

Department Goals

The Bishop DuBourg High School's Science Department strives to empower our students to:

1. Research current developments in the physical, life, earth, and space sciences through media, course work, and technology.
2. Employ methods of inquiry and other critical thinking skills to address scientific issues.
3. Examine historic and current scientific developments and their impact on society.
4. Show appreciation and respect for the evolution of the universe and all of life.
5. Use proper laboratory skills and safety procedures.
6. Relate and apply scientific concepts and processes among science courses.
7. Exhibit their personal, social, and moral responsibility for the stewardship of the environment.

Department Course Goals

Course Code ANAPH

Course Name ANATOMY & PHYSIOLOGY

Goals

1. Students will demonstrate appreciation and respect for living and once-living organisms.
2. Students will define anatomical terms related to and identify components of systems studied
3. Students will examine current health issues in light of anatomical and physiological concepts
4. Students will participate in dissection employing careful and advanced techniques
5. Students will perceive the interrelationship among systems and functions of the body

Content (Knowledge, Skills & Values)

1. History of Anatomy and Physiology
2. Terminology
3. Histology
4. Integumentary System
5. Skeletal System
6. Muscular System
7. Cardiovascular System
8. Tissue Identification Skills
9. Dissection Skills
10. Appreciation for the wonders of the human body

Resources, Activities & Assessments

1. Text: Anatomy and Physiology by Seeley, Stephens, and Tate, McGraw-Hill, 8th ed. 2008
2. Computers / Anatomical Websites
3. Models
4. Skeleton and Bones
5. Tissue Slides
6. Microscopes
7. Research Papers and/or Power Point Presentations
8. Dissection

9. Worksheets
10. Videos as appropriate
11. Field trips as appropriate
12. Quizzes
13. Tests
14. Labs

Science Department Course Goals

Course Code ASTRO1/ASTRO2

Course Name ASTRONOMY

Goals

1. Students will summarize the historical development of astronomy from prehistoric through modern times.
2. Students will explain the origins of the universe and the formation of our solar system, along with the evolution of the sun and other stars.
3. Students will incorporate critical thinking skills when analyzing the potential for extraterrestrial life in the universe.
4. Students will identify common constellations, lunar phases and the forces that control the motions of the universe.

Content (Knowledge, Skills & Values)

1. History of Astronomy
2. The Earth
3. The Moon
4. The Solar System
5. The Sun and Stellar Evolution
6. White Dwarfs, Neutron Stars and Black Holes
7. The Milky Way and Galaxies
8. Cosmology and Life in the Universe

Resources, Activities & Assessments

1. Textbook *Explorations: An Introduction to Astronomy*
2. "The Planets" Video Series from A&E
3. "The Universe" Video Series from History Channel
4. *Astronomy* magazine
5. *The Planetary Report* magazine from The Planetary Society

6. Tests, homework, class work, and quizzes
7. Moon Journal
8. Power Point presentation on the planets
9. H-R Diagram of Star Types

Science Department Course Goals

Course Code BIO21

Course Name Enriched Biology

Goals

1. Students will exhibit a respect for learning and life.
2. Students will examine historic and current scientific developments, in biology, and their impact on society .
3. Students will employ methods of inquiry and other critical thinking skills to address issues in biology.
4. Students will use proper laboratory skills and safety procedures in the biology laboratory.
5. Students will dissect invertebrates and vertebrates with limited direction from the instructor.
6. Students will relate and apply scientific concepts and processes from previous science courses to their work in biology.

Content (Knowledge, Skills & Values)

1. Nature of life
2. Cell – structure and function
3. Deoxyribonucleic acid and ribonucleic acid
4. Mitosis
5. Meiosis
6. Genetics
7. Evolution
8. Classification
9. Viruses
10. Kingdoms – Prokaryotic and Eukaryotic
11. Microscope and laboratory techniques
12. Dissection skills

Resources, Activities & Assessments

1. Biology; Kenneth Miller and Joseph Levine; Prentice Hall; copyright 2002

2. Ancillary materials that accompany the textbook
3. Various laboratory books
4. Lab supplies, dissection materials
5. Various videos
6. Internet for research and activities
7. Calculators, computers, microscopes
8. Current periodicals
9. Power point presentations (by teacher)
10. Various labs
11. Graphing, data analysis
12. Dissection of invertebrates and vertebrates
13. Researching, composing and presenting power point presentation
14. Homework
15. Laboratory reports
16. Quizzes
17. Tests

