I Promise Skill Statements
Science Grades 5-12

Grade Level	Develop and Use Models	Forming Arguments Using Evidence	Analyze and Interpret Data	Read and Understand Scientific, Informational Texts	Scientific Experimentation
5th	Use and explain provided scientific models	Support an argument based on given evidence	Read and use simple data tables and graphs	Read scientific texts to answer given questions	Conduct a scientific investigation.
6th	Use provided models to demonstrate an application of a concept	Support an argument based on given evidence and justify your opinion.	Create basic tables and graphs from sets of scientific data	Read scientific texts to answer given questions appropriately.	Conduct scientific investigations.
7th	Use provided models to demonstrate understanding through concept application.	Determine if data supplied supports a given argument.	Display data in a variety of formats	Summarize the text and determine if the source of data is appropriate and dependable.	Conduct and Design scientific investigations.
8th	Use provided models to demonstrate understanding through concept application.	Determine if data supplied supports a given argument.	Display data in a variety of formats	Summarize the text and determine if the source of data is appropriate and dependable.	Design and conduct scientific investigations.
9th	Develop simple models and interpret complex* models to apply understanding.	Cite specific data to adequately support a given conclusion.	Describe how one variable is mathematically related to another variable.	Use information from popular sources to enhance understanding of similar information from class.	Design and conduct scientific experiments.
10th	Use, develop & analyze models with multiple formats.	<u>1st Semester</u> Cite specific data from text, observations, and data and/or graphs to adequately support a given conclusion. <u>2nd Semester</u> Defend a claim by evaluating and analyzing whether supporting data was interpreted	Examine line graphs to determine if they show a direct or inverse relationship between variables. Identify and compare scales used in different data representations.	Read multiple scientific texts and determine how the findings are consistent or inconsistent.	

		appropriately.			
11-12th	Use, develop & analyze complex* models to make predictions.	Evaluate the merits of a claim based on the analysis of several data sets.	Identify mathematical relationships in data sets, analyze the data sets & make predictions based on that analysis.	Read scientific texts to seek out new findings that enhance or challenge existing understanding.	

*complex model = multiple formats and mathematical applications

Implementation Brainstorming

9th Grade	*Develop simple models and interpret complex* models to apply understanding.*	*Cite specific data to adequately support a given conclusion.*	*Describe how one variable is mathematically related to another variable.*	*Use information from popular sources to enhance understanding of similar information from class.*	*Design and conduct scientific experiments.*
	• Seasons model development • Cloud formation model • Weather front models • Compositional and mechanical layers of the earth model • Fusion (Hydrogen) • Kepler's laws? •	• Cloud formation (dew point and temperature table) • C.E.R. Outcome (S.ES.1.4) • Planet characteristics comparison / contrast •	•	• Why is Water Essential to Life?	
	❑	❑	❑	❑ Exoplanet's Article (Science News) ❑	
10th Grade	*Use, develop & analyze models with multiple formats.*	*Defend a claim by arguing whether supporting data was interpreted appropriately.*	*Examine line graphs to determine if they show a direct or inverse relationship between variables.* *Identify and compare scales used in different data representations.*	*Read multiple scientific texts and determine how the findings are consistent or inconsistent.*	*Design and conduct scientific experiments.*

Biology	• atom • Water molecule • Enzyme function • Mitosis and meiosis • Photosynthesis • Cell respiration • DNA replication • Protein synthesis • Punnett squares • Food chains, food, webs,and energy pyramids • Anatomical structures • Water, carbon, nitrogen cycles	• Enzyme reactions • Identifying biological molecules • •	• Carrying capacity	• Cell division-Mitosis and meiosis	
11th and 12th Grade	*Use, develop & analyze complex* models to make predictions*	*Evaluate the merits of a claim based on the analysis of several data sets.*	*Identify mathematical relationships in data sets, analyze them & make predictions based on that analysis.*	*Use information from popular sources to enhance understanding of similar information from class.*	*Design and conduct scientific experiments.*
Physics	• Constant Velocity • Constant Acceleration •	•	•	•	
	❑	❑	❑	❑	
Environmental Science	• Food chain, web, and pyramids • Nitrogen cycle • Carbon cycle • Population dynamics	•	• Food pyramids (~10% energy) • Calculations of carrying capacity	• The Sixth Extinction (1st Semester)	
	❑	❑	❑	❑	
Chemistry	• Atom • Classifying matter • Phase diagrams • Periodic table • Orbital diagrams • Gas laws • Chemical equations • Stoichiometry • Fission and fusion		• Density • Stoichiometry • • Gas laws		• Reaction rates

DC Biology	• atom • Water molecule • Enzyme function • Mitosis and meiosis • Photosynthesis • Cell respiration • DNA replication • Protein synthesis • Punnett squares				• Enzyme function
Forensics	• Crime scene drawing • Hair • Fiber types • DNA • Fingerprint characteristics • Blood spatter patterns • Skeleton • Trajectory		• STR's		

Develop & Use Models
Forming Arguments Using Evidence
Analyze & Interpret Data (Multiple Forms, Graphs, Charts, Paragraphs, Compare Experiments)
Read & Understand Scientific, Informational Texts (Viable Research)

-Develop & Use Models

5th-
- Simple models
- Provided models
- More pictorial & graphical

Use and explain provided scientific models

6th-
- Use provided models to demonstrate an application of a concept
- Demonstrating a model through application

7th-

- Demonstrating a model through application

Concept Application
Classifying
Mathematical
8th-
9th-

- Original model that is modified over time

Original Models
Develop, Interpret
10th-
11th-12th-
Use, develop & analyze complex models with multiple formats & mathematical applications

- Label detailed models
- Explain a complex process (photosynthesis)
- Equations can be models

Complex Process
Multiple Formats
Equations

- Analyze & Interpret Data (Multiple Forms, Graphs, Charts, Paragraphs, Compare Experiments)

5th-

- Provided data
- Guided
- Graphs & tables
    - Bar, Pie, Line

Read and use simple data tables and graphs
6th-
Create basic tables and graphs from sets of scientific data
7th-

- Dependent & Independent variables

Display data in a variety of formats
8th-

Display data in a variety of formats

9th-

- Self-collected data
- Created graphs
- Data complexity
- Text
- Start self-scaling

Use provided scale

Cite specific data to adequately support a given conclusion (one variable is mathematically related to another variable)

11th-12th-

- Self-collected data
- Complex data/representations (multiple)
- Independent
- Mathematical relationships

Determine appropriate scale

Identify mathematical relationships in data sets, analyze them & make predictions based on that analysis