Northside Christian Academy
Curriculum Guide

Subject: Physical Science Grade(s): 9

Philosophy Statement
Throughout the Scriptures nature is used to illustrate Biblical principles. In Proverbs the instruction is to look at the ant for work habits. Romans reminds that one simply needs to look at nature to see the hand of God. Because of this vital link between nature and Scripture, it is important for students to have a thorough understanding of things created in order to know the Creator. The physical and biological sciences are the vehicles we can use to demonstrate His nature.

Course Description
This course serves as a beginning course in science and provides an overview of several important topics in Chemistry and Physics. This includes the Periodic Table, types of bonding, chemical reactions, energy, mechanics, waves, heat, and electricity. This course is required for freshmen.

General Course Goals
- Understand the relationship between the Bible and Science
- Learn the Scientific Method
- Understand measurement of matter
- Understand the properties of matter
- Comprehend the classification of matter
- Comprehend Atomic Models
- Recognize families of atoms
- Comprehend the forces between atoms
- Understand how reactions take place
- Understand solutions and solubility
- Recognize the relationships between acids, Bases, and Salts
- Comprehend the relationship between matter and energy
- Understand the nature of Mechanics
- Comprehend the mechanical principles of machines
- Comprehend Thermal Energy
- Comprehend the properties of electricity
- Gain insight into electronics
- Understand the concepts of magnetism
- Understand the concepts of sound
- Comprehend the components of light

Text(s)/Class Resources
- *The Physical World: An Introduction To Physical Science* Bob Jones, 2000
- Teacher Edition from publisher
- Scientific Calculator
- Notebook with 3 dividers

Time Allotment
- One 45 minute class per day, 5 times per week
- Course length: two semesters

Assessment
- One quiz and one test per unit
- One cumulative exam
- Homework checked as assigned

Northside Christian Academy
Curriculum Guide

Subject: Biology Grade(s): 10

Philosophy Statement
Throughout the Scriptures nature is used to illustrate biblical principles. In Proverbs the instruction is to look at the ant for work habits. Romans reminds that one simply needs to look at nature to see the hand of God. Because of this vital link between nature and Scripture, it is important for students to have a thorough understanding of things created in order to better know the Creator. The physical and biological sciences are the vehicles we can use to demonstrate His nature.

Course Description
The biology course is designed to develop in students a more in-depth understanding of select areas of the study of life. The study begins with a comprehensive look at the definition of truth. The course covers essential aspects of biology such as chemistry of life, cells, genetics, evolution/creation and various important biological functions within the animal kingdom. Along with these topics the student will have a greater opportunity to develop laboratory skills through planned laboratory experiences.

General Course Goals
- Develop an understanding of truth.
- Develop good laboratory methods
- Develop a clear understanding of cells
- Produce a foundation for understanding genetic principles and how they have developed and what their potential could be
- Become stronger in the Christian faith due to scientific evidence that supports the biblical account of Creation and the Flood
- Compare various animals in regards to digestion, respiration and movement, support and body covering

Text(s)/Class Resources
- *Biology for Christian Schools,*, Bob Jones University Press
- Biology for Christian Schools laboratory manual, Bob Jones University Press
- *Answers Academy: Participants Workbook*, Answers In Genesis, 2005
- Dissections of earthworm, crayfish, starfish, freshwater mussel, perch and frog

Time Allotment
- One 45 minute class per day, 5 times per week
- Course length: two semesters

Assessment
- One quiz per unit
- One test for every unit
- Laboratory reports
- One cumulative exam per semester

Homework checked and graded as assigned

Northside Christian Academy
Curriculum Guide

Subject: Biology Honors Grade(s): 10

Philosophy Statement
Throughout the Scriptures nature is used to illustrate biblical principles. In Proverbs the instruction is to look at the ant for work habits. The Book of Romans reminds that one simply needs to look at nature to see the hand of God. Because of this vital link between nature and Scripture, it is important for students to have a thorough understanding of things created in order to better know the Creator. The physical and biological sciences are the vehicles we can use to demonstrate His nature.

Course Description
The honors biology class is designed to develop in students a more in-depth understanding of select areas of the study of life in preparation for taking the Advanced Placement Biology course. The class begins with a comprehensive look at the definition of truth. The class covers essential aspects of biology such as chemistry of life, cells, genetics, evolution/creation and various important biological functions within the animal kingdom. Along with these topics the student will have a greater opportunity to develop laboratory skills through planned laboratory experiences. Prerequisite: criteria for honors selection.

