

Mapping Your Future Curriculum Matrix

Next Generation Science Standards

Unit I: Biotechnology and its Applications

Next Generation Science Standards

- MS-ETS1-1. Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.
- MS-ETS1-2. Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.
- MS-ETS1-3. Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.
- MS-ETS1-4. Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.
- HS-ETS1-1. Analyze a major global challenge to specify qualitative and quantitative criteria and constraint for solutions that account for societal needs and wants.
- 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.
- 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.

Common Core State Standards for English Language Arts & Literacy in History/Social Studies, Science, and Technical Subjects

- Reading Standards for Informational Text 1, 2, 3, 4, 5, 6, and 7 for Sixth grade to Twelfth grade

Activity: Biotechnology Timeline

Next Generation Science Standards

- MS-ETS1-1. Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.
- MS-ETS1-2. Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.
- MS-ETS1-3. Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.
- MS-ETS1-4. Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.
- HS-ETS1-1. Analyze a major global challenge to specify qualitative and quantitative criteria and constraint for solutions that account for societal needs and wants.
- 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.
- 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.

Common Core State Standards for English Language Arts & Literacy in History/Social Studies, Science, and Technical Subjects

- Reading Standards for Informational Text 1, 2, 3, 4, and 7 for Sixth grade to Twelfth grade
- Speaking and Listening Standards 1, 2, 4, and 6 for Sixth grade to Twelfth grade

Mapping Your Future Curriculum Matrix

Activity: Create a Logo

Next Generation Science Standards

- MS-ETS1-1. Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.
- MS-ETS1-2. Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.
- HS-ETS1-1. Analyze a major global challenge to specify qualitative and quantitative criteria and constraint for solutions that account for societal needs and wants.

Common Core State Standards for English Language Arts & Literacy in History/Social Studies, Science, and Technical Subjects

- Speaking and Listening Standards 1, 2, 3, 4, 5, and 6 for Sixth grade to Twelfth grade

Activity: Make a Yeast Incubator

Next Generation Science Standards

- MS-ETS1-1. Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.
- MS-ETS1-2. Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.
- MS-ETS1-3. Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.
- MS-ETS1-4. Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.
- MS-LS1-2. Develop and use a model to describe the function of a cell as a whole and ways parts of cells contribute to the function.
- HS-LS1-7. Use a model to illustrate that cellular respiration is a chemical process whereby the bonds of food molecules and oxygen molecules are broken and the bonds in new compounds are formed resulting in a net transfer of energy.

Common Core State Standards for English Language Arts & Literacy in History/Social Studies, Science, and Technical Subjects

- Speaking and Listening Standards 1, 2, and 4 for Sixth grade to Twelfth grade

Activity: DNA Extraction from Yeast

Next Generation Science Standards

- MS-ETS1-1. Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.
- MS-ETS1-2. Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.
- MS-ETS1-3. Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.
- MS-ETS1-4. Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.
- MS-LS1-2. Develop and use a model to describe the function of a cell as a whole and ways parts of cells contribute to the function.
- HS-LS1-1. Construct an explanation based on evidence for how the structure of DNA determines the structure of proteins which carry out the essential functions of life through systems of specialized cells.

Mapping Your Future Curriculum Matrix

Common Core State Standards for English Language Arts & Literacy in History/Social Studies, Science, and Technical Subjects

- Speaking and Listening Standards 1, 2, and 4 for Sixth grade to Twelfth grade

Unit II: Drug Discovery and Manufacturing

Next Generation Science Standards

- MS-ETS1-1. Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.
- MS-ETS1-2. Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.
- MS-ETS1-3. Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.
- MS-ETS1-4. Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.
- HS-ETS1-1. Analyze a major global challenge to specify qualitative and quantitative criteria and constraint for solutions that account for societal needs and wants.
- 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.
- 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.

