

LOCATION / TOPIC

TITLE & DESCRIPTION

General

Discovering History : 20th Century Biographies : Scientists and Inventors (30:00) ★ ★ ★

The scientific discoveries and achievements of the 20th century paved the way for our way of life in the 21st century. Examine the contributions of prominent scientists and inventors, including Marie Curie, Albert Einstein, Jonas Salk, Guglielmo Marconi, and Thomas Alva Edison. © 2005 Discovery Channel School

General

Simply Science: Science Skills (27:13) ★ ★ ★

This program emphasizes the importance of practicing proper procedures when conducting a scientific investigation. Footage from previous programs helps students review the skills needed to measure the meniscus, measure with a ruler and weigh with non-digital scales, recognize significant digits in measurements and calculations, prepare a wet mount slide, view a slide throughout a microscope and make a drawing of the slide, and use tables and graphs to help record and analyze information. © 1998 United Learning

Biology (see also:
Health Videos)

Biologix : Alternate Patterns of Inheritance (29:07) ★ ★

Reveals how knowledge of Mendelian genetics, blood groups and pedigrees can be used to solve a paternity case. Examines other patterns of human inheritance involving skin color, eye color and height. Discusses the occurrence of multiple alleles in Himalayan rabbits. © 1997 United Learning

Biology (see also:
Health Videos)

Biologix: Asexual Reproduction and Alternation of Generations (29:07) ★ ★

Uses the analogy of soccer to explore the diversity in plant and animal reproductive strategies. Compares sexual and asexual reproduction by looking at chromosomal activity, genetic variation and the consequences of budding, binary fission and spore production. © 1997 United Learning

Biology (see also:
Health Videos)

Biologix: Chromosomal Basis of Inheritance (29:07) ★ ★ ★

Looks at exceptions to segregation and independent assortment during gamete formation. Examines the effect of gene linkage on phenotypic and genotypic ratios. Uses cross-over values in *Sordaria* to determine the distance of a gene from the centromere. © 1997 United Learning

Biology (see also:
Health Videos)

Biologix : Comparison of Mitosis and Meiosis (29:06) ★ ★

Compares the processes of mitosis and meiosis, focusing on the tissues in which these processes occur, the behavior and number of chromosomes involved and the types of cells produced. Takes the viewer on a journey through cells undergoing mitosis to discover the significance of these events. © 1997 United Learning

Biology (see also:
Health Videos)

Biologix: Dihybrid Crosses (29:07) ★ ★

Uses the analogy of square dancing to introduce dihybrid crosses. Illustrates how the laws of inheritance for monohybrid crosses also apply to dihybrid crosses. Demonstrates how probability and the product rule determine the outcome of two trait crosses. © 1997 United Learning

Biology (see also:

Biologix: DNA Replication (29:07) ★ ★ ★

LOCATION / TOPIC

TITLE & DESCRIPTION

Health Videos)

Demonstrates the isolation of DNA. Examines the composition of nucleic acids within DNA and the process of DNA replication. Explains how new technologies such as gel electrophoresis further the study of molecular genetics. © 1997 United Learning

Biology (see also:
Health Videos)

Biologix: Electrochemical Control Systems (29:07) ★★
Describes how the nervous and endocrine systems work together to maintain homeostasis and equilibrium in humans. Examines the structure of the neuron and explains the biological basis for multiple sclerosis. © 1997 United Learning

Biology (see also:
Health Videos)

Biologix: Embryonic Development and Differentiation (29:07) ★★ ★
Describes the events that occur once fertilization of the ovum has taken place. Explains the various stages of embryonic development and differentiation using prepared slides and models. Presents theories on the various mechanisms that trigger cell differentiation. © 1997 United Learning

Biology (see also:
Health Videos)

Biologix: Fetal Development and Birth (29:08) ★★ ★
Outlines the development of fetal systems during each trimester of pregnancy and the hormones involved in regulating fetal development, birth and lactation. Illustrates the mechanism for exchanging nutrients and wastes between the mother and fetus. Describes Fetal Alcohol Syndrome and its impact on the developing child. © 1997 United Learning

Biology (see also:
Health Videos)

Biologix: Hormonal Controls and the Menstrual Cycle (29:07) ★★ ★
Compares the cyclical patterns of reproduction in humans with that of other mammals. Describes the human menstrual cycle and the hormones that regulate it. Addresses the effect of lifestyle and aging on the menstrual cycle and the pros and cons of hormone therapy. © 1997 United Learning

Biology (see also:
Health Videos)

Biologix: Hormonal Controls and Conception (29:08) ★★ ★
Reviews the events that occur when fertilization of the ovum takes place. Provides an in-depth look at the various conception control methods, their effectiveness and some of the risks associated with using them. Talks about the moral and ethical issues that conception control has raised in some cultures. © 1997 United Learning

Biology (see also:
Health Videos)

Biologix: Interactions and Relationships Among Organisms (29:07) ★★
Demonstrates the effect of intraspecific and interspecific competition on populations. Uses simulations and field trips to examine the relationship between predators and prey and to explore the various symbiotic relationships among organisms. © 1997 United Learning

Biology (see also:
Health Videos)

Biologix: Manipulating DNA (29:07) ★★ ★ ★
Demonstrates how restriction enzymes and gel electrophoresis are used to manipulate DNA in genetic engineering experiments. Simulates bacterial transformation and explores gene therapy as a potential treatment for people with cystic fibrosis. © 1997 United Learning

LOCATION / TOPIC

TITLE & DESCRIPTION

Biology (see also:
Health Videos)

Biologix: Meiosis and Gamete Formation (29:07) ★★

Illustrates the phases of meiosis and explores its importance in maintaining the proper number of chromosomes during gamete formation. Explains how crossing over and nondisjunction increase diversity in the species. Addresses some of the chromosomal alterations that can take place during meiosis. © 1997 United Learning

Biology (see also:
Health Videos)

Biologix: Molecular Genetics and the Human Genome Project (29:07) ★★★

Outlines the Human Genome project, its parameters and potential impacts. Uses models to demonstrate the complexity of gene mapping and the process for isolating genes. Presents some pros and cons of the Human Genome project. © 1997 United Learning

Biology (see also:
Health Videos)