General Course Goals
- Develop an understanding of truth.
- Develop good laboratory methods
- Develop a clear understanding of cells
- Produce a foundation for understanding genetic principles and how they have developed and what their potential could be
- Become stronger in the Christian faith due to scientific evidence that supports the biblical account of Creation and the Flood
- Compare the kingdoms of Fungi, Protista, and Plantae.
- Describe the general attributes of viruses
- Compare various animals in regards to digestion, circulation, reproduction, respiration and movement, support and body covering

Text(s)/Class Resources
- *Biology for Christian Schools,*, Bob Jones University Press, 1991
- Biology for Christian Schools laboratory manual, Bob Jones University Press, 1991
- Dissections of earthworm, crayfish, starfish, freshwater mussel, perch and frog

Time Allotment
- One 45 minute class per day, 5 times per week
- Course length: two semesters

Assessment
- One quiz per unit
- One test for every unit
- One cumulative exam per semester
- Homework checked and graded as assigned
- Laboratory write-ups

Northside Christian Academy
Curriculum Guide

Subject: Chemistry Grade(s): 11/12

Philosophy Statement
Throughout the Scriptures nature is used to illustrate biblical principles. In Proverbs, the instruction is to look at the ant for work habits. Romans reminds that one simply needs to look at nature to see the hand of God. Because of this vital link between nature and Scripture, it is important for students to have a thorough understanding of things created in order to know the creator. The physical and biological sciences are the vehicles we can use to demonstrate His nature.

Course Description
The chemistry class is designed for students who are college bound. It provides background in general principles and laws governing the behavior of atoms and molecules. Students develop a better understanding of chemical reactions, including the involvement of energy and sub-atomic particles to better understand the nature of chemical changes. By learning about various chemical reactions, students learn about chemical reactions that occur around us every day. Laboratory work is planned to coincide with the theory covered in class. This course is one option for the third science credit required for graduation.

General Course Goals
- Structure of atoms
- Structure and properties of matter
- Chemical reactions
- Conservation of energy and matter
- Interaction of energy and matter

Text(s)/Class Resources
- *Chemistry: Matter & Change*
- Teacher Editions
- Publisher Materials
- Scientific Calculator

Time Allotment
- One 45 minute class per day, 5 times per week
- Course length: two semesters

Assessment
- One quiz and one exam per unit
- One cumulative exam each semester
- Homework checked as assigned
- Lab write-up for each experiment

Northside Christian Academy
Curriculum Guide

Subject: Human Anatomy and Physiology Grade(s): 11/12

Philosophy Statement
Throughout the Scriptures nature is used to illustrate biblical principles. In Proverbs the instruction is to look at the ant for work habits. The Book of Romans reminds that one simply needs to look at nature to see the hand of God. Because of this vital link between nature and Scripture, it is important for students to have a thorough understanding of things created in order to better know the Creator. The physical and biological sciences are the vehicles that can be used to demonstrate His nature.

Course Description
The course is designed as an introductory course to the human body. The goal is to integrate the study of the structures of the human body with their functions. This course uses a systematic approach by studying each of 9 -10 systems of the human body. Students will also be able to correlate information about the various systems with their relationships to each other. This is a lab course with significant dissections. This course is one option that meets the graduation requirement of a third science course.

General Course Goals
- The student will understand the basic organization of the human body.
- The student will understand the anatomy and physiology of the integumentary system.
- The student will understand the anatomy and physiology of the skeletal system.
- The student will understand the anatomy and physiology of the muscular system.
- The student will understand the organization of the nervous system.
- The student will understand the special senses and the functional aspects of the nervous system.
- The student will understand the anatomy and physiology of blood.
- The student will understand the anatomy and physiology of the cardiovascular system.
- The student will understand the anatomy and physiology of the human respiratory system.
- The student will understand the anatomy and physiology of the human digestive system.
- The student will understand the concepts involved in human nutrition and metabolism.
- The student will understand the anatomy and physiology of the human reproductive system.
- The student will understand the principles involved in human development.
- The student will understand the relationship between human anatomy and fetal pig anatomy.