Department Course Goals

Course Code BIO23

Course Name BIOLOGY 23

Goals

1. Students will use utilize the scientific method and critical thinking to solve problems in biology
2. Students will develop an understanding of physical, chemical and cellular basis of life through biology.
3. Students will demonstrate proper laboratory skills and safety procedures in biology
4. Students will show an understanding of the evolution of life and the development of ecological relationships among organisms
5. Student will examine historic and current scientific developments in biology and their impact on society
6. Students will research current developments in Biology through media, course work and technology
7. Students will exhibit personal, social and moral responsibilities for the stewardship of the environment through biology

Content (Knowledge, Skills & Values)

1. Scientific method
2. Introduction to biology; including nature and diversity of life
3. Cells: Structure and Function
4. Nucleic acids
5. Genetics
6. Evolution
7. Classification
8. The Six Kingdoms
9. Invertebrates
10. Vertebrates
11. Lab Skills

Resources, Activities & Assessments

1. Text: *Biology* by Miller and Levine, Prentice-Hall, 2002
2. Computer/ Internet
3. Labs
4. Homework
5. Quizzes
6. Tests
7. Projects

Science Department Course Goals

Course Code BIO25

Course Name Biology 25

Goals

1. Students will exhibit a respect for learning and life.
2. Students will examine historic scientific developments and their impact on society.
3. Students will read and report on current developments in life science using media, course work and technology.
4. Students will use proper laboratory skills and safety procedures in the biology laboratory.
5. Students will dissect invertebrates and vertebrates with detailed instructions from the instructor.
6. Students will recognize scientific concepts and procedures from earlier science courses and apply them to their work in biology.

Content (Knowledge, Skills & Values)

1. Nature of life
2. Cell – structure and function
3. Deoxyribonucleic acid and ribonucleic acid
4. Mitosis
5. Meiosis
6. Genetics
7. Evolution
8. Classification
9. Viruses
10. Kingdoms – Prokaryotic and Eukaryotic
11. Microscope and laboratory techniques
12. Dissection skills

Resources, Activities & Assessments

1. Biology Principles and Explorations; George B. Johnson and Peter H. Raven; Holt, Rinehart and Winston; copyright 2001.
2. Ancillary materials that accompany the textbook
3. Various laboratory books
4. Dissection materials, lab supplies
5. Various videos
6. Internet for research and activities
7. Calculators, computers, microscopes
8. Current periodicals
9. Power point presentations (by teacher)
10. Teacher generated worksheets and puzzles
11. Various labs
12. Graphing, data analysis
13. Dissection of invertebrates and vertebrates
14. Researching current developments in biology
15. Composing and presenting power point presentation
16. Homework
17. Laboratory reports
18. Quizzes
19. Tests

Department Course Goals

Course Code CHEM 31

Course Name HONORS CHEMISTRY 31

Goals

1. Students will investigate chemical terms and apply them to class work, lab work, and real life issues
2. Students will analyze and classify chemical formulas and equations
3. Students will investigate the development of the modern atomic theory and the periodic table
4. Students will explore current topics related to chemistry and formulate competent reports
5. Students will apply formulas and concepts learned in chemistry to solve problems and analyze data.
6. Students will demonstrate safe and careful laboratory techniques.
7. Students will plan and design experiments.
8. Students will show an appreciation for the applications of chemistry to everyday life.

Content (Knowledge, Skills & Values)

1. Measurement and Dimensional Analysis
2. Matter: Elements, Compounds, and Mixtures
3. Energy: Changes and Measurements
4. Atomic Theory
5. Periodic Table
6. Formulas
7. Equations
8. Stoichiometry
9. Properties and Behaviors of Solids, Liquids and Gases
10. Solution Concentrations
11. Chemistry in Our World

Resources, Activities & Assessments

1. Text: Introductory Chemistry by Zumdahl, 5th Ed., Houghton-Mifflin, 2004
2. Chemistry Helper (laminated periodic table and chem. facts)

3. Lab and Lab Equipment
4. Computer: for Research and Virtual Labs
5. Scientific Calculators (or TI 84s)
6. Labs
7. Homework
8. Quizzes
9. Tests
10. Projects

Department Course Goals

Course Code CHEM35

Course Name CHEMISTRY 35

Goals

1. Students will utilize the scientific method and critical thinking to solve problems in chemistry
2. Students will demonstrate proper laboratory skills and safety procedures
3. Students will research current developments in chemistry through media, course work and technology and their impact on society
4. Students will define basic chemistry terms
5. Students will describe the development, arrangement and organization of the periodic table
6. Students will examine the composition of the atom
7. Students will exhibit personal, social and moral responsibilities for the stewardship of the environment through chemical applications

Content (Knowledge, Skills & Values)