Biologix: Nerve Impulse Conduction (29:07) ★★

Explores the electrochemical nature of nerve impulse conduction and transmission. Analyzes the different stages of the membrane potential through simulations, discussions with a neurophysiologist and a visit to the dentist. Presents research on how chemicals affect membrane potential. © 1997 United Learning

Biology (see also:
Health Videos)

Biologix: Reflexes and Synaptic Transmission (29:07) ★★★

Investigate the physiology of the reflex arc through experiments on the pupillary and patellar reflexes. Focuses on the transmission of an impulse across the synapse and at the neuromuscular junction. Discusses some of the neurotransmitters and chemicals that affect impulse transmission. © 1997 United Learning

Biology (see also:
Health Videos)

Biologix: Reproductive Technologies and Sexually Transmitted Diseases (29:07) ★★★

Examines the various reproductive technologies that have augmented and altered the chemical control systems involved in human reproduction. Reveals how sexually transmitted diseases affect and damage the reproductive system. Provides one explanation of how the retrovirus for human immunodeficiency disease works. © 1997 United Learning

Biology (see also:
Health Videos)

Biologix: Sex-Linked Inheritance (29:06) ★★★

Examines the findings of Thomas Morgan regarding sex-linked inheritance. Investigates the probabilities of males and females inheriting sex-linked traits such as color blindness and hemophilia. Uses graphics and pedigree charts to introduce and analyze sex-linked traits. © 1997 United Learning

Biology (see also:
Health Videos)

Biologix : Succession and Climax Communities (29:07) ★★

Discusses successional events and their causes in a microenvironment within a particular community. Analyzes data on population and community change and examines the impact of human activity on various ecosystems. Presents some new ideas on the concept of succession. © 1997 United Learning

Biology (see also:
Health Videos)

Biologix: Tactile and Chemoreceptors (29:07) ★★★★★

Investigates the structures and functions of various tactile and chemoreceptors. Uses touch, taste and smell experiments to demonstrate how the sensory-somatic cortex works. Explores Wilder Penfield's work on the sensory cortex, the neurophysiology of pain and phantom limb syndrome. © 1997 United Learning

LOCATION / TOPIC

TITLE & DESCRIPTION

Biology (see also:
Health Videos)

Biologix: The Adrenal Glands and Gonads (29:07) ★ ★ ★

Examines the different parts and functions of the adrenal glands. Uses the work of Hans Selye to explain the physiological basis of stress. Illustrates how hormones regulate the primary and secondary sex characteristics in males and females. Discusses the use and misuse of anabolic steroids. © 1997 United Learning

Biology (see also:
Health Videos)

Biologix: The Central Nervous System and Brain (29:07) ★ ★ ★

Features the primary components of the human central nervous system. Identifies the main structures of the brain and their roles in controlling body systems and maintaining homeostasis. Examines the effects of physical injury, chemical imbalances and drug usage on the brain. © 1997 United Learning

Biology (see also:
Health Videos)

Biologix: The Ear: Hearing and Balance (29:07) ★ ★ ★

Takes viewers through the structures and functions of the human ear and relates how sound waves are transmitted. Examines the role of the inner ear in maintaining balance and equilibrium in the body. Provides examples of various technologies which help people with hearing impairments to communicate. © 1997 United Learning

Biology (see also:
Health Videos)

Biologix: The Eye: Vision and Perception (29:07) ★ ★ ★

Highlights the structures and functions of the mammalian eye and illustrates how visual sensory receptors relay messages to the brain. Describes a number of visual disorders, along with the corrective lenses and techniques that can be used for treating them. © 1997 United Learning

Biology (see also:
Health Videos)

Biologix: The Human Female Reproductive System (29:07) ★ ★ ★

Describes the structures and functions of the female reproductive system and the hormones that regulate these functions. Explores certain medical conditions such as ectopic pregnancies, endometriosis and cancer that can occur within the female reproductive system. Examines the technology of endoscopy in the treatment of these conditions. © 1997 United Learning

Biology (see also:
Health Videos)

Biologix: The Human Male Reproductive System (29:07) ★ ★ ★

Presents an overview of reproduction in vertebrates. Highlights the human male reproductive structures and their specific functions. Explains the hormones that are involved in regulating these functions. Addresses some of the disorders that can occur within the male reproductive system. © 1997 United Learning

Biology (see also:
Health Videos)

Biologix: The Hypothalamus and Pituitary Glands (29:07) ★ ★

Acquaints viewers with how the pituitary and hypothalamus work together to control many body functions. Highlights the homeostatic feedback mechanism involved with regulating water balance in the body. Examines the use of growth hormone in humans and other populations. © 1997 United Learning

Biology (see also:

Biologix: The Neuroendocrine System (29:07) ★ ★

LOCATION / TOPIC

TITLE & DESCRIPTION

Health Videos)

Compares the nervous and endocrine systems by describing how each responds to different situations - physical activity, body temperature, eating and stress. Summarizes the regulation of blood glucose and fluid levels in the body. © 1997 United Learning

Biology (see also:
Health Videos)

Biologix: The Pancreas (29:06) ★ ★ ★

Explores the many roles of the pancreas and its hormonal secretions. Illustrates how insulin and glucagon help regulate blood glucose levels in the body. Reviews the discovery of insulin and discusses current research on diabetes. © 1997 United Learning

Biology (see also:
Health Videos)

Biologix: The Peripheral Nervous System (29:07) ★ ★ ★

Illustrates how the human body senses and responds to its internal and external environments. Describes the structures and functions of the peripheral nervous system and examines current research on nerve regeneration. Reveals how a polygraph and biofeedback apparatus measure responses of the autonomic nervous system. © 1997 United Learning

Biology (see also:
Health Videos)

Biologix: The Thyroid Gland (29:07) ★ ★

Uses drama to reveal the function and structure of the thyroid gland. Demonstrates the role of thyroxine in regulating metabolic rate. Presents some of the disorders that may result when the thyroid does not function properly and describes the various techniques for treating these conditions. © 1997 United Learning

Biology (see also:
Health Videos)

Blood (20:22) ★ ★ ★

This program examines and compares the four major components of blood: plasma, red blood cells, white blood cells and platelets. Animation and microscopic images help students understand important mechanisms involved in nutrient uptake, hormone transport, exchange of respiratory gases, the immune system, and blood clotting. Diseases affecting blood and the circulatory system, such as sickle cell anemia, AIDS, and the arteriosclerosis are also presented in this useful program. © 1995 United Learning

