

Main Criteria: Forward Education
Secondary Criteria: North Carolina Standard Course of Study
Subjects: Mathematics, Science, Technology Education
Grades: 11, 12, Key Stage 4

Forward Education

Autonomous Electric Vehicles of the Future

North Carolina Standard Course of Study
Mathematics

Grade 11 - Adopted: 2016/IMPL 2016

CONTENT AREA / STRAND	Math 1
STRAND / ESSENTIAL STANDARD	Standards for Mathematical Practice

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

CONTENT AREA / STRAND	Math 1
STRAND / ESSENTIAL STANDARD	Algebra: Creating Equations
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	Create equations that describe numbers or relationships.

CLARIFYING OBJECTIVE	NC.M1.A-CED.2.	Create and graph equations in two variables to represent linear, exponential, and quadratic relationships between quantities.
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CONTENT AREA / STRAND	Math 1
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STRAND / ESSENTIAL STANDARD		Algebra: Reasoning with Equations and Inequalities
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE		Understand solving equations as a process of reasoning and explain the reasoning.

CLARIFYING OBJECTIVE NC.M1.A-REI.1. Justify a chosen solution method and each step of the solving process for linear and quadratic equations using mathematical reasoning.

CONTENT AREA / STRAND		Math 1
STRAND / ESSENTIAL STANDARD		Geometry: Expressing Geometric Properties with Equations
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE		Use coordinates to prove simple geometric theorems algebraically.
CLARIFYING OBJECTIVE	NC.M1.G-GPE.5.	Use coordinates to prove the slope criteria for parallel and perpendicular lines and use them to solve problems.

INDICATOR NC.M1.G-GPE.5b. Find the equation of a line parallel or perpendicular to a given line that passes through a given point.

CONTENT AREA / STRAND		Math 2
STRAND / ESSENTIAL STANDARD		Standards for Mathematical Practice

ESSENTIAL STANDARD / CLARIFYING OBJECTIVE MP.1. Make sense of problems and persevere in solving them.

ESSENTIAL STANDARD / CLARIFYING OBJECTIVE MP.2. Reason abstractly and quantitatively.

ESSENTIAL STANDARD / CLARIFYING OBJECTIVE MP.3. Construct viable arguments and critique the reasoning of others.

ESSENTIAL STANDARD / CLARIFYING OBJECTIVE MP.4. Model with mathematics.

ESSENTIAL STANDARD / CLARIFYING OBJECTIVE MP.8. Look for and express regularity in repeated reasoning.

CONTENT AREA / STRAND		Math 3
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STRAND / ESSENTIAL STANDARD		Standards for Mathematical Practice
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	MP.1.	Make sense of problems and persevere in solving them.
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	MP.2.	Reason abstractly and quantitatively.
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	MP.3.	Construct viable arguments and critique the reasoning of others.
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	MP.4.	Model with mathematics.
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	MP.8.	Look for and express regularity in repeated reasoning.

Grade 11 - Adopted: 2019/IMPL 2020

CONTENT AREA / STRAND		Math 4
STRAND / ESSENTIAL STANDARD		Standards for Mathematical Practice
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	MP.1.	Make sense of problems and persevere in solving them.
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	MP.2.	Reason abstractly and quantitatively.
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	MP.3.	Construct viable arguments and critique the reasoning of others.
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	MP.4.	Model with mathematics.

ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	MP.8.	Look for and express regularity in repeated reasoning.
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	MP.9.	Use strategies and procedures flexibly.
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	MP.10.	Reflect on mistakes and misconceptions.

CONTENT AREA / STRAND		Discrete Mathematics for Computer Science
STRAND / ESSENTIAL STANDARD		Standards for Mathematical Practice

ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	MP.1.	Make sense of problems and persevere in solving them.
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	MP.2.	Reason abstractly and quantitatively.
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	MP.3.	Construct viable arguments and critique the reasoning of others.
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	MP.4.	Model with mathematics.
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	MP.8.	Look for and express regularity in repeated reasoning.
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	MP.9.	Use strategies and procedures flexibly.
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	MP.10.	Reflect on mistakes and misconceptions.

