

## **DBCS CURRICULUM GUIDE FOR SCIENCE DEPARTMENT**

**Biblical Basis for the SCIENCE DEPARTMENT:** To develop the knowledge and skills necessary to be good stewards of God's creation, adhering to the creation mandate, through the understanding of the physical laws that govern the universe.

(Gen. 1:1-31, Heb 11:3, Col. 1:15-17, 1 Peter 4:10)

### **SCIENCE DEPARTMENT CURRICULUM:**

A graduate of Denbigh Baptist Christian School should...

1. defend creationism and reveal the weaknesses of evolution and other false theories through scientific facts. (Expected Student Outcomes 1, 2, 3, 4, 7, 8, 9)
2. recognize and respect the interdependence of factors within an ecosystem. (ESO 2, 3, 7)
3. recognize the orderliness of science through the scientific method and scientific laws. (ESO 3, 7, 9)
4. incorporate Biblical principles for making ethical scientific choices. (ESO 1, 2, 7, 8, 9, 10, 11, 16)
5. conduct meaningful scientific research appropriate for future college and/or career assignments. (ESO 2, 3, 4, 5, 9, 14, 17)
6. realize the importance of each person in God's plan for the world. (ESO 1, 6, 7, 9, 10, 11, 12, 14, 15, 16, 17)
7. communicate effectively and accurately in both written and oral forms. (ESO 2, 3, 4, 5)

## **K5 SCIENCE CURRICULUM – PURPOSEFUL DESIGN:**

The student will:

- 1. begin to see the purpose of God’s created world. (Science dept. # 6)
- 2. further explore Creation of each man’s purposeful, physical design through the study of the five senses. (Science dept. # 1, 4, 6)
- 3. further explore the creation of God’s physical world through the scientific topics of weather and seasons. (Science dept. # 1, 2, 3, 4.)
- 4. study the life cycle of certain plants and animals. (Science dept. # 2, 3, 4)
- 5. recognize the significance and purpose of the sea and sea life. (Science dept. # 2, 4)

## **1<sup>st</sup> GRADE SCIENCE CURRICULUM – PURPOSEFUL DESIGN: LEVEL 1**

The student will:

- 1. Realize they are God’s creation and are created for a purpose. (Science dept. #1, 6)
- 2. Learn about God’s wisdom and His provision for all creation throughout the study of the animal kingdom. (Science dept. #1,2,3)
- 3. Understand the basic concepts of movements and simple machines and how they are used to make work easier. (Science dept. #3,5)
- 4. Develop a basic knowledge of the human body and God’s provision on to how bodily systems function and work together. (1,3,6)
- 5. Discover how to predict and outcome by using the scientific method. (Science dept.#3,4,5)
- 6. Understand the greatness of nature’s design points to a Master Designer. (Science dept. #1, 6)

## **2<sup>nd</sup> GRADE SCIENCE CURRICULUM – PURPOSEFUL DESIGN: LEVEL 2**

The student will:

- 1. realize the importance of their individual life in God’s plan. (Science dept. 6)
- 2. learn to better appreciate and care for their body. (Science dept. 6)
- 3. become familiar with several species of the animal kingdom. (Science dept. 2)
- 4. increase their awareness of animals in their environment. (Science dept. 2)
- 5. develop a deeper reverence for God as they come to a better understanding of the importance of plants in their lives. (Science dept. 2)
- 6. develop a basic understanding of God’s plan for the plant and animal world. (Science dept. 2)
- 7. develop an understanding of how their everyday work and play activities are dependent up the basic principles of energy, heat and light. (Science dept. 3)
- 8. better understand the atmosphere and the causes of various weather conditions. (Science dept. 3)
- 9. gain a basic understanding of the ocean. (Science dept. 3)

### **3<sup>rd</sup> GRADE SCIENCE CURRICULUM – PURPOSEFUL DESIGN: LEVEL 3**

The student will:

- 1. recognize the difference in ecosystems and the factors which affect them. (Science dept. #2)
- 2. become familiar with different habitats and how each is designed specifically for the animal and plant life living in them. (Science dept. #2)
- 3. develop a deeper reverence for the Creator of these marvels as he/she comes to a better understanding of plants and animals, and their importance in our lives. (Science dept. #2)
- 4. learn that matter is not eternal but it has a degree of consistency and stability that allows he/she to measure, mix, and manipulate it (Science dept. # 3)
- 5. recognize the difference between work and power and its effect on us, and our place in God’s creation. (Science dept. # 2, 3, 4)
- 6. develop an understanding of how their everyday activities are dependent upon the basic principles of energy, and light. (Science dept. #3)
- 7. develop a better understanding about our atmosphere and the causes of various weather conditions. (Science dept. # 3)
- 8. learn God’s purposeful design through the study of the earth, the atmosphere, and the solar system. (Science # 1, 2, 3)
- 9. recognize the vastness and variety of God’s creation through a study of space. (Science dept. #3)
- 10. learn to appreciate and care for their body. (Science dept. #6)

#### **4<sup>th</sup> GRADE SCIENCE CURRICULUM – PURPOSEFUL DESIGN: LEVEL 4**

The student will:

- 1. enhance their observation skills and apply them to the scientific method. (Science dept. #3)
- 2. gain a better understanding of God’s orderliness and design in creation. (Science dept. #1, 2, and 6)
- 3. identify selected insects, plants, birds, rocks, and types of marine life. (Science dept. #1, 2, 3, 4, and 5)
- 4. learn the basic structure of the earth, the atmosphere, and the solar system. (Science dept. # 1, 2, and 3)
- 5. study basic meteorology and auditory perception. (Science dept. #1, 2, 5, and 6)

## **5<sup>th</sup> GRADE SCIENCE CURRICULUM – BOB JONES UNIVERSITY PRESS, SCIENCE 5**

The student will:

- 1. appreciate the abundant variety in the plant and animal kingdoms. (Science dept. # 1, 2, 3, 7)
- 2. discover the causes and effects of weather. (Science dept. # 1, 2)
- 3. examine the structure of our planet. (Science dept. # 1, 2, 3)
- 4. explore ecosystem interactions. (Science dept. # 1, 2)
- 5. analyze the ecology of the ocean depths. (Science dept. # 1, 2, 7)
- 6. recognize functions of matter, energy, and heat (Science dept. #1, 3)
- 7. explore the principles of light. (Science dept. # 1, 3)
- 8. Examine the human respiratory system (Science dept. # 1, 3, 4, 6)

## 6<sup>th</sup> GRADE SCIENCE CURRICULUM –

The student will:

- 1. become familiar with the structure and functions of animals. (Science dept. # 2)
- 2. recognize the structure and function of plants. (Science dept. # 2)
- 3. become familiar with the basic structures and functions of cells. (Science dept. # 2)
- 4. have an understanding of the structure, functions and movements of the earth. (Science dept. # 3)
- 5. recognize the vastness and variety of God's creation through a study of space. (Science dept. # 3)
- 6. recognize the physical laws that govern matter and energy. (Science dept. # 3)

## 7<sup>th</sup> GRADE SCIENCE CURRICULUM – LIFE SCIENCE

The student will:

- 1. defend creationism and reveal weaknesses of evolution through scientific facts. (Science dept. # 1)
- 2. understand that life is dependant on the function and processes of cells. (Science dept. # 2, 3)
- 3. recognize the characteristics of the 6 living kingdoms. (Science dept. # 2)
- 4. gain an understanding of the structure and functions of plant life through study and experimentation. (Science dept. # 2, 5)
- 5. gain an understanding of a variety of animal life through study, dissection and experimentation. (Science dept. # 2, 5)
- 6. recognize the difference in ecosystems and the factors which affect them. (Science dept. # 2)
- 7. use biblical principles in making decisions which affect the living community. (Science dept. # 4)
- 8. use the scientific method to find solutions to problems. (Science dept. # 3, 5)
- 9. gain an understanding of the ways in which organisms interact in our world and our place in God's creation. (Science dept. # 2, 3, 4, 6)
- 10. Gain an understanding of human anatomy and physiology through the study of each of the human body systems and the organs associated with them. (Science dept. # 4,6)
- 11. Recognize that as God's greatest creation we have the sole responsibility to be good stewards of all that He has given us so that we, in turn, can carry out the Great Commission. (Science dept. # 6).
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## **8<sup>th</sup> GRADE SCIENCE CURRICULUM – EARTH SCIENCE**

The student will:

- 1. defend creationism and reveal the weaknesses of evolution through the application of scientific facts. (Science dept. #1)
- 2. recognize the vastness of God's creation through the study of space and the laws which govern it. (Science dept. # 3)
- 3. realize the importance of our atmosphere and the laws which govern its function. (Science dept. # 2, 3, 4)
- 4. understand the structure, composition, and movement of the earth and the factors which affect it. (Science dept. # 2, 3, 4)
- 5. understand the structure, composition, and movement of the ocean, and the factors which affect it. (Science dept. # 2, 3, 4)
- 6. gain an understanding of the ways in which the parts of our physical environment work together to form our world, its affect on us, and our place in God's creation. (Science dept. # 2, 3, 4)

## 9<sup>th</sup> GRADE SCIENCE CURRICULUM – PHYSICAL SCIENCE

The student will:

- 1. demonstrate the use of the scientific method. (Science dept. # 3)
- 2. record data in both qualitative and quantitative form. (Science dept. # 5)
- 3. demonstrate the proper use of scientific instruments used in a physical science laboratory. (Science dept. # 5)
- 4. recognize the physical and chemical properties in all states of matter. (Science dept. # 3)
- 5. explain the process of bonding in chemical compounds. (Science dept. # 3)
- 6. recognize the properties of individual elements using the periodic table. (Science dept. # 3)
- 7. use the physical laws to defend creationism and refute evolution. (Science dept. # 1)
- 8. identify the various forms of energy. (Science dept. # 2, 3)
- 9. use mathematical equations to explain physical laws. (Science dept. # 3)

## **10<sup>th</sup> GRADE SCIENCE CURRICULUM – BIOLOGY**

The student will:

- 1. recognize the weaknesses of evolution through various biological examples. (Science dept. # 1)
- 2. explain the steps and importance of the scientific method. (Science dept. # 3)
- 3. differentiate between animal and plant cell division. (Science dept. # 3)
- 4. explain the function and processes of cells and how they sustain all living things. (Science dept. # 2, 3)
- 5. demonstrate the proper use of scientific instruments used in a biological laboratory. (Science dept. # 5)
- 6. explain the genetic reasons behind why living organisms look they way they do. (Science dept. # 3)
- 7. differentiate between the characteristics of the five kingdoms. (Science dept. # 3)
- 8. recognize the internal and external features of the five kingdoms. (Science dept. # 2)
- 9. identify an illness and state its biological cause, method of treatment, and means of reducing exposure in the future. (Science dept. # 2)

## CHEMISTRY SCIENCE CURRICULUM

The student will:

- 1. investigate the qualitative and quantitative study of substances and the changes that occur in them through the use of laboratory techniques, manipulation of chemical quantities, and problem-solving applications. (Science dept. #1, 3, 5)
- 2. investigate and understand that the placement of elements in the periodic table is a function of their electronic configuration. (Science dept. # 3, 5)
- 3. investigate and understand how conservation of energy and matter is expressed in chemical formulas and balanced equations. (Science dept. # 1, 3, 5)
- 4. investigate and understand that quantities in a chemical reaction are based on molar relationships. (Science dept. # 1, 3, 5)
- 5. investigate and understand that the kinetic theory and forces of attraction between particles explain the phases of matter. (Science dept. # 3, 5)
- 6. investigate and understand the theories of molecular structure and the relationship between structure and properties of matter. (Science dept. # 3, 5)

## GENETICS SCIENCE CURRICULUM

The student will:

- 1. recognize the weaknesses of evolution through various genetic examples. (Science Dept. # 1)
- 2. explain the genetic reasons behind why living organisms look they way they do. (Science Dept. # 3)
- 3. differentiate between the structural form of eukaryotic and prokaryotic chromosomes. (Science Dept. # 3)
- 4. differentiate between the processes seen in eukaryotic and prokaryotic chromosomes. (Science Dept. # 3)
- 5. explain how mutations and external factors such as microorganisms and environmental factors can have an effect on cellular functions (Science Dept. # 2)
- 6. demonstrate the proper techniques for conducting and analyzing genetic research (Science Dept. #5)
- 7. defend Mendelian genetics with data from their own genetic research (Science Dept. # 5, 7)
- 8. defend their position on current bioethical issues in the news with scripture (Science Dept. # 4, 6)

## **HUMAN ANATOMY & PHYSIOLOGY SCIENCE CURRICULUM**

The student will:

1. recognize the weaknesses of evolution through various anatomical examples. (Science Dept. #1)
2. identify the functions of cellular processes, cellular organelles, and organic substances in the human body. (Science Dept. #3)
3. identify the correct position of the anatomical organs in the human body. (Science Dept. #3)
4. explain the physiological reasons behind why human organs work the way they do. (Science Dept. #3)
5. demonstrate the proper techniques for conducting and analyzing scientific research (Science Dept. #5, 7)
6. defend their position on current bioethical issues in the news with scripture (Science Dept. #4, 6, 7)

## PHYSICS SCIENCE CURRICULUM

The student will:

- 1. understand the practical application of physics in other areas of science and technology and how physics affects our world. (Science Dept. 5)
- 2. investigate and understand how to conduct laboratory investigations and how to analyze and interpret data. ( Science Dept. 3, 5)
- 3. investigate and understand the basic concepts of classical Newtonian mechanics. (Science Dept. 3, 5)
- 4. investigate and understand that mass, energy, momentum, and charge are conserved. (Science Dept.1, 3, 5)
- 5. investigate and understand that energy can be transferred and transformed to provide usable work. (Science Dept. 3, 5)
- 6. investigate and understand wave theory and its application to sound and the electromagnetic spectrum. (Science Dept.3, 5)
- 7. investigate and understand how light behaves in the fundamental processes of reflection, refraction, and image formation in describing optical systems. (Science Dept. 3, 5)
- 8. investigate and understand how to diagram and construct basic electrical circuits and explain the function of various circuit components. (Science Dept. 3, 5)
- 9. investigate and understand fundamental forces and elementary particles of matter and the basic concepts of modern physics. (Science Dept. 1, 3, 4, 5)

## **AP BIOLOGY SCIENCE CURRICULUM**

The student will:

1. understand how evolutionists believe the process of evolution drives the diversity and unity of life and know how to refute the data in order to defend a biblical worldview. (Science dept. #1, 3, 6, 7)
2. explain how biological systems utilize free energy and molecular building blocks to grow, to reproduce and to maintain dynamic homeostasis. (Science dept. #3, 5, 7)
3. explain how living systems store, retrieve, transmit and respond to information essential to life processes. (Science dept. #3, 5, 7)
4. explain biological systems interact, and these systems and their interactions possess complex properties. (Science dept. #2, 3, 4, 5, 6, 7)