Biology (see also:
Health Videos)

Cells: The Building Blocks of Life (19:20) ★ ★

Cells are the building blocks of life. As versatile media support for Biology and Life Science units on the structure and functions of cells, this program explores the two basic types of cells, eukaryotic and prokaryotic, and their major components. The importance of the cell membrane in the processes of diffusion, osmosis, and active transport is also illustrated. © 1996 AIMS Multimedia

Biology (see also:
Health Videos)

Elements of Biology: The Cell: Structure and Function (20:00) ★ ★

Every cell is surrounded by a membrane and is constituted of thousands of molecules of a variety of specialized structures that carry out cell functions such as energy productions, waste disposal, synthesis of new molecules and the storage of genetic material. © 2002 United Learning

Biology (see also:

Elements of Biology : Genetics : The Molecular Basis of Heredity (56:00) ★ ★ ★ ★

LOCATION / TOPIC

TITLE & DESCRIPTION

Health Videos)

The instructions specifying the characteristics of all organisms, whether plant or animal, are carried in what is called the DNA. This is a large polymer formed from subunits of four kinds (A, G, C, and T). Scientists are working to unlock the mysteries of DNA in order to better understand how organisms get their structure. © 2006 United Learning

Biology (see also:
Health Videos)

Forensics: Who Killed the Iceman? (52:00) ★ ★ ★ ★

Discovered by hikers in the Italian Alps in 1991, the Iceman, also known as "Ötzi," is 5,300 years old---the oldest frozen mummy ever found. Forensic scientists and archaeologists investigating the cause of his death have uncovered new evidence that reveals a shocking conclusion. Scientists hope to use this information to reconstruct the last hours of the Iceman's life. © 2003 Discovery Channel School

Biology (see also:
Health Videos)

Human Body Systems: The Skeletal and Muscular Systems (24:00) ★ ★ ★

The skeletal and muscular systems work together to provide the structure and shape of the body. Without the skeletal system, the body would collapse. The muscles attached to the skeletal system provide the ability to move the body. The video looks at both of these systems and how they work together to allow humans to bend, walk and run. © 1997 United Learning

Biology (see also:
Health Videos)

Human Body, The: The Ultimate Machine (25:10) ★ ★ ★

The Human Body: The Ultimate Machine provides entrancing visual support for Biology, Life Science and Health units on the structure of the human body. Students are taken on a concise and incredible journey through the human body, as realistic 3-D animation, exciting footage of actual surgical procedures, and microphotography detail the functioning of each of the body's major systems. © 1996 AIMS Multimedia

Biology (see also:
Health Videos)

Investigating the Nervous System (19:39) ★

This introductory program provides solid media support for Biology units studying the nervous system. The program first explains the system's structure, then examines several methods that scientists use to investigate the nervous systems of vertebrates, including behavioral experiments with animals, dissection, section cutting, and the use of electrical equipment to monitor changes in nervous tissue and muscle. © 1983 AIMS Multimedia

Biology (see also:
Health Videos)

Language of Life, The: Understanding the Genetic Code (27:39) ★ ★ ★

This two-part program uses colorful animation and live action footage of living cells to introduce students to the genetic code. In Part One, the familiar structures of the English language are compared to the molecular language used by cells. Part Two covers the flow of information from DNA to protein in living cells. © 1994 United Learning

Biology (see also:

Life's Clocks (27:00) No ratings yet

LOCATION / TOPIC

TITLE & DESCRIPTION

Health Videos)

How do bodies measure time? Are they dependent on outside clues -- the continuous cycle of day into night -- or are there some built-in mechanisms for time measurement? This program provides an in-depth introduction for Biology units studying the internal rhythms of organisms and the behavior patterns that those rhythms determine. A thorough explanation of the science of chronobiology, using controlled experiments with human subjects, animals and plants to demonstrate how organisms' internal time clocks work, and their influence on such functions as migration and hibernation. A possible connection between internal rhythms, mental illness and depression is also examined. © 1988 AIMS Multimedia

Biology (see also:
Health Videos)

Lungs (Revised) (11:02) ★ ★ ★

Using typical land mammals -- a horse, sheep and dog -- this program demonstrates that the respiratory system of mammals has a structure that enables exchange of gases between the blood and the external environment. The organs' structure is revealed through dissection of a sheep's lung. The appearance of living, breathing lungs is shown during surgery on a dog at a veterinary clinic. Radiocinematography shows how diaphragm and rib movements alter the volume of the chest cavity. This program provides essential support to Biology units on the respiratory system of mammals. © 1982 AIMS Multimedia

Biology (see also:
Health Videos)

Mitosis and Meiosis (23:25) ★ ★ ★

This easy-to-understand program uses exceptional microscopic images and animated sequences to show the processes of mitosis and meiosis. The first part of the program is devoted to the subjects of the interphase state, DNA replication, and chromosome structure, and offers a detailed look at each stage of mitosis. The second part looks at the diploid and haploid states, at fertilization, and at the various stages of meiosis. © 1994 United Learning

Biology (see also:
Health Videos)

Power of Genes, The (55:59) ★ ★

To what degree are we genetically programmed with certain traits and abilities? In segments that cover identical twins, the promising science of biotechnology, and the genetic inheritance of working dogs, students consider the classic nature-versus-nurture discussion in light of recent technologies and discoveries. This program includes two feature segments and two short segments. © 2004 Discovery Channel School

Biology (see also:
Health Videos)

Real Bionic Man, The (49:38) ★ ★ ★ ★

Are bionic men and women in our future? In places like Utah's Bionic Valley, scientists are developing incredibly sophisticated artificial body part: hearing devices implanted in the cochlea and eyes that transmit electric signals to the visual cortex. This video explores the field of science-fiction-turned-science-fact and shows how some inventions are already helping people with disabilities. Produced by Discovery Channel School. © 1997 Discovery Channel School

Biology (see also:

Simply Science: A Close-Up View of Growth (27:14) ★ ★ ★

LOCATION / TOPIC

TITLE & DESCRIPTION

Health Videos)