CONTENT AREA / STRAND		Precalculus
STRAND / ESSENTIAL STANDARD		Standards for Mathematical Practice

ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	MP.1.	Make sense of problems and persevere in solving them.
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ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	MP.2.	Reason abstractly and quantitatively.
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ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	MP.3.	Construct viable arguments and critique the reasoning of others.
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ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	MP.4.	Model with mathematics.
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ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	MP.8.	Look for and express regularity in repeated reasoning.
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ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	MP.9.	Use strategies and procedures flexibly.
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ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	MP.10.	Reflect on mistakes and misconceptions.
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**North Carolina Standard Course of Study
Mathematics
Grade 12 - Adopted: 2016/IMPL 2016**

CONTENT AREA / STRAND		Math 1
STRAND / ESSENTIAL STANDARD		Standards for Mathematical Practice

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

CONTENT AREA / STRAND		Math 1
STRAND / ESSENTIAL STANDARD		Algebra: Creating Equations
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE		Create equations that describe numbers or relationships.

CLARIFYING OBJECTIVE NC.M1.A-CED.2. Create and graph equations in two variables to represent linear, exponential, and quadratic relationships between quantities.

CONTENT AREA / STRAND		Math 1
STRAND / ESSENTIAL STANDARD		Algebra: Reasoning with Equations and Inequalities
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE		Understand solving equations as a process of reasoning and explain the reasoning.

CLARIFYING OBJECTIVE NC.M1.A-REI.1. Justify a chosen solution method and each step of the solving process for linear and quadratic equations using mathematical reasoning.

CONTENT AREA / STRAND		Math 1
STRAND / ESSENTIAL STANDARD		Geometry: Expressing Geometric Properties with Equations
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE		Use coordinates to prove simple geometric theorems algebraically.

CLARIFYING OBJECTIVE NC.M1.G-GPE.5. Use coordinates to prove the slope criteria for parallel and perpendicular lines and use them to solve problems.

INDICATOR NC.M1.G- Find the equation of a line parallel or perpendicular to a given line that passes through a given point.
GPE.5b.

CONTENT AREA / STRAND		Math 2
STRAND / ESSENTIAL STANDARD		Standards for Mathematical Practice

ESSENTIAL STANDARD / CLARIFYING OBJECTIVE MP.1. Make sense of problems and persevere in solving them.

ESSENTIAL STANDARD / CLARIFYING OBJECTIVE MP.2. Reason abstractly and quantitatively.

ESSENTIAL STANDARD / CLARIFYING OBJECTIVE MP.3. Construct viable arguments and critique the reasoning of others.

ESSENTIAL STANDARD / CLARIFYING OBJECTIVE MP.4. Model with mathematics.

ESSENTIAL STANDARD / CLARIFYING OBJECTIVE MP.8. Look for and express regularity in repeated reasoning.

CONTENT AREA / STRAND		Math 3
STRAND / ESSENTIAL STANDARD		Standards for Mathematical Practice

ESSENTIAL STANDARD / CLARIFYING OBJECTIVE MP.1. Make sense of problems and persevere in solving them.

ESSENTIAL STANDARD / CLARIFYING OBJECTIVE MP.2. Reason abstractly and quantitatively.

ESSENTIAL STANDARD / CLARIFYING OBJECTIVE MP.3. Construct viable arguments and critique the reasoning of others.

ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	MP.4.	Model with mathematics.
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ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	MP.8.	Look for and express regularity in repeated reasoning.
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Grade 12 - Adopted: 2019/IMPL 2020

CONTENT AREA / STRAND		Math 4
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STRAND / ESSENTIAL STANDARD		Standards for Mathematical Practice
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ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	MP.1.	Make sense of problems and persevere in solving them.
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ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	MP.2.	Reason abstractly and quantitatively.
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ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	MP.3.	Construct viable arguments and critique the reasoning of others.
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ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	MP.4.	Model with mathematics.
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ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	MP.8.	Look for and express regularity in repeated reasoning.
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ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	MP.9.	Use strategies and procedures flexibly.
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ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	MP.10.	Reflect on mistakes and misconceptions.
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CONTENT AREA / STRAND		Discrete Mathematics for Computer Science
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STRAND / ESSENTIAL STANDARD		Standards for Mathematical Practice
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ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	MP.1.	Make sense of problems and persevere in solving them.
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	MP.2.	Reason abstractly and quantitatively.
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	MP.3.	Construct viable arguments and critique the reasoning of others.
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	MP.4.	Model with mathematics.
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ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	MP.9.	Use strategies and procedures flexibly.
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	MP.10.	Reflect on mistakes and misconceptions.

CONTENT AREA / STRAND		Precalculus
STRAND / ESSENTIAL STANDARD		Standards for Mathematical Practice

ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	MP.1.	Make sense of problems and persevere in solving them.
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	MP.2.	Reason abstractly and quantitatively.
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	MP.3.	Construct viable arguments and critique the reasoning of others.

ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	MP.4.	Model with mathematics.
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	MP.8.	Look for and express regularity in repeated reasoning.
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	MP.9.	Use strategies and procedures flexibly.
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	MP.10.	Reflect on mistakes and misconceptions.

**North Carolina Standard Course of Study
Science
Grade 11 - Adopted: 2010**

CONTENT AREA / STRAND	NC.PSc.	Physical Science
STRAND / ESSENTIAL STANDARD		Energy: Conservation and Transfer
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	PSc.3.3.	Understand electricity and magnetism and their relationship.

CLARIFYING OBJECTIVE PSc.3.3.5 Explain the practical applications of magnetism.

CONTENT AREA / STRAND	NC.Bio.	Biology
STRAND / ESSENTIAL STANDARD		Ecosystems
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	Bio.2.2.	Understand the impact of human activities on the environment (one generation affects the next).

CLARIFYING OBJECTIVE Bio.2.2.1. Infer how human activities (including population growth, pollution, global warming, burning of fossil fuels, habitat destruction and introduction of nonnative species) may impact the environment.

CONTENT AREA / STRAND	NC.EEn.	Earth/Environmental Science
STRAND / ESSENTIAL STANDARD		Earth: Systems, Structures and Processes
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	EEn.2.5.	Understand the structure of and processes within our atmosphere.

CLARIFYING OBJECTIVE EEn.2.5.5. Explain how human activities affect air quality.

CONTENT AREA / STRAND	NC.EEn.	Earth/Environmental Science
STRAND / ESSENTIAL STANDARD		Earth: Systems, Structures and Processes
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	EEn.2.6.	Analyze patterns of global climate change over time.

CLARIFYING OBJECTIVE EEn.2.6.2. Explain changes in global climate due to natural processes.

CLARIFYING OBJECTIVE EEn.2.6.3. Analyze the impacts that human activities have on global climate change (such as burning hydrocarbons, greenhouse effect, and deforestation).

CLARIFYING OBJECTIVE EEn.2.6.4. Attribute changes in Earth systems to global climate change (temperature change, changes in pH of ocean, sea level changes, etc.).

CONTENT AREA / STRAND	NC.EEn.	Earth/Environmental Science
STRAND / ESSENTIAL STANDARD		Earth: Systems, Structures and Processes
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	EEn.2.8.	Evaluate human behaviors in terms of how likely they are to ensure the ability to live sustainably on Earth.

CLARIFYING OBJECTIVE EEn.2.8.1. Evaluate alternative energy technologies for use in North Carolina.

CONTENT AREA / STRAND	NC.OBio.	Occupational Course of Study - Biology
STRAND / ESSENTIAL STANDARD		Ecosystems
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	OBio.2.2.	Understand the impact of human activities on the environment (one generation affects the next).