Common Core State Standards for English Language Arts & Literacy in History/Social Studies, Science, and Technical Subjects

- Reading Standards for Informational Text 1, 2, 3, 4, 5, 6, and 7 for Sixth grade to Twelfth grade

Activity: New Drug Development

Next Generation Science Standards

- MS-ETS1-1. Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.
- MS-ETS1-2. Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.
- HS-ETS1-1. Analyze a major global challenge to specify qualitative and quantitative criteria and constraint for solutions that account for societal needs and wants.
- 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.
- 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.

Common Core State Standards for English Language Arts & Literacy in History/Social Studies, Science, and Technical Subjects

- Reading Standards for Informational Text 1, 2, 3, 4, 6, and 7 for Sixth grade to Twelfth grade
- Speaking and Listening Standards 1, 2, 4, and 6 for Sixth grade to Twelfth grade

Mapping Your Future Curriculum Matrix

Activity: Say What You Do and Do What You Say

Next Generation Science Standards

- MS-ETS1-1. Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.
- MS-ETS1-2. Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.
- HS-ETS1-1. Analyze a major global challenge to specify qualitative and quantitative criteria and constraint for solutions that account for societal needs and wants.
- 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.
- 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.

Common Core State Standards for English Language Arts & Literacy in History/Social Studies, Science, and Technical Subjects

- Writing Standards 2 for Sixth grade to Twelfth grade
- Speaking and Listening Standards 1, 3, 4, and 6 for Sixth grade to Twelfth grade

Unit III: Career Opportunities

Next Generation Science Standards

- HS-ETS1-1. Analyze a major global challenge to specify qualitative and quantitative criteria and constraint for solutions that account for societal needs and wants.

Common Core State Standards for English Language Arts & Literacy in History/Social Studies, Science, and Technical Subjects

- Reading Standards for Informational Text 1, 2, 3, 4, 5, 6, and 7 for Sixth grade to Twelfth grade

Activity: A Day in the Life of Six Biomanufacturing Employees

Next Generation Science Standards

- HS-ETS1-1. Analyze a major global challenge to specify qualitative and quantitative criteria and constraint for solutions that account for societal needs and wants.

Common Core State Standards for English Language Arts & Literacy in History/Social Studies, Science, and Technical Subjects

- Reading Standards for Informational Text 1, 2, and 3 for Sixth grade to Twelfth grade
- Writing Standards 1 and 2 for Sixth grade to Twelfth grade
- Speaking and Listening Standards 1, 2, 4, and 6 for Sixth grade to Twelfth grade

Activity: Selecting a Bioscience Career

Next Generation Science Standards

- HS-ETS1-1. Analyze a major global challenge to specify qualitative and quantitative criteria and constraint for solutions that account for societal needs and wants.

Mapping Your Future Curriculum Matrix

Common Core State Standards for English Language Arts & Literacy in History/Social Studies, Science, and Technical Subjects

- Reading Standards for Informational Text 1, 2, and 3 for Sixth grade to Twelfth grade
- Speaking and Listening Standards 1, 2, 4, and 6 for Sixth grade to Twelfth grade

Unit IV: Getting a Job and Getting Ahead

Common Core State Standards for English Language Arts & Literacy in History/Social Studies, Science, and Technical Subjects

- Reading Standards for Informational Text 1, 2, 3, 4, 5, 6, and 7 for Sixth grade to Twelfth grade

Activity: The Biomanufacturing Facility

Next Generation Science Standards

- MS-ETS1-1. Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.
- MS-ETS1-2. Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.
- MS-ETS1-3. Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.
- MS-ETS1-4. Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.
- HS-ETS1-1. Analyze a major global challenge to specify qualitative and quantitative criteria and constraint for solutions that account for societal needs and wants.
- 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.

Common Core State Standards for English Language Arts & Literacy in History/Social Studies, Science, and Technical Subjects

- Writing Standards 2 for Sixth grade to Twelfth grade
- Speaking and Listening Standards 1, 2, 4, and 6 for Sixth grade to Twelfth grade