1. Scientific methods
2. Matter
3. Atomic structure
4. Periodic table
5. Compounds
6. Equations
7. Acids and bases
8. Solutions
9. Nuclear chemistry
10. Environmental chemistry

Resources, Activities & Assessments

1. Text: Science Explore—Chemical Interaction and Chemical Building Blocks, Printice Hall, 2000
2. Periodic table
3. Labs .
4. Computer/Internet
5. Internet
6. Calculator
7. Class work
8. Homework
9. Quizzes
10. Tests
11. Projects
12. Magazines : Discover; Science World; Chem Matters; Current Science; Science

Department Course Goals

Course Code CHEM33

Course Name CHEMISTRY 33

Goals

1. Students will define chemical terms and relate them to class work, lab work, and real life issues
2. Students will write correct chemical formulas and balanced equations
3. Students will demonstrate a basic understanding of the atomic theory and the periodic table
4. Students will explore current topics related to chemistry and formulate simple reports on this reading.
5. Students will apply formulas and concepts learned in chemistry to solve problems and interpret data.
6. Students will demonstrate safe and careful laboratory techniques.
7. Students will relate concepts learned in chemistry to issues of everyday life.

Content (Knowledge, Skills & Values)

1. Measurement and Dimensional Analysis
2. Matter: Elements, Compounds and Mixtures
3. Energy: Changes and Measurements
4. Atomic Theory
5. Periodic Table
6. Formulas
7. Equations
8. Simple Stoichiometry
9. Properties and Behaviors of Solids, Liquids, and Gases
10. Chemistry in Our World

Resources, Activities & Assessments

1. Text: Chemistry: Connections to Our Changing World by LeMay, Beall, Robblee, Brower
Prentice Hall, 1996
2. Chemistry Helper (laminated periodic table and chem. facts)

3. Lab and Lab Equipment
4. Computer
5. Scientific Calculator
6. Labs
7. Homework
8. Quizzes
9. Tests
10. Projects

Science Department Course Goals

Course Code HUMSY1/HUMSY2

Course Name Human Systems

Goals

1. Students will exhibit a respect for life and learning.
2. Students will examine historic and current scientific developments, in human systems, and their impact on society.
3. Students will employ methods of inquiry and other critical thinking skills to address issues in human systems.
4. Students will use proper laboratory skills and safety procedures in the laboratory.
5. Students will relate and apply scientific concepts and processes from previous science courses to their work in human systems.

Content (Knowledge, Skills & Values)

1. Circulatory system
2. Digestive system
3. Endocrine system
4. Integument system
5. Lymphatic system
6. Muscular system
7. Nervous system
8. Reproductive system
9. Respiratory system
10. Skeletal system
11. Urinary system
12. Dissection skills, microscope and laboratory techniques

Resources, Activities & Assessments

1. Biology; Kenneth Miller and Joseph Levine; Prentice Hall; copyright 2002.

2. Ancillary materials that accompany the textbook
3. Various laboratory books
4. Lab supplies, dissection materials
5. Various videos
6. Internet for research and activities
7. Calculators, computers, microscopes
8. Current periodicals
9. Various labs
10. Graphing, data analysis
11. Researching and composing brochures on various diseases
12. Homework
13. Laboratory reports
14. Quizzes
15. Tests

Department Course Goals

Course Code PHSC13

Course Name Physical Science 13

Goals

1. Students will design and solve problems in Physical Science using the scientific method.
2. Students will demonstrate knowledge of basic science process skills and critical thinking skills used in inquiry science.
3. Students will interact cooperatively to complete the projects and labs in Physical Science.
4. Students will demonstrate proper laboratory skills and safety procedures.
5. Students will devise, organize, and reorganize a Physical Science binder/notebook of all coursework to use as a reference tool when taking tests and quizzes.
6. Students will choose the correct formulas to set up and solve problems in Physical Science.
7. Students in Physical Science will use conversion charts and tables whenever necessary to answer questions that require conversions in Metric and Standard measurements.

Content (Knowledge, Skills & Values)

1. Scientific Method
2. Measurement (including Scientific Notation)
3. Matter
4. Mixtures
5. The Water Cycle
6. Force and Motion
7. Work, Power, and Simple Machines
8. Energy
9. Organizational Skills

Resources, Activities & Assessments

1. Physical Science Concepts in Action With Earth and Space Science by Pearson Prentice Hall, copyright 2004 course textbook and supplemental materials)