CLARIFYING OBJECTIVE Bio.2.2.1. Infer how human activities (including population growth, pollution, global warming, burning of fossil fuels, habitat destruction and introduction of nonnative species) may impact the environment.

CONTENT AREA / STRAND	NC.OA.	Occupational Course of Study - Applied Science
STRAND / ESSENTIAL STANDARD		Chemicals
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	OA5.1.	Identify the uses and dangers of common chemicals.

CLARIFYING OBJECTIVE OA5.1.1. Identify uses of common chemicals.

CONTENT AREA / STRAND	NC.OA.	Occupational Course of Study - Applied Science
STRAND / ESSENTIAL STANDARD		The Environment
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	OA6.1.	Understand how humans can have positive and negative effects on the environment.

CLARIFYING OBJECTIVE OA6.1.1. Explain how humans can have a positive impact on natural resources.

CLARIFYING OBJECTIVE OA6.1.2. Explain the effects of pollution on the earth, air and waterways and what can be done at the individual, family and community level to reduce pollution.

CONTENT AREA / STRAND	NC.CC.11-12.RST.	Reading Standards for Literacy in Science and Technical Subjects
STRAND / ESSENTIAL STANDARD		Key Ideas and Details

ESSENTIAL STANDARD / CLARIFYING OBJECTIVE 11-12.RST.2. Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.

ESSENTIAL STANDARD / CLARIFYING OBJECTIVE 11-12.RST.3. Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.

CONTENT AREA / STRAND	NC.CC.11-12.RST.	Reading Standards for Literacy in Science and Technical Subjects
STRAND / ESSENTIAL STANDARD		Craft and Structure

ESSENTIAL STANDARD / CLARIFYING OBJECTIVE 11-12.RST.4. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11-12 texts and topics.

ESSENTIAL STANDARD / CLARIFYING OBJECTIVE 11-12.RST.5. Analyze how the text structures information or ideas into categories or hierarchies, demonstrating understanding of the information or ideas.

CONTENT AREA / STRAND	NC.CC.11-12.RST.	Reading Standards for Literacy in Science and Technical Subjects
STRAND / ESSENTIAL STANDARD		Integration of Knowledge and Ideas

ESSENTIAL STANDARD / CLARIFYING OBJECTIVE 11-12.RST.9. Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.

CONTENT AREA / STRAND	NC.CC.11-12.RST.	Reading Standards for Literacy in Science and Technical Subjects
STRAND / ESSENTIAL STANDARD		Range of Reading and Level of Text Complexity

ESSENTIAL STANDARD / CLARIFYING OBJECTIVE 11-12.RST.10. By the end of grade 12, read and comprehend science/technical texts in the grades 11-12 text complexity band independently and proficiently.

CONTENT AREA / STRAND	NC.CC.11-12.WHST.	Writing Standards for Literacy in Science and Technical Subjects
STRAND / ESSENTIAL STANDARD		Text Types and Purposes
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	11-12.WHST.2.	Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes.

CLARIFYING OBJECTIVE 11-12.WHST.2.d. Use precise language, domain-specific vocabulary and techniques such as metaphor, simile, and analogy to manage the complexity of the topic; convey a knowledgeable stance in a style that responds to the discipline and context as well as to the expertise of likely readers.

CONTENT AREA / STRAND	NC.CC.11-12.WHST.	Writing Standards for Literacy in Science and Technical Subjects
STRAND / ESSENTIAL STANDARD		Production and Distribution of Writing

ESSENTIAL STANDARD / CLARIFYING OBJECTIVE 11-12.WHST.4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

ESSENTIAL STANDARD / CLARIFYING OBJECTIVE 11-12.WHST.6. Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information.