Explains how to prepare a wet mount slide and use stains to examine the features of plant and animal cells. A compound light microscope shows how to calculate magnification, field of view and scale. Students identify and describe the most important cell organelles in prepared slides and micrographs. The growth, division, and differentiation of cells is examined, with particular reference to medical research and the fight against cancer. © 1998 United Learning

Biology (see also:
Health Videos)

Simply Science: Energy Converters (27:13) ★ ★ ★ ★ ★

A weight room setting is used to demonstrate how energy must be converted for activity and life functions to occur. Energy efficiency is examined by a sports physiologist and an athlete, and cellular respiration in hibernating animals is discussed by a hibernation expert. © 1998 United Learning

Biology (see also:
Health Videos)

Simply Science: Kingdoms (27:14) ★ ★

Explains how the electron microscope has enable scientists to probe the most elemental boundaries of life. Students investigate the nature, transmission and harmful effects of viruses. Bacteria are cultured and Paramecia are observed to identify the similarities and differences between prokaryotic and eukaryotic cells. The requirements and mechanisms for unicellular nutrition are contrasted with multicellular organisms. A visit to the zoo helps students survey the five kingdoms of life. © 1998 United Learning

Biology (see also:
Health Videos)

Simply Science: Maintaining Equilibrium (27:04) ★ ★ ★

Explores the concepts of equilibrium and homeostasis in living systems. Students examine diffusion, osmosis and tonicity at the cellular level, perform a diffusion experiment in gelatin, and investigate semipermeable membranes with different solutions in dialysis tubing. The exchange of energy and matter in open systems is illustrated by the physiological responses of people in physical training, by the complexity of a greenhouse ecosystem that filters waste water, and through contributions of technology such as hemodialysis. © 1998 United Learning

Biology (see also:
Health Videos)

Simply Science: Matter and Energy On The Move (27:04) ★ ★ ★

Examines the movement of matter into and our of living cells across a semipermeable membrane. The concepts of diffusion, osmosis, concentration gradients and active and passive transportation are explained and demonstrated. The mechanisms of the gas exchange in plants and animals are explored. Calculations are performed to illustrate the implications of the surface area to volume ratio as a limiting factor in cell size. © 1998 United Learning

Biology (see also:
Health Videos)

Understanding Genetics (37:13) ★ ★

This two-part program provides students with a comprehensive introduction to the science of genetics. In Part One of this program, the principles of classical Mendelian genetics are presented. Part Two examines the principles of genetics in terms of modern molecular gene theory. © 1995 United Learning

Biology (see also:

Understanding: The Power of Genes (49:29) ★ ★ ★ ★ ★

LOCATION / TOPIC

TITLE & DESCRIPTION

Health Videos)

Can we - and should we - start shuffling the biological deck after four billion years of evolution? Scientists are about to deal us this hand, and biotechnology is going to be the game of the next century, according to experts. From leading geneticist Dr. William Haseltine and current National Institutes of Health officials to a university biologist who advises the television series "The X-Files," the top minds in this field share their powerful insights and explore our startling achievements. (Dolly the sheep's cloning was only the beginning!) Produced by Discovery Channel School. © 1999 Discovery Channel School

Biology (see also:
Health Videos)

Understanding Viruses (54:00) ★ ★ ★

Your body is under attack every minute of every hour of every day. The enemy is patient, adaptable, potentially deadly, and invisible. Called the "littlest assassins" and "phantom killers," viruses range from the common cold to HIV and have caused epidemics more devastating than war. This video explains how viruses operate and how your immune system defends you. And it shows scientists turning the tables, transforming invading viruses into agents of healing. Produced by Discovery Channel School. © 1997 Discovery Channel School

Biology - Ecology

ACEER Useful Plant Trail Video Guide, The (28:00) ★ ★ ★

Discover the Useful Plant Trail of the Amazon Center for Environmental Education and Research (ACEER) with your guide, Shaman Don Antonio Montero, vetted by Dr. James Duke, internationally recognized ethnobotanist. On the trail you will see 45 trees and plants, not only useful to the people of Amazonia, but some that provide chemicals or products used in countries around the world. © 2002 Environmental Media

Biology - Ecology

Amazonia: Exploiting the Forest (19:06) ★

This programme examines unsustainable exploitation of the rainforest. Since 1950 logging, mining and, above all, ranching have destroyed vast areas of forest. At the same time the government has encouraged farmers to move into Amazonia. This programme looks at the impact of these developments. © 1991 Channel 4

Biology - Ecology

Amazonia: How the Forest Works (19:11) ★ ★ ★ ★

The oldest, the richest and most varied ecosystem on earth -- how does the rainforest work and why is recovery so slow if it is damaged? © 1991 Channel 4

Biology - Ecology

Amazonia: Living in the Forest (19:31) No ratings yet

This programme looks at the sustainable development of the rainforest and focuses on three different ways of life in the forest, none of which causes lasting damage—the Tikuna Indians and the Caboclos (early Portuguese settlers) who practise different forms of slash and burn agriculture in the Terra Firme forest, and the Caboclos living on the Varzea (floodplain forest). © 1991 Channel 4

Biology - Ecology

Amazonia: The City in the Forest (19:22) No ratings yet

Manaus is a city with a population of one and a half million situated in the centre of one of the most sparsely populated areas on earth! Why has Manaus grown up where it has and why has it become so big? How does it relate to the surrounding forest and what has been its impact on that forest? © 1991 Channel 4

LOCATION / TOPIC

TITLE & DESCRIPTION

Biology - Ecology

Amazonia: The Forest: A Global Challenge (19:31) ★ ★ ★ ★

Brazil has a rapidly growing population and a large overseas debt; the development of the resources of the rainforest is one way of addressing these problems. Development has to continue but what will the consequences be if clearing continues at present rates? Can existing forms of development be made sustainable? © 1991 Channel 4

Biology - Ecology

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Biology - Ecology

Biologix : Succession and Climax Communities (29:07) ★ ★

Discusses successional events and their causes in a microenvironment within a particular community. Analyzes data on population and community change and examines the impact of human activity on various ecosystems. Presents some new ideas on the concept of succession. © 1997 United Learning

