MODULE TEMPLATE

MODULE TOPIC:
Think Like a Scientist to Solve a Problem

STANDARD(S) & INDICATOR(S):
(Note: This section should include all standards listed in the lessons.)
5.1.12.B.1: Design investigations, collect evidence, analyze data, and evaluate evidence to determine measures of central tendencies, causal/correlational relationships, and anomalous data.
5.1.12.D.1: Engage in multiple forms of discussion in order to process, make sense of, and learn from others’ ideas, observations, and experiences.
5.3.12.A.1: Represent and explain the relationship between the structure and function of each class of complex molecules using a variety of models.

OBJECTIVE(S):
(Note: This section should include all objectives listed in the lessons.)
• Apply Scientific method to solve a problem.
• Create different types of graph representing data obtained during lab activity, and identifying correctly independent and dependent variable.
• Apply scientific principles to build and refine standards for data collection, posing controls, and presenting evidence.
• Analyze structure and function of macromolecules

LIST OF LESSONS:
Lesson 1: Scientific thinking skills
Lesson 2: Structure and Function of Macromolecules

REFERENCES:
LESSON TOPIC:
Scientific thinking skills

STANDARD(S) & INDICATOR(S):
5.1.12.A.1: Refine interrelationships among concepts and patterns of evidence found in different central scientific explanations.
5.1.12.B.1: Design investigations, collect evidence, analyze data, and evaluate evidence to determine measures of central tendencies, causal/correlational relationships, and anomalous data.
5.1.12.B.3: Revise predictions and explanations using evidence, and connect explanations/arguments to established scientific knowledge, models, and theories.
5.1.12.C.1: Reflect on and revise understandings as new evidence emerges.
5.1.12.D.1: Engage in multiple forms of discussion in order to process, make sense of, and learn from others’ ideas, observations, and experiences.

OBJECTIVE(S): Students will be able to:
✓ Explain the usage and steps of the scientific method in pair-share setting using their note-taking guide if needed.
✓ Apply Scientific method to solve a problem or answer a question:
  - Marshmallow challenge
  - Flashlight activity
  - Jumping jack activity
✓ Identify experimental and control group during an experiment.
✓ Compare and contrast independent and dependent variable.
✓ Create different types of graph representing data obtained during lab activity, and identify correctly independent and dependent variable.

CLASSROOM ACTIVITY DESCRIPTION
Learning Experience
Fill in Note-taking guide (helps organize ideas and binder).
• Marshmallow challenge
  • Work in groups
  • Apply scientific method while having fun
• Obtain & present Results
• interdisciplinary (engineering)

Flashlight Activity
✓ Work in pair-share setting
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✓ Explain scientific method  
✓ Organize ideas  
✓ Apply scientific method (hands on activity)

Jumping Jack Activity  
✓ Research topic  
✓ Conduct experiment  
✓ Create tables, graphs, and diagrams for data/results  
✓ Analysis of results  
✓ Create lab report  
✓ Involve HOTS (analysis)

STUDENT ASSESSMENT OUTCOMES:  
• Complete note-taking guide (daily grade)  
• Complete worksheets created on application of scientific method.  
• Apply scientific method to different hands on activities:  
  • Marshmallow challenge  
  • Flashlight activity  
  • Simpsons’ worksheet  
  • Solving Farmer Joe’s Case  
  • Jumping jack activity.  
• Create graphs for data obtained during lab activity.  
• Write lab report, describing their findings during lab activity.  
• Review activity (inner & outer circle)
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LESSON 2.

LESSON TOPIC:
Structure and Function of Macromolecules

OBJECTIVE(S): Students will be able to:
✓ Define in their own words: organic compounds, biomolecules, macromolecules, and monomers using a graphic organizer.
✓ Describe the structures and functions of each of the four groups of macromolecules
✓ Compare and contrast carbohydrates, proteins, and lipids.
✓ Analyze the correlation between food, macromolecule and energy.
✓ Analyze which solution is a carbohydrate, lipid, starch, and protein by using chemical indicators.
✓ Define in their own words: organic compounds, biomolecules, macromolecules, and monomers using a graphic organizer.
✓ Describe the structures and functions of each of the four groups of macromolecules
✓ Compare and contrast carbohydrates, proteins, and lipids.
✓ Analyze the correlation between food, macromolecule and energy.
✓ Analyze which solution is a carbohydrate, lipid, starch, and protein by using chemical indicators.

CLASSROOM ACTIVITY DESCRIPTION
• Understand macromolecule structure and function.
• Conduct biomolecule testing experiment and solve the case of Who took Juan’s iPod.

Learning Experience
➢ Exploration phase:
  ✓ Analyze the saying “You are what you eat”
  ✓ Graphic organizer of a typical meal
➢ Explanation:
  ✓ Note-taking guide (Macromolecules)
  ✓ Activities/projects
➢ Application:
  ✓ 4 corner activity
  ✓ Graffiti activity
  ✓ Lab activity (divided in 2)

PARAMETERS TO EVALUATE STUDENT WORK PRODUCTS:
✓ Lab report
✓ Superfood project/ gallery walk
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Contributors
Angela Ramirez (Union City High School, Union City, NJ), Primary Author
Howard Kimmel, Levelle Burr-Alexander, John Carpinelli - Center for pre-College Programs, NJIT
Chris D’Ambrose, Dr. Ramana Susarla, Dr. Lucas Sievens Figueroa, Dr. James Scicolone
Rajesh Dave - C-SOPS, NJIT

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Center for Pre-College Programs & Newark College of Engineering
New Jersey Institute of Technology