**
PERFORMANCE STANDARD / INDICATOR	HS-SS-1 NM.	Obtain and communicate information about the role of New Mexico in nuclear science and 21st century innovations including how the national laboratories have contributed to theoretical, experimental, and applied science; have illustrated the interdependence of science, engineering, and technology; and have used systems involving hardware, software, production, simulation, and information flow.

New Mexico Content Standards

Science

Grade **12** - Adopted: **2013**

STRAND / CONTENT STANDARD	**NGSS.HS-PS.**	**PHYSICAL SCIENCE**
BENCHMARK / STANDARD	**HS-PS1.**	**Matter and Its Interactions**

PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY		**Students who demonstrate understanding can:**
PERFORMANCE STANDARD / INDICATOR	HS-PS1-4.	Develop a model to illustrate that the release or absorption of energy from a chemical reaction system depends upon the changes in total bond energy.

STRAND / CONTENT STANDARD	**NGSS.HS-PS.**	**PHYSICAL SCIENCE**
BENCHMARK / STANDARD	**HS-PS3.**	**Energy**
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY		**Students who demonstrate understanding can:**
PERFORMANCE STANDARD / INDICATOR	HS-PS3-3.	Design, build, and refine a device that works within given constraints to convert one form of energy into another form of energy.

STRAND / CONTENT STANDARD	**NGSS.HS-PS.**	**PHYSICAL SCIENCE**
BENCHMARK / STANDARD	**HS-PS4.**	**Waves and Their Applications in Technologies for Information Transfer**
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY		**Students who demonstrate understanding can:**
PERFORMANCE STANDARD / INDICATOR	HS-PS4-2.	Evaluate questions about the advantages of using a digital transmission and storage of information.

STRAND / CONTENT STANDARD	**NGSS.HS-LS.**	**LIFE SCIENCE**
BENCHMARK / STANDARD	**HS-LS2.**	**Ecosystems: Interactions, Energy, and Dynamics**
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY		**Students who demonstrate understanding can:**
PERFORMANCE STANDARD / INDICATOR	HS-LS2-7.	Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.

STRAND / CONTENT STANDARD	**NGSS.HS-ESS.**	**EARTH AND SPACE SCIENCE**
BENCHMARK / STANDARD	**HS-ESS2.**	**Earth's Systems**
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY		**Students who demonstrate understanding can:**

PERFORMANCE STANDARD / INDICATOR	HS-ESS2-4.	Use a model to describe how variations in the flow of energy into and out of Earth's systems result in changes in climate.

STRAND / CONTENT STANDARD	**NGSS.HS-ESS.**	**EARTH AND SPACE SCIENCE**
BENCHMARK / STANDARD	**HS-ESS3.**	**Earth and Human Activity**
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY		**Students who demonstrate understanding can:**
PERFORMANCE STANDARD / INDICATOR	HS-ESS3-1.	Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity.
PERFORMANCE STANDARD / INDICATOR	HS-ESS3-2.	Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios.
PERFORMANCE STANDARD / INDICATOR	HS-ESS3-3.	Create a computational simulation to illustrate the relationships among management of natural resources, the sustainability of human populations, and biodiversity.
PERFORMANCE STANDARD / INDICATOR	HS-ESS3-4.	Evaluate or refine a technological solution that reduces impacts of human activities on natural systems.
PERFORMANCE STANDARD / INDICATOR	HS-ESS3-6.	Use a computational representation to illustrate the relationships among Earth systems and how those relationships are being modified due to human activity.

STRAND / CONTENT STANDARD	**NGSS.HS-ETS.**	**ENGINEERING DESIGN**
BENCHMARK / STANDARD	**HS-ETS1.**	**Engineering Design**
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY		**Students who demonstrate understanding can:**
PERFORMANCE STANDARD / INDICATOR	HS-ETS1-1.	Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.
PERFORMANCE STANDARD / INDICATOR	HS-ETS1-2.	Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.
PERFORMANCE STANDARD / INDICATOR	HS-ETS1-3.	Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics, as well as possible social, cultural, and environmental impacts.