**North Carolina Standard Course of Study
Science
Grade 12 - Adopted: 2010**

CONTENT AREA / STRAND	NC.PSc.	Physical Science
STRAND / ESSENTIAL STANDARD		Energy: Conservation and Transfer
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	PSc.3.3.	Understand electricity and magnetism and their relationship.

CLARIFYING OBJECTIVE PSc.3.3.5 Explain the practical applications of magnetism.

CONTENT AREA / STRAND	NC.Bio.	Biology
STRAND / ESSENTIAL STANDARD		Ecosystems
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	Bio.2.2.	Understand the impact of human activities on the environment (one generation affects the next).

CLARIFYING OBJECTIVE Bio.2.2.1. Infer how human activities (including population growth, pollution, global warming, burning of fossil fuels, habitat destruction and introduction of nonnative species) may impact the environment.

CONTENT AREA / STRAND	NC.EEn.	Earth/Environmental Science
STRAND / ESSENTIAL STANDARD		Earth: Systems, Structures and Processes
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	EEn.2.5.	Understand the structure of and processes within our atmosphere.

CLARIFYING OBJECTIVE EEn.2.5.5. Explain how human activities affect air quality.

CONTENT AREA / STRAND	NC.EEn.	Earth/Environmental Science
STRAND / ESSENTIAL STANDARD		Earth: Systems, Structures and Processes
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	EEn.2.6.	Analyze patterns of global climate change over time.

CLARIFYING OBJECTIVE EEn.2.6.2. Explain changes in global climate due to natural processes.

CLARIFYING OBJECTIVE EEn.2.6.3. Analyze the impacts that human activities have on global climate change (such as burning hydrocarbons, greenhouse effect, and deforestation).

CLARIFYING OBJECTIVE EEn.2.6.4. Attribute changes in Earth systems to global climate change (temperature change, changes in pH of ocean, sea level changes, etc.).

CONTENT AREA / STRAND	NC.EEn.	Earth/Environmental Science
STRAND / ESSENTIAL STANDARD		Earth: Systems, Structures and Processes
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	EEn.2.8.	Evaluate human behaviors in terms of how likely they are to ensure the ability to live sustainably on Earth.

CLARIFYING OBJECTIVE EEn.2.8.1. Evaluate alternative energy technologies for use in North Carolina.

CONTENT AREA / STRAND	NC.OBio.	Occupational Course of Study - Biology
STRAND / ESSENTIAL STANDARD		Ecosystems
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	O Bio.2.2.	Understand the impact of human activities on the environment (one generation affects the next).

CLARIFYING OBJECTIVE Bio.2.2.1. Infer how human activities (including population growth, pollution, global warming, burning of fossil fuels, habitat destruction and introduction of nonnative species) may impact the environment.

CONTENT AREA / STRAND	NC.OA.	Occupational Course of Study - Applied Science
STRAND / ESSENTIAL STANDARD		Chemicals
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	OA5.1.	Identify the uses and dangers of common chemicals.

CLARIFYING OBJECTIVE OA5.1.1. Identify uses of common chemicals.

CONTENT AREA / STRAND	NC.OA.	Occupational Course of Study - Applied Science
STRAND / ESSENTIAL STANDARD		The Environment
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	OA6.1.	Understand how humans can have positive and negative effects on the environment.

CLARIFYING OBJECTIVE OA6.1.1. Explain how humans can have a positive impact on natural resources.

CLARIFYING OBJECTIVE OA6.1.2. Explain the effects of pollution on the earth, air and waterways and what can be done at the individual, family and community level to reduce pollution.

CONTENT AREA / STRAND	NC.CC.11-12.RST.	Reading Standards for Literacy in Science and Technical Subjects
STRAND / ESSENTIAL STANDARD		Key Ideas and Details

ESSENTIAL STANDARD / CLARIFYING OBJECTIVE 11-12.RST.2. Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.

ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	11-12.RST.3.	Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.
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CONTENT AREA / STRAND	NC.CC.11-12.RST.	Reading Standards for Literacy in Science and Technical Subjects
STRAND / ESSENTIAL STANDARD		Craft and Structure

ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	11-12.RST.4.	Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11-12 texts and topics.
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ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	11-12.RST.5.	Analyze how the text structures information or ideas into categories or hierarchies, demonstrating understanding of the information or ideas.
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CONTENT AREA / STRAND	NC.CC.11-12.RST.	Reading Standards for Literacy in Science and Technical Subjects
STRAND / ESSENTIAL STANDARD		Integration of Knowledge and Ideas

ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	11-12.RST.9.	Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.
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CONTENT AREA / STRAND	NC.CC.11-12.RST.	Reading Standards for Literacy in Science and Technical Subjects
STRAND / ESSENTIAL STANDARD		Range of Reading and Level of Text Complexity

ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	11-12.RST.10	By the end of grade 12, read and comprehend science/technical texts in the grades 11-12 text complexity band independently and proficiently.
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CONTENT AREA / STRAND	NC.CC.11-12.WHST.	Writing Standards for Literacy in Science and Technical Subjects
STRAND / ESSENTIAL STANDARD		Text Types and Purposes
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	11-12.WHST.2.	Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.

CLARIFYING OBJECTIVE	11-12.WHST.2.d.	Use precise language, domain-specific vocabulary and techniques such as metaphor, simile, and analogy to manage the complexity of the topic; convey a knowledgeable stance in a style that responds to the discipline and context as well as to the expertise of likely readers.
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CONTENT AREA / STRAND	NC.CC.11-12.WHST.	Writing Standards for Literacy in Science and Technical Subjects
STRAND / ESSENTIAL STANDARD		Production and Distribution of Writing

ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	11-12.WHST.4.	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
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ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	11-12.WHST.6.	Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information.
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**North Carolina Standard Course of Study
Technology Education
Grade 11 - Adopted: 2020 (ISTE-S)**

CONTENT AREA / STRAND		Digital Learning Standards
STRAND / ESSENTIAL STANDARD	ISTE-S.3.	Knowledge Constructor: Students critically curate a variety of resources using digital tools to construct knowledge, produce creative artifacts and make meaningful learning experiences for themselves and others.

ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	ISTE-S.3.d.	Students build knowledge by actively exploring real-world issues and problems, developing ideas and theories and pursuing answers and solutions.
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CONTENT AREA / STRAND		Digital Learning Standards
STRAND / ESSENTIAL STANDARD	ISTE-S.4.	Innovative Designer: Students use a variety of technologies within a design process to identify and solve problems by creating new, useful or imaginative solutions.

ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	ISTE-S.4.a.	Students know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems.
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ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	ISTE-S.4.b.	Students select and use digital tools to plan and manage a design process that considers design constraints and calculated risks.
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CONTENT AREA / STRAND		Digital Learning Standards
STRAND / ESSENTIAL STANDARD	ISTE-S.5.	Computational Thinker: Students develop and employ strategies for understanding and solving problems in ways that leverage the power of technological methods to develop and test solutions.

ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	ISTE-S.5.a.	Students formulate problem definitions suited for technology-assisted methods such as data analysis, abstract models and algorithmic thinking in exploring and finding solutions.
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ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	ISTE-S.5.b.	Students collect data or identify relevant data sets, use digital tools to analyze them, and represent data in various ways to facilitate problem-solving and decision-making.
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ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	ISTE-S.5.d.	Students understand how automation works and use algorithmic thinking to develop a sequence of steps to create and test automated solutions.
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Grade 11 - Adopted: 2020

CONTENT AREA / STRAND		NC K-12 Computer Science Standards
STRAND / ESSENTIAL STANDARD		Introduction to CS
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE		Algorithms & Programming
CLARIFYING OBJECTIVE		Algorithms

INDICATOR	ICS-AP-01.	Create prototypes that use algorithms to solve computational problems by leveraging prior student knowledge and personal interests.
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CONTENT AREA / STRAND		NC K-12 Computer Science Standards
STRAND / ESSENTIAL STANDARD		Introduction to CS
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE		Algorithms & Programming
CLARIFYING OBJECTIVE		Program Development