Biology - Ecology

Champions of the Land (26:00) ★ ★ ★

This fascinating profile of the American Conservation Movement reveals the historical roots of today's conservation efforts, which promote the inherent value of nature as more than just a disposable human resource. Conservationists profiled include John Muir, Aldo Leopold, Bob Marshall, Rosalie Edge, and Rachel Carson. © 1997 Discovery Channel School

**LOCATION /
TOPIC**

TITLE & DESCRIPTION

Biology - Ecology

Coral Reefs: Rainforests of the Sea (19:00) ★★

Like the rainforests of the land, coral reefs are ancient, large, serve as host an astonishing variety of life, and constitute an ecosystem all their own. The video discusses the food chain within a coral reef, the very specific conditions necessary for their growth, and how they affect both marine and human life. Like their counterparts on land, these rainforests of the sea are seriously endangered by human activity. Viewers are encouraged to make healthy environmental choices that help preserve the all-important balance of nature. © 2004 AIMS Multimedia

Biology - Ecology

Global Ocean Realm, The (20:00) ★★

The Global Ocean Realm explores in depth many of the complex and dynamic oceanic events that occur around the world. Topics include the volcanic mid-oceanic ridge system, seamounts, volcanic islands, deep-sea trenches, the continental shelf, turbidity currents, ocean currents, coastal wave action, barrier islands, tidal patterns, coral reefs, and the abyssal plains. © 2002 United Learning

Biology - Ecology

Ecosphere : Where All Life Exists (24:32) ★★ ★★

This view of the ecosphere focuses on three main concepts: the mutual interdependence of all living things, the dynamic nature of the ecosphere, and how the earth has been altered by living things. Viewers will learn about where life exists on Earth, the first living things to appear on Earth, why the development of photosynthetic organisms are critical to life on Earth, why the ozone layer of our atmosphere is so important, the nitrogen cycle, eutrophication, and the Greenhouse Effect. © 1992 United Learning

Biology - Ecology

Elements of Biology : Biomes : The Adaptations of Organisms (56:00) ★★ ★★

Biomes are zones created by physical geographic and climatic conditions in different areas of the earth. Organisms thrive or perish within biomes depending on their ability to adapt. This program will describe the major world biomes and explain how some organisms adapt to the environment within the biomes. Mention will be made of how humans have changed the ecosystem in some biomes. © 2006 United Learning

Biology - Ecology

Elements of Biology : Ecosystem : Organisms and Their Environment (56:00) ★★ ★★

Plants and animals compete and cooperate in their environment resulting in what is often described as a "Balance of Nature" within an ecosystem. © 2006 United Learning

Biology - Ecology

Elements of Biology : Matter and Energy : Organization in Living Systems (56:00) ★★ ★★ ★★

Matter and energy are organized in living systems in such a way that they help the organism adapt to its environment. © 2006 United Learning

Biology - Ecology

Energy and the Chemistry of Life (39:48) ★★ ★★

**LOCATION /
TOPIC**

TITLE & DESCRIPTION

This two-part program explains the basic physical and chemical processes that allow energy to be stored and utilized by living things. The physical concepts of matter and energy are explained and the structure of atoms are described. Students learn how sub-atomic particles aggregate to form elements and then combine to form molecules and chemical compounds. Finally, some of the most important compounds essential to living organisms are discussed. The second part utilizes the physical and chemical concepts to analyze two metabolic processes: aerobic cellular respiration and photosynthesis. © 1996 United Learning

Biology - Ecology

Legacy of an Oil Spill (28:46) ★ ★ ★ ★

In 1989 the super tanker Exxon Valdez spilled over 11 million gallons of crude oil into Alaska's Prince William Sound damaging over 1,000 miles of wilderness shoreline. More than a decade later, only two of 28 species injured by this environmental catastrophe have recovered. Some species are fighting their way back while others are still in decline. This video allows viewers to join scientists in the field on an ecosystem research project to determine the long-term effects of the spill on several species of fish, birds and marine mammals. They learn about the challenges many injured species face in a rapidly changing marine environment. "Legacy of an Oil Spill" provides students with a scientific perspective on the long-term effects of the nation's worst oil spill on the wildlife and habitats of Prince William Sound. © 2000 AIMS Multimedia

Biology - Ecology

NetFiles #107: Science/Environment Applications (26:00) No Ratings Yet

In this program, you will visit two Net Classrooms where students are combining Internet research, scientific data, and hands-on water testing to help the environment. Net Safety segment discusses the newest versions of filtering software available for schools. Susan Walton from Peasley Middle School in Gloucester, working with Dr. Moe Lynch from the Virginia Institute of Marine Science, has developed a problem-based activity on fish kill. Jenny Sue Flannagan and Deb Rollins from Kemps Landing Magnet School have students conduct water quality tests and place the data on a web site for others to research. © 1998 United Learning

Biology - Ecology

On the Gulf : Coastlines in Danger (56:09) ★ ★ ★ ★

In the aftermath of Hurricane Katrina, this program takes a look at the challenges that scientists, environmentalists, and engineers face with Gulf Coast weather phenomena. © 2006 Discovery Channel School

Biology - Ecology

Simply Science: Combustion and Replacement Reactions (27:13) ★ ★ ★

Compares combustion reactions to respiration, explores solubility, explains polyatomic ions and multi-valent metals, and investigates single and double replacement reactions. Interviews with water treatment experts explain how sewage treatment plants use chemicals and bacteria, and show how bacteria is used to help clean up spills and remediate contaminated soil. © 1998 United Learning

Biology - Ecology

Simply Science: Conditions for Life (27:04) ★ ★ ★ ★

LOCATION / TOPIC

TITLE & DESCRIPTION

Students investigate the science behind the search for extraterrestrial life. Using information presented throughout the series, they discuss the possibility of life on other worlds in the solar system. This leads to an investigation of the effects living things have on their environment and specifically the modern concern of the Greenhouse Effect. The underlying theme is the universality of scientific knowledge and its ability to lead us to reasonable hypotheses. © 1998 United Learning

Biology - Ecology

Simply Science: Solar Energy in the Biosphere (27:04) ★★

The Earth is compared to a spaceship that travels through space carrying everything needed for survival. Students see the effects of light energy on matter and find evidence that light causes chemical reactions in plants. This leads to a discussion of the importance of solar energy in sustaining life and driving weather systems on our planet. © 1998 United Learning