Text(s)/Class Resources
- *The Human Body: Concepts of Anatomy & Physiology,* Saunders College Publishing, 1994.
- *Dissection of the Fetal Pig,* REX Educational Resources Company, 1991.
- Dissections of sheep brain, sheep eye, sheep heart and fetal pig.
- Various labs based on thematic units

Time Allotment
- One 45 minute class per day, 5 times per week
- Course length: two semesters

Assessment
- One quiz and one exam per unit
- One cumulative exam each semester
- Laboratory write-ups

- Cumulative fetal pig dissection
- Homework checked as assigned

Northside Christian Academy
Curriculum Guide

Subject: Physics Honors Grade(s): 11-12

Philosophy Statement
Throughout the Scriptures nature is used to illustrate Biblical principles. In Proverbs the instruction is to look at the ant for work habits. Romans reminds that one simply needs to look at nature to see the hand of God. Because of this vital link between nature and Scripture, it is important for students to have a thorough understanding of things created in order to know the Creator. The physical and biological sciences are the vehicles we can use to demonstrate His nature.

Course Description
This course is an honors course studying the many areas of Physics. Physics is the study of motion and this class will include the study of mechanics, thermodynamics, vibrations and waves, electricity and magnetism, and light and optics. Prerequisite: criteria for selection to an honors course. Students must have taken or be concurrently enrolled in Precalculus. This course is one option for the third science credit required for graduation.

General Course Goals
- Define Mechanics
- Solve problems with motion in one dimension
- Solve vectors and problems in two dimensions
- Apply the laws of motion
- Define work, energy, and conservation of mechanical energy
- Solve problems with momentum
- Apply rules using rotational motion
- Solve problems with rotational dynamics
- Distinguish forces between solids and liquids
- Solve problems in thermal physics
- Describe energy in thermal processes
- Define the Laws of Thermodynamics
- Apply the rules dealing with vibrations and waves
- Define sound and apply rules for dealing with sound
- Solve problems dealing with electricity and magnetism
- Define reflection and refraction of light
- Solve problems using mirrors and lenses
- Solve problems involving wave optics

Text(s)/Class Resources
- *Conceptual Physics* Prentice Hall
- Teacher Edition from publisher
- Scientific Calculator

Time Allotment
- One 45 minute class per day, 5 times per week
- Course length: two semesters

Assessment
- One test per unit
- One cumulative exam
- Homework checked as assigned
- Lab notebooks checked as assigned

Northside Christian Academy
Curriculum Guide

Subject: Biology AP Grade(s): 11/12

Philosophy Statement
Throughout the Scriptures nature is used to illustrate biblical principles. In Proverbs the instruction is to look at the ant for work habits. The Book of Romans reminds that one simply needs to look at nature to see the hand of God. Because of this vital link between nature and Scripture, it is important for students to have a thorough understanding of things created in order to better know the Creator. The physical and biological sciences are the vehicles that can be used to demonstrate His nature.

Course Description
The AP Biology course is designed to be the equivalent of a college introductory biology course. AP Biology will include topics including the chemistry of life, cells, cellular energetics, heredity, molecular genetics, diversity of organisms, structure and function of plants and animals and ecology. Along with the topics discussed in the class, participants in the class will complete 12 college level laboratory exercises and will take the AP Biology Exam offered by the College Board given in May, which may enable the students to earn college credit for the course. Prerequisite: Biology and selection criteria for an AP course. This course is one option for meeting the graduation requirement of a third science course.

General Course Goals
- Review of addition, subtraction, multiplication, and division of whole numbers, integers, fractions, and decimals
- Solving one-step equations and inequalities involving integers, decimals, and fractions
- Identification of the properties of numbers, and simplification of variable expressions
- Rounding and estimating decimals, products, and quotients
- Evaluation of expressions using exponents
- Writing and solving ratios, proportions, and percent problems

Text(s)/Class Resources
- *Biology: Concepts & Connections*, Benjamin Cummings Publishing, 1997
- AP Biology Lab Manual, College Board, 2001
- Biology: Concepts & Connects Study Guide, Benjamin Cummings Publishing, 1997
- Cliffs AP: Biology 2nd edition, Wiley Publishing, Inc, 2001
- Instructor's Guide to Text and Media, Biology: Concepts & Connections, Benjamin Cummings Publishing, 2003
- Test Bank for Biology: Concepts & Connections, Benjamin Cummings Publishing, 1994

Time Allotment
- Two 45 minute class per day, 5 times per week
- Course length: two semesters

Assessment
- One quiz per unit
- One test for every 2-4 units
- One cumulative exam per semester
- One project per semester, presented in both oral and written format
- Homework checked and graded as assigned
- Laboratory and activities write-ups
  AP Biology Exam administered by College Board in May of each year