

## COURSE DESCRIPTION

# *Biology*

### PHILOSOPHY

“In the beginning, God created the heavens and the earth.” God provided an orderly universe. All matter and energy was created by God and comes from Him. Changes in the form of matter and energy are continuously occurring, with a downward trend. Though the physical universe usually functions according to the natural laws God established, He sometimes chooses to intervene in miraculous ways. God preserves His creation so that it continues to function as He has planned. All creation was affected by the sin of mankind in the Garden of Eden. Mankind’s ability to observe and understand the truth of creation is impaired by sin. God expects people to recognize Him as we study His creation.

### CONTENT

Definition of life. DNA. Energy production and consumption. The scientific method. Biological classification. Species and classification. Chemical changes in living things. The cell. Cellular reproduction. Genetics. Evolution. Ecosystems. Anatomy, physiology, and classification in the plant and animal kingdom.

### OBJECTIVES

Students will acquire experience and competence in the content areas listed above. Students will be able to define terms, discuss concepts, evaluate perspectives, and analyze information related to the living world. Students will perform laboratory experiments and activities to develop lab skills and experiences. Students will receive a broad overview of God’s creation and develop an appreciation of the wonder of God’s mighty power.

### TEXT

*Biology, Fifth Edition*, BJU Press  
*Biology Lab Manual*, BJU Press

### INSTRUCTIONAL MATERIALS

Textbook, supplemental reading, videos, laboratory exercises, internet resources, guest speakers, field trips

### EVALUATION

Tests, quizzes, homework assignments, lab assignments

### TIME & CREDIT

55 min/day, 5 days/week, ½ credit per semester, first & second semesters, offered to 9<sup>th</sup> – 10<sup>th</sup> grades in odd-even school years (2019-20, 2021-22)

## COURSE DESCRIPTION

# *Physical Science*

### **PHILOSOPHY**

“In the beginning, God created the heavens and the earth.” God provided an orderly universe. All matter and energy was created by God and comes from Him. Changes in the form of matter and energy are continuously occurring, with a downward trend. Though the physical universe usually functions according to the natural laws God established, He sometimes chooses to intervene in miraculous ways. God preserves His creation so that it continues to function as He has planned. All creation was affected by the sin of mankind in the Garden of Eden. Mankind’s ability to observe and understand the truth of creation is impaired by sin. God expects people to recognize Him as we study His creation.

### **CONTENT**

The basics of matter. Scientific measurement. Air and the gases that compose it. Earth’s atmosphere. Water’s composition and properties. The hydrosphere and hydrologic cycle. The lithosphere and layers of Earth. Meteorology. Introduction to the physics of motion and Newton’s laws. Gravitation and circular periodic motion. Electricity and electromagnetic force. Atomic structure, behavior and forces. Waves and sound. Electromagnetic radiation, specifically relating to the visible spectrum. Introductory astrophysics.

### **OBJECTIVES**

Students will acquire experience and competence in the content areas listed above. Students will be able to define terms, discuss concepts, evaluate perspectives, and analyze information related to the structure of the universe. Students will perform laboratory experiments and activities to develop lab skills and experiences. Students will receive a broad overview of God’s creation and develop an appreciation of the wonder of God’s mighty power.

### **TEXT**

*Physical Science, Fifth Edition*, BJU Press  
*Physical Science Lab Manual*, BJU Press

### **INSTRUCTIONAL MATERIALS**

Textbook, supplemental reading, videos, laboratory exercises, internet resources, guest speakers, field trips

### **EVALUATION**

Tests, quizzes, homework assignments, lab assignments

### **TIME & CREDIT**

55 min/day, 5 days/week, ½ credit per semester, first & second semesters, offered to 9<sup>th</sup> – 10<sup>th</sup> grades in even-odd school years (2020-21, 2022-23)

## COURSE DESCRIPTION

# Chemistry

### PHILOSOPHY

“In the beginning, God created the heavens and the earth.” God provided an orderly universe. All matter and energy was created by God and comes from Him. Changes in the form of matter and energy are continuously occurring, with a downward trend. Though the physical universe usually functions according to the natural laws God established, He sometimes chooses to intervene in miraculous ways. God preserves His creation so that it continues to function as He has planned. All creation was affected by the sin of mankind in the Garden of Eden. Mankind’s ability to observe and understand the truth of creation is impaired by sin. God expects people to recognize Him as we study His creation.