Biology - Ecology

Simply Science: Systems, Energy, and Matter (27:08) ★★★★★

Examines how living organisms, as open systems, exchange energy and matter with their environment. Students observe the absorption, transportation and waste removal of water, mineral and gases in plants and animals. Pesticides are studied explaining how they are helpful in plants, but may be inadvertently amplified in animals higher up the food chain. © 1998 United Learning

Biology - Ecology

Simply Science: Water: Highway of Life (27:05) ★★★

The ability of water to dissolve substances makes it the primary system of transport in living organisms. Using graphics, this program examines the formation of molecular and ionic compounds, and explores the efficiency of water in dissolving these compounds. The process of diffusion is described and a lab is performed to show the rate of diffusion in gelatin. A visit to a water treatment plant shows how water's efficiency as a solvent affects the water treatment process. © 1998 United Learning

Biology - Ecology

Simply Science: Water's Physical Properties (27:04) ★★★★★

Ice fishing is the setting for this review of the physical properties of water. A lab is performed to graph the effects of adding energy to frozen and liquid water, and the amount of energy required to raise the temperatures of ice and water by certain amounts is calculated. The natural setting and the lab are integrated to emphasize the high specific heat capacity of water, and the importance of water in moderating the Earth's climate. © 1998 United Learning

Biology - Ecology

Simply Science: Weather Systems (27:05) ★★★

Looking at weather from a global perspective illustrates the forces which determine major weather patterns. Students conduct an experiment to demonstrate the uneven heating of Earth and learn about the meeting of high and low pressure systems. A meteorologist at a weather forecasting center explains how data is collected for weather forecasts, and how storm activity can be predicted. © 1998 United Learning

Biology - Ecology

TEAMS : Ecosystems : Observing Your Environment (30:17) No Ratings Yet

LOCATION / TOPIC	TITLE & DESCRIPTION
	Students make observations of the environment around them and use classroom maps to record their observations. Throughout the video, viewers are given breaks to practice what they have just seen in their own classroom. © 0 Los Angeles County Office of Education
Biology - Ecology	Underwater Forensics (56:00) ★ ★ ★ ★ For countless centuries, the sea has enticed mankind to travel and explore—always at risk of disaster from the ocean’s tumultuous power and basic inhospitability to human life. In segments that cover two famous shipwrecks and a phenomenon that endangers deep-sea divers, students examine the skills and techniques that modern investigators use to solve maritime mysteries and avoid future accidents. This program includes two feature segment and two short segments. © 2004 Discovery Channel School
Biology - Ecology	Water Through the Ecosystem (27:05) ★ ★ ★ The video examines how water affects vegetation and climate in different areas of the world. © 1998 United Learning
Biology - Ecology	Web of Life : Producer to Predator (23:52) ★ ★ ★ ★ As versatile media support for Biology, Life Science and Ecology units on ecosystems, this program explores the processes and relationships that occur in all ecosystems: the flow of energy, the cycling of water and nutrients, food chains, and the producer-consumer-decomposer cycle. It also looks at examples of how modern society has affected the balance of life in different ecosystems. © 1996 AIMS Multimedia
Biology - Ecology	World's Biomes : Desert to Rainforest (30:00) ★ ★ ★ This program provides versatile media support for Biology, Life Science, Ecology, Earth Science, and Geography units on biomes. Students' knowledge is reinforced regarding the various physical factors that determine the climate of a biome, and, in turn, the density of life within a given biome. This informative program highlights the adaptations that different organisms make to their environment. © 1996 AIMS Multimedia
Chemistry	Chemistry Connections: Acid-Base Calculations (29:05) ★ ★ ★ Quantitative aspects of acids and bases are used to describe their solutions. Various STS contexts are used to present the different calculations involving K_a , K_b , pH, pOH, hydronium ion, hydroxide ion, and the percentage of a reaction. Shows the relationship between K_w , K_a , and K_b . © 1998 United Learning
Chemistry	Chemistry Connections: Acid-Base Indicators (29:05) ★ Common substances are used to reveal how and why indicators change color in the presence of acids or bases. Demonstrates universal indicators and universal indicator strips. Students are challenged to design an experiment that determines the relative pH of several solutions using only indicators. © 1998 United Learning
Chemistry	Chemistry Connections: Acid-Base Stoichiometry and Titration Curves (29:05) ★ ★ ★

**LOCATION /
TOPIC**

TITLE & DESCRIPTION

The control of pH in swimming pools and hot tubs provides an example of a stoichiometric acid-base calculation. Various types of pH curves are generated using a pH probe and a computer interface, comparisons of the different curves are made, and information obtained from the curves discussed. © 1998 United Learning

Chemistry

Chemistry Connections: Acid-Base Technology and Society (29:05) ★★

Examines and evaluates uses of acids and bases in the food and pharmaceutical industries. Shows how acids, produced directly or indirectly, can lead to environmental problems such as acid rain. © 1998 United Learning

Chemistry

Chemistry Connections: Acid-Base Titrations (29:05) ★★ ★

Students are actively involved in determining an unknown acid concentration through the selection of proper indicators, the standardizing of the titrant, the titration of the unknown acid, and the analysis. Computer-generated titration curves are used to explain equivalence points and indicator endpoints. © 1998 United Learning

Chemistry

Chemistry Connections: Acid-Base Titrations and Concentration Calculations (29:05) ★★ ★★

Students complete an analysis of household ammonia using the steps for titration and proper techniques. Hydrochloric acid is standardized using a sodium carbonate solution of known concentration. The HCl titrant is then used to titrate the ammonia. Data is collected and calculations completed to determine the concentration of the ammonia. © 1998 United Learning

Chemistry

Chemistry Connections: Acids and Bases Defined (29:05) ★★ ★

Empirical definitions of acidic, basic and neutral solutions are derived by performing diagnostic tests. Students examine STS applications of acids and bases, and an analogy is used to present the historical development of acid-base theories. © 1998 United Learning

Chemistry

Chemistry Connections: Acids Bases and the Ion Product Constant of Water (29:05) ★★ ★

Analyzes a pure water system and introduces its equilibrium constant. Studies evidence for the shifting of equilibrium in pure water when acids or bases are added. Students examine the inverse relationship between hydrogen and hydroxide ions in all solutions, and sample calculations are worked out with K_w . Students analyze and explain their results using collisions with water and information about hydroxide or hydroxide ions. © 1998 United Learning