2. Water in the Earth System by American Meteorological Society Education Program, copyright 2001
3. Power Practice Physical Science by Pamela Jennett, Creative Teaching Press, copyright 2004
4. Reproducible Activities Physical Science by Joan DiStasio, Instructional Fair, copyright 1995
5. Teacher made labs, activities and worksheets
6. Activities, labs, and worksheets from courses, workshops and conferences like DataStreme Ocean, Water in the Earth System, STOM, and NSTA
7. Teacher made tests and quizzes
8. Teacher made rubrics for scoring activities, labs, binders/notebooks, and projects

Department Course Goals

Course Code PHSC15

Course Name Physical Science 15

Goals

1. Students will design and solve problems in Physical Science using the scientific method.
2. Students will demonstrate knowledge of basic science process skills and critical thinking skills used in inquiry science.
3. Students will interact cooperatively to complete the projects and labs in Physical Science.
4. Students will demonstrate proper laboratory skills and safety procedures.
5. Students will devise, organize, and reorganize a Physical Science binder/notebook of all coursework to use as a reference tool when taking tests and quizzes.
6. Students in Physical Science will use a metric conversion chart to answer questions in measurement labs and whenever necessary.

Content (Knowledge, Skills & Values)

1. Scientific Method
2. Measurement
3. Matter
4. Mixtures
5. The Water Cycle
6. Force and Motion
7. Work, Power, and Simple Machines
8. Energy
9. Organizational Skills

Resources, Activities & Assessments

1. Exploring Physical Science by Prentice Hall, copyright 1999 (course textbook and supplemental materials)
2. Water in the Earth System by American Meteorological Society Education Program, copyright 2001

3. Power Practice Physical Science by Pamela Jennett, Creative Teaching Press, copyright 2004
4. Reproducible Activities Physical Science by Joan DiStasio, Instructional Fair, copyright 1995
5. Teacher made labs, activities and worksheets
6. Activities, labs, and worksheets from courses, workshops and conferences like DataStreme Ocean, Water in the Earth System, STOM, and NSTA
7. Teacher made tests and quizzes
8. Teacher made rubrics for scoring activities, labs, binders/notebooks, and projects

Science Department Course Goals

Course Code PHYS41

Course Name HONORS PHYSICS

Goals

1. Students will utilize high level algebra skills to solve various honors physics problems.
2. Students will apply trigonometric equations when solving vector problems.
3. Students will explain and describe Newton's three laws of motion.
4. Students will explain and describe Newton's law of gravitation.
5. Students will analyze motion by methods of energy and momentum.
6. Students will express and utilize Coulomb's Law
7. Students will investigate the ideas of special relativity and explain some of the basic ideas of curved space and general relativity.
8. Students will research, design, produce and test several hands on projects involving the applications of multiple physical laws.
9. Students will examine the connection between basic physics theories, technologies developed from these theories and the impact they have had on our society.

Content (Knowledge, Skills & Values)

1. History of Physics
2. Kinematics in One Dimension and Two Dimensions
3. Vectors
4. Dynamics
5. Simple Harmonic Motion
6. Gravity
7. Work, Power and Energy
8. Electricity
9. Magnetism
10. Waves, Sound and Light
11. Geometric Optics
12. Special Theory of Relativity

Resources, Activities & Assessments

1. Textbook: *Physics 5th Revised Edition* by Giancoli, Prentice Hall 2002
2. Vernier calculator based labs
3. Various videos (NOVA, The Science Channel, Discovery Channel, etc.)
4. Homework, tests, quizzes, lab reports and various projects including spaghetti bridges, mouse trap cars, water rockets

Science Department Course Goals

Course Code PHYS43

Course Name PHYSICS

Goals

1. Students will develop an understanding of and explain Newton's three laws of motion.
2. Students will summarize and explain Newton's law of gravity.
3. Students will use algebra and critical thinking skills in solving various Newtonian physics problems.
4. Students will explain Coulombs Law and solve various parallel and series circuit problems.
5. Students will analyze the connection between electricity and magnetism.
6. Students will research, design, produce and test several hands on projects involving the applications of multiple physical laws.
7. Students will examine the connections between basic physics theories, technologies developed from these theories and the impact they have had on our society.

Content (Knowledge, Skills & Values)

1. History of Physics
2. Mathematical Tools Used in Physics
3. Vectors and Vector Addition
4. Motion and Forces
5. Gravity
6. Momentum
7. Work, Power and Simple Machines
8. Energy
9. Waves, Sound and Light
10. Mirrors and Lenses
11. Electricity
12. Magnetism

Resources, Activities & Assessments

1. Textbook *Physics: Principles and Problems* by Zitzewitz Glencoe 2002
2. Vernier Calculator based Labs
3. Various projects including : Mouse Trap Cars, Water Rockets, Egg Drop, Spaghetti Bridges
4. homework, tests, quizzes, lab reports