### CONTENT

Measurements and units. Energy, heat and temperature. Atoms and molecules, and a history of atomic theories. Conservation of mass. The Periodic Table of the Elements. Molecules and compounds. Mixtures. Phases of matter. Chemical reactions and chemical equations. Decomposition, formation, and combustion reactions. Mole relationships. Limiting reactants and excess components. Volume and mass relationships for chemical equations. Stoichiometry. Atomic structure. Quantum mechanics and the atom. Lewis structures. Ionization potential and electronegativity. Polyatomic ions. Molecular geometry and the VESPR theory. Purely covalent and polar covalent molecules. Acids and bases. Acid-base titration. Solubility and solutes. Freezing point depression and boiling point elevation. The combined gas equation and the ideal gas equation.

### OBJECTIVES

Students will acquire experience and competence in the content areas listed above. Students will be able to define terms, discuss concepts, evaluate perspectives, and analyze information related to interactions of atoms and molecules. Students will perform laboratory experiments and activities to develop lab skills and experiences. Students will receive a broad overview of God’s creation and develop an appreciation of the wonder of God’s mighty power.

### TEXT

*Chemistry, Fourth Edition*, BJU Press

*Exploring Creation with Chemistry, Second Edition*, Apologia Publishing

### INSTRUCTIONAL MATERIALS

Textbook, supplemental reading, videos, laboratory exercises, internet resources, guest speakers, field trips

### EVALUATION

Tests, quizzes, homework assignments, lab assignments

### TIME & CREDIT

55 min/day, 5 days/week, ½ credit per semester, first & second semesters, offered to 11<sup>th</sup> – 12<sup>th</sup> grades in odd-even school years (2019-20, 2021-22)

## COURSE DESCRIPTION

# Physics

### PHILOSOPHY

“In the beginning, God created the heavens and the earth.” God provided an orderly universe. All matter and energy was created by God and comes from Him. Changes in the form of matter and energy are continuously occurring, with a downward trend. Though the physical universe usually functions according to the natural laws God established, He sometimes chooses to intervene in miraculous ways. God preserves His creation so that it continues to function as He has planned. All creation was affected by the sin of mankind in the Garden of Eden. Mankind’s ability to observe and understand the truth of creation is impaired by sin. God expects people to recognize Him as we study His creation.

### CONTENT

Accuracy, precision and significant figures. Distance and displacement. Speed, velocity and acceleration. Motion of falling masses. Force vectors. Projectile motion. Newton’s laws of motion. Gravity. Rotational motion and torque. Friction. Uniform circular motion. Centripetal force. Work and energy. Thermodynamics. Power. Momentum. Periodic motion. Waves in relation to sound and electromagnetic radiation. The nature of light. Reflection and refraction. Converging and diverging optics. Electrical charges. Electric potential and capacitors. Batteries, current and circuits. Resistance. Magnets and magnetic fields. Electromagnetic induction. R.E.S.I.R.D. contest. Bridge building contest.

### OBJECTIVES

Students will acquire experience and competence in the content areas listed above. Students will be able to define terms, discuss concepts, evaluate perspectives, and analyze information related to properties and interactions of matter and energy. Students will perform laboratory experiments and activities to develop lab skills and experiences. Students will receive a broad overview of God’s creation and develop an appreciation of the wonder of God’s mighty power.

### TEXT

*Physics, Third Edition*, BJU Press

*Exploring Creation with Physics, Second Edition*, Apologia Publishing

### INSTRUCTIONAL MATERIALS

Textbook, supplemental reading, videos, laboratory exercises, internet resources, guest speakers, field trips

### EVALUATION

Tests, quizzes, homework assignments, lab assignments, special projects

### TIME & CREDIT

55 min/day, 5 days/week, ½ credit per semester, first & second semesters, offered to 11<sup>th</sup> – 12<sup>th</sup> grades in even-odd school years (2019-2020, 2021-2022)