Chemistry

Chemistry Connections: Acid Rain and K_w (29:05) ★★

The topic of acid deposition leads to a calculation of hydronium and hydroxide ion concentrations, pH and pOH using K_w . Calculations demonstrate what happens to pH and pOH during a series of dilutions. © 1998 United Learning

Chemistry

Chemistry Connections: Applying a Problem Solving Model to Energetics (29:05) ★★ ★

**LOCATION /
TOPIC**

TITLE & DESCRIPTION

Illustrates multi-step energetics problems with various STS situations. Stresses the steps that should be applied in problem-solving: identify changes, relate known to unknown, calculate the answer, and check the answer. © 1998 United Learning

Chemistry

Chemistry Connections: Assigning Oxidation Numbers and Balancing Half-Reactions (29:05) ★★

Detailed graphics explain oxidation numbers within molecules and complex ions. Various examples show the rules for assigning oxidation numbers. STS examples are used for writing half-reactions using oxidation numbers the explain the rules. © 1998 United Learning

Chemistry

Chemistry Connections: Balancing Oxidation-Reduction Reactions Using Oxidation Numbers (29:05) No Ratings Yet

Generates oxidation and reduction half-reactions using oxidation numbers and rules from the previous program. Electrons are balanced and the two half-reactions are added to obtain the balanced overall reaction. Lab demonstrations explain a shortcut method for balancing without writing half-reactions. © 1998 United Learning

Chemistry

Chemistry Connections: Bronsted-Lowry Acid-Base Systems (29:05) ★★ ★★

Discusses the limitations of Arrhenius' Theory and shows how a new theory involving proton transfer-the Bronsted-Lowry Theory-explains these limitations. Acids and bases and their conjugates are explained and labeled as conjugate acid-base pairs in equations. Demonstrates the five-step method for writing Bronsted-Lowry equations using an acid-base table from a data booklet or a text-appendix. © 1998 United Learning

Chemistry

Chemistry Connections: Buffers and Buffer Systems (29:05) ★★ ★★

Buffers and how they work are explained in terms of the Bronsted-Lowry Theory and Le Chatelier's Principle. Students explore the importance of buffers in biological systems, and buffering action is illustrated using chemical reactions and pH curves. © 1998 United Learning

Chemistry

Chemistry Connections: Building a Water Heater (29:05) ★★ ★★

Students compare the efficiency of different water heater designs using controlled and responding variables. The molar enthalpies of different fuels are determined and compared. © 1998 United Learning

Chemistry

Chemistry Connections: Corrosion Reactions (29:05) ★★

Explains why corrosion is a major concern on industry and consumers. Shows everyday examples of corrosion reactions and how they can be prevented. The five-step method for writing these reactions is used throughout the program. © 1998 United Learning

Chemistry

Chemistry Connections: Dynamic Equilibrium (29:05) ★★

The dinitrogen tetroxide, nitrogen dioxide equilibrium system demonstrates how equilibrium is dynamic, and that a change in temperature can favor either the forward or reverse rate of the reaction. On a molecular level, the hydrogen, iodine, hydrogen iodide equilibrium is used to show-according to the collision theory-what happens from the start of a reaction until the system reaches equilibrium. © 1998 United Learning.

LOCATION / TOPIC	TITLE & DESCRIPTION
Chemistry	Chemistry Connections: Electrochemical Changes: Energy and Cost (29:05) No Ratings Yet Compares the costs of recycling to that of producing aluminum and iron from their ores. Students look at the economic and environmental advantages and disadvantages associated with each process. © 1998 United Learning
Chemistry	Chemistry Connections: Electrolysis (29:05) No Ratings Yet Explores the similarities and differences of voltaic and electrolytic cells, The same steps to predict voltaic cell reactions can be used to predict non-spontaneous electrolytic reactions. Discusses industrial applications of electrolysis. © 1998 United Learning
Chemistry	Chemistry Connections: Electrolysis of Molten Compounds (29:05) ★ ★ ★ ★ Explains how metals are obtained from molten ores using electrolysis. A model and graphics present a historical perspective of Sir Humphrey Davy's work. Students explore similar technology used today in the Hall-Heroult process, the Downs cell and the formation of magnesium metal. © 1998 United Learning
Chemistry	Chemistry Connections: Equilibrium Systems in Methanol Production (29:05) No Ratings Yet The two reactions involved in the production of methanol form the basis for a review of the factors which favor methanol production, and for equilibrium calculations. Dinitrogen tetroxide, nitrogen dioxide equilibrium is used as an example of a calculation using a quadratic equation to solve for equilibrium concentrations. © 1998 United Learning
Chemistry	Chemistry Connections: Energy from the Sun (29:05) ★ ★ Photosynthesis and cellular respiration are examples of potential energy changes that can be calculated using Hess's Law. Students calculate the molar enthalpy of combustion of hydrocarbons and compare it to the molar enthalpy of respiration. Catalysts are explained and lab demonstrations are used to show how catalysts lower activation energy. © 1998 United Learning
Chemistry	Chemistry Connection : The Enthalpy of Phase Changes (29:06) ★ ★ Determines the molar enthalpy of a phase change by assuming that the kinetic and potential energy changes of a substance undergoing a temperature and phase change are equal to the kinetic energy of the calorimeter. The molar enthalpies for condensation and fusion of water are determined calorimetrically, and various enthalpy change problems are solved. © 1998 United Learning
Chemistry	Chemistry Connections: Explaining the pH/pOH Scale (29:06) ★ ★ Reveals that the pH scale is an easy way to express hydrogen ion concentration. Provides a definition of pH and shows how it is calculated. Explains a pH/pOH scale and observes the mathematical relationship between pH and pOH. Demonstrates the use of pH meters and examines the significance of pH in biological systems and other products. © 1998 United Learning