INDICATOR	ICS-AP-13.	Develop computational artifacts working in team roles using collaborative tools.
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CONTENT AREA / STRAND		NC K-12 Computer Science Standards
STRAND / ESSENTIAL STANDARD		Introduction to CS
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE		Impacts of Computing
CLARIFYING OBJECTIVE		Culture

INDICATOR	ICS-IC-04.	Test computational artifacts to reduce bias and equity deficits.
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INDICATOR ICS-IC-05. Demonstrate ways a given algorithm applies to problems across disciplines.

CONTENT AREA / STRAND		NC K-12 Computer Science Standards
STRAND / ESSENTIAL STANDARD		High School – CS Level 1
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE		Networks & The Internet
CLARIFYING OBJECTIVE		Network Communication & Organization

INDICATOR HS-NI-01. Identify issues of network functionality in computational artifact design.

INDICATOR HS-NI-02. Analyze issues of network functionality in computational artifact design.

CONTENT AREA / STRAND		NC K-12 Computer Science Standards
STRAND / ESSENTIAL STANDARD		High School – CS Level 1
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE		Networks & The Internet
CLARIFYING OBJECTIVE		Cybersecurity

INDICATOR HS-NI-03. Identify issues of unauthorized access and cybersecurity in computational artifact design.

INDICATOR HS-NI-04. Analyze issues of unauthorized access and cybersecurity in computational artifact design.

CONTENT AREA / STRAND		NC K-12 Computer Science Standards
STRAND / ESSENTIAL STANDARD		High School – CS Level 1
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE		Algorithms & Programming
CLARIFYING OBJECTIVE		Algorithms

INDICATOR HS-AP-01. Identify artificial intelligence algorithms.

INDICATOR HS-AP-02. Solve computational problems with classic algorithms.

CONTENT AREA / STRAND		NC K-12 Computer Science Standards
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STRAND / ESSENTIAL STANDARD		High School – CS Level 1
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE		Algorithms & Programming
CLARIFYING OBJECTIVE		Program Development
INDICATOR	HS-AP-09.	Create a computational artifact through an industry-standard process.
INDICATOR	HS-AP-10.	Justify that a computational artifact meets design specifications with systematic testing and debugging methods.

CONTENT AREA / STRAND		NC K-12 Computer Science Standards
STRAND / ESSENTIAL STANDARD		High School – CS Level 1
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE		Impacts of Computing
CLARIFYING OBJECTIVE		Culture
INDICATOR	HS-IC-05.	Create computational artifacts to ensure accessibility and reduce computational bias.

**North Carolina Standard Course of Study
Technology Education
Grade 12 - Adopted: 2020 (ISTE-S)**

CONTENT AREA / STRAND		Digital Learning Standards
STRAND / ESSENTIAL STANDARD	ISTE-S.3.	Knowledge Constructor: Students critically curate a variety of resources using digital tools to construct knowledge, produce creative artifacts and make meaningful learning experiences for themselves and others.
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	ISTE-S.3.d.	Students build knowledge by actively exploring real-world issues and problems, developing ideas and theories and pursuing answers and solutions.
CONTENT AREA / STRAND		Digital Learning Standards
STRAND / ESSENTIAL STANDARD	ISTE-S.4.	Innovative Designer: Students use a variety of technologies within a design process to identify and solve problems by creating new, useful or imaginative solutions.
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	ISTE-S.4.a.	Students know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems.

ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	ISTE-S.4.b.	Students select and use digital tools to plan and manage a design process that considers design constraints and calculated risks.
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CONTENT AREA / STRAND		Digital Learning Standards
STRAND / ESSENTIAL STANDARD	ISTE-S.5.	Computational Thinker: Students develop and employ strategies for understanding and solving problems in ways that leverage the power of technological methods to develop and test solutions.

ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	ISTE-S.5.a.	Students formulate problem definitions suited for technology-assisted methods such as data analysis, abstract models and algorithmic thinking in exploring and finding solutions.
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ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	ISTE-S.5.b.	Students collect data or identify relevant data sets, use digital tools to analyze them, and represent data in various ways to facilitate problem-solving and decision-making.
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ESSENTIAL STANDARD / CLARIFYING OBJECTIVE	ISTE-S.5.d.	Students understand how automation works and use algorithmic thinking to develop a sequence of steps to create and test automated solutions.
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Grade 12 - Adopted: 2020

CONTENT AREA / STRAND		NC K-12 Computer Science Standards
STRAND / ESSENTIAL STANDARD		Introduction to CS
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE		Algorithms & Programming
CLARIFYING OBJECTIVE		Algorithms

INDICATOR	ICS-AP-01.	Create prototypes that use algorithms to solve computational problems by leveraging prior student knowledge and personal interests.
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CONTENT AREA / STRAND		NC K-12 Computer Science Standards
STRAND / ESSENTIAL STANDARD		Introduction to CS
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE		Algorithms & Programming
CLARIFYING OBJECTIVE		Program Development

INDICATOR	ICS-AP-13.	Develop computational artifacts working in team roles using collaborative tools.
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CONTENT AREA / STRAND		NC K-12 Computer Science Standards
STRAND / ESSENTIAL STANDARD		Introduction to CS
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE		Impacts of Computing
CLARIFYING OBJECTIVE		Culture

INDICATOR ICS-IC-04. Test computational artifacts to reduce bias and equity deficits.

INDICATOR ICS-IC-05. Demonstrate ways a given algorithm applies to problems across disciplines.

CONTENT AREA / STRAND		NC K-12 Computer Science Standards
STRAND / ESSENTIAL STANDARD		High School – CS Level 1
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE		Networks & The Internet
CLARIFYING OBJECTIVE		Network Communication & Organization

INDICATOR HS-NI-01. Identify issues of network functionality in computational artifact design.

INDICATOR HS-NI-02. Analyze issues of network functionality in computational artifact design.

CONTENT AREA / STRAND		NC K-12 Computer Science Standards
STRAND / ESSENTIAL STANDARD		High School – CS Level 1
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE		Networks & The Internet
CLARIFYING OBJECTIVE		Cybersecurity

INDICATOR HS-NI-03. Identify issues of unauthorized access and cybersecurity in computational artifact design.

INDICATOR HS-NI-04. Analyze issues of unauthorized access and cybersecurity in computational artifact design.

CONTENT AREA / STRAND		NC K-12 Computer Science Standards
STRAND / ESSENTIAL STANDARD		High School – CS Level 1

ESSENTIAL STANDARD / CLARIFYING OBJECTIVE		Algorithms & Programming
CLARIFYING OBJECTIVE		Algorithms
INDICATOR	HS-AP-01.	Identify artificial intelligence algorithms.
INDICATOR	HS-AP-02.	Solve computational problems with classic algorithms.

CONTENT AREA / STRAND		NC K-12 Computer Science Standards
STRAND / ESSENTIAL STANDARD		High School – CS Level 1
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE		Algorithms & Programming
CLARIFYING OBJECTIVE		Program Development
INDICATOR	HS-AP-09.	Create a computational artifact through an industry-standard process.
INDICATOR	HS-AP-10.	Justify that a computational artifact meets design specifications with systematic testing and debugging methods.

CONTENT AREA / STRAND		NC K-12 Computer Science Standards
STRAND / ESSENTIAL STANDARD		High School – CS Level 1
ESSENTIAL STANDARD / CLARIFYING OBJECTIVE		Impacts of Computing
CLARIFYING OBJECTIVE		Culture
INDICATOR	HS-IC-05.	Create computational artifacts to ensure accessibility and reduce computational bias.