STRAND / CONTENT STANDARD	**NM.SS.**	**SCIENCE AND SOCIETY**
BENCHMARK / STANDARD	**HS-SS.**	**Science and Society**
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY		**Students who demonstrate understanding can:**
PERFORMANCE STANDARD / INDICATOR	HS-SS-1 NM.	Obtain and communicate information about the role of New Mexico in nuclear science and 21st century innovations including how the national laboratories have contributed to theoretical, experimental, and applied science; have illustrated the interdependence of science, engineering, and technology; and have used systems involving hardware, software, production, simulation, and information flow.

New Mexico Content Standards

Technology Education

Grade **11** - Adopted: **2019**

STRAND / CONTENT STANDARD		**CSTA K-12 Computer Science Standards**
BENCHMARK / STANDARD	**CSTA.3 B.**	**Level 3B (Ages 17-18)**
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	**3B-AP.**	**Algorithms & Programming**
PERFORMANCE STANDARD / INDICATOR		**Algorithms**
INDICATOR	3B-AP-09.	Implement an artificial intelligence algorithm to play a game against a human opponent or solve a problem. (P5.3)
INDICATOR	3B-AP-10.	Use and adapt classic algorithms to solve computational problems. (P4.2)

STRAND / CONTENT STANDARD		**CSTA K-12 Computer Science Standards**
BENCHMARK / STANDARD	**CSTA.3 B.**	**Level 3B (Ages 17-18)**
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	**3B-AP.**	**Algorithms & Programming**
PERFORMANCE STANDARD / INDICATOR		**Modularity**
INDICATOR	3B-AP-14.	Construct solutions to problems using student-created components, such as procedures, modules and/or objects. (P5.2)

STRAND / CONTENT STANDARD		**CSTA K-12 Computer Science Standards**
BENCHMARK / STANDARD	**CSTA.3 B.**	**Level 3B (Ages 17-18)**

PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	**3B-AP.**	**Algorithms & Programming**
PERFORMANCE STANDARD / INDICATOR		**Program Development**
INDICATOR	3B-AP-17.	Plan and develop programs for broad audiences using a software life cycle process. (P5.1)

New Mexico Content Standards

Technology Education

Grade **12** - Adopted: **2019**

STRAND / CONTENT STANDARD		**CSTA K-12 Computer Science Standards**
BENCHMARK / STANDARD	**CSTA.3B.**	**Level 3B (Ages 17-18)**
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	**3B-AP.**	**Algorithms & Programming**
PERFORMANCE STANDARD / INDICATOR		**Algorithms**
INDICATOR	3B-AP-09.	Implement an artificial intelligence algorithm to play a game against a human opponent or solve a problem. (P5.3)
INDICATOR	3B-AP-10.	Use and adapt classic algorithms to solve computational problems. (P4.2)

STRAND / CONTENT STANDARD		**CSTA K-12 Computer Science Standards**
BENCHMARK / STANDARD	**CSTA.3B.**	**Level 3B (Ages 17-18)**
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	**3B-AP.**	**Algorithms & Programming**
PERFORMANCE STANDARD / INDICATOR		**Modularity**
INDICATOR	3B-AP-14.	Construct solutions to problems using student-created components, such as procedures, modules and/or objects. (P5.2)

STRAND / CONTENT STANDARD		**CSTA K-12 Computer Science Standards**
BENCHMARK / STANDARD	**CSTA.3B.**	**Level 3B (Ages 17-18)**
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	**3B-AP.**	**Algorithms & Programming**

PERFORMANCE STANDARD / INDICATOR		Program Development
INDICATOR	3B-AP-17.	Plan and develop programs for broad audiences using a software life cycle process. (P5.1)