LOCATION / TOPIC	TITLE & DESCRIPTION
Chemistry	Chemistry Connections: Explaining the Strengths of Acids and Bases (29:05) No Ratings Yet An experiment comparing acidic solutions in relationship to their pH and conductivity leads to a definition of strong and weak acids. A similar procedure is followed for bases. Students develop equilibrium expressions for acids and bases and the K_a and K_b are then used to define strong and weak acids and bases. © 1998 United Learning
Chemistry	Chemistry Connections: Extending the Reduction Half-Reaction Table (29:05) No Ratings Yet Students perform experiments to identify the chemical responsible for causing metal to tarnish, compare relative strengths of non-metallic oxidizing agents, and develop a Reduction Half-Reaction Table. Students learn to use the Reduction Half-Reaction Table to predict spontaneity. © 1998 United Learning
Chemistry	Chemistry Connections: Introduction to Chemical Equilibrium Systems (29:05) No Ratings Yet Explains several reversible reactions, and a juggler demonstrates the differences between steady state, open and closed systems. Students perform experiments using evaporation to show the difference between an open and closed system. Defines equilibrium using the preceding examples and the sublimation of iodine. © 1998 United Learning
Chemistry	Chemistry Connections: An Introduction to Oxidation and Reduction (29:05) ★★ Introduces and defines the terms oxidation, reduction, oxidizing agent and reducing agent. Examples of half-reactions and STS applications reinforce the terms. © 1998 United Learning
Chemistry	Chemistry Connections: Introduction to Thermochemical Changes (29:05) ★★ ★★ Defines energy and the fact that energy can be converted from one form to another. An overview of thermochemical changes is presented as it relates to physical, chemical and nuclear changes. The First Law of Thermodynamics is defined and applied, and the terms endothermic and exothermic are explained. Potential and kinetic energy definitions are illustrated, and the concept that energy can be measured is introduced. © 1998 United Learning
Chemistry	Chemistry Connections: Introduction to Voltaic Cells (29:06) No Ratings Yet Students build simple voltaic cells and study the parts of the cell and their function. Discusses commercial cells in terms of their usefulness and limitations. Provides examples of electrochemical corrosion and cathodic protection. © 1998 United Learning
Chemistry	Chemistry Connections: Kinetic and Potential Energy Changes During Changes to States of Matter (29:06) ★★ ★★ Graphs are generated to illustrate kinetic and potential energy changes to states of matter. Molecular animation further illustrates this concept. Defines molar enthalpy terms for phase changes and discusses STS applications. © 1998 United Learning
Chemistry	Chemistry Connections: Molar Enthalpies and Formation Reactions (29:05) No Ratings Yet

LOCATION / TOPIC

TITLE & DESCRIPTION

The three methods for expressing molar enthalpies are demonstrated with equations, graphs and experiments. Explains enthalpy changes in terms of the rearrangement of chemical bonds and examines a method for graphically determining the enthalpy change for a reaction using known enthalpy changes for other reactions. © 1998 United Learning

Chemistry

Chemistry Connections: Molar Enthalpy of Solution (29:05) ★★

Discusses energy transfer by assuming the energy released by one substance equals energy absorbed by another. Calorimetry experiments determine the amount of energy transferred when hot water is added to cold. Through experiments, students determine molar heats of solution for endothermic and exothermic reactions. © 1998 United Learning

Chemistry

Chemistry Connections: Nuclear Changes (29:05) ★★

Compares the energy of a phase change, chemical change and nuclear change. Explains the conversion of mass to energy using Einstein's equation, $E=mc^2$. Students trace the path from the discovery of radioactivity to the development of the fission bomb. © 1998 United Learning

Chemistry

Chemistry Connections: Opposing Reactions and Le Chatelier's Principle (29:05) ★★★

Explains Le Chatellier's Principle and shows how his scientific work is used today to identify factors that can affect equilibrium concentrations. Cobalt (II) coordinate complexes visually demonstrate how equilibrium can be shifted by changing temperature or the concentrations of various reagents. Students study the Haber-Bosch process for synthesizing ammonia to determine the factors that would favor the production of ammonia, including the use of catalysts. © 1998 United Learning

Chemistry

Chemistry Connections: Opposing Reactions in Equilibrium Systems (29:05) ★★★★★

The synthesis of ammonia shows how to determine the amount of product and reactant that are present at equilibrium. The equilibrium law expression is explained and derived, and written examples are shown for various reactions. The equilibrium constant, K , from its numerical value, reveals whether products or reactants are favored at equilibrium. © 1998 United Learning

Chemistry

Chemistry Connections: Oxidation-Reduction Titrations and Stoichiometry (29:06) ★★★

Shows the complete cycle of a redox titration and the analysis of the data: predicting the endpoint color change, standardizing the titrant, titrating the unknown, and stoichiometric analysis of the data. © 1998 United Learning

Chemistry

Chemistry Connections: Practical Applications of Calorimetry (29:06) ★★★

Shows how the energy content of food can be determined using calorimetry. Defines specific heat capacity and heat capacity. Students design and build a calorimeter and perform an experiment to determine the energy content of a peanut. © 1998 United Learning

Chemistry

Chemistry Connections: Predicting Oxidation-Reduction Reactions (29:05) No Ratings Yet

LOCATION / TOPIC	TITLE & DESCRIPTION
	Focuses on early electronics. Students perform a lab demonstration to make a printed circuit board. Explains the five-step method for writing redox reactions equations. The five-step method is then reviewed using STS examples. © 1998 United Learning
Chemistry	Chemistry Connections: Predicting Redox Reactions (29:05) No Ratings Yet Students complete experiments that explain the terms spontaneous and non-spontaneous and that indicate the strength of oxidizing and reducing agents. A reduction half-reaction table is developed from the experiments. Students perform experiments to test the spontaneity rule and show the results on an appropriate data table. © 1998 United Learning
Chemistry	Chemistry Connections: Primary Cells Secondary Cells and Fuel Cells (29:05) ★ ★ ★ Secondary cells are defined and compared to primary cells. Equations show the rechargeable aspect of secondary cells, and this is explained using a lead storage battery. Discusses the uses and advantages of fuel cells. © 1998 United Learning
Chemistry	Chemistry Connection : Primary Voltaic Cells (29:05) ★ ★ ★ ★ ★ Cutaways and graphics of commercial primary cells show electrolyte composition, oxidation and reduction half-reactions, and anode and cathode. Discusses applications of the cells, as well as their drawbacks. Students conduct experiments on primary cells arranged in a series to show that the total voltage is the sum of the cells in the series. © 1998 United Learning
Chemistry	Chemistry Connection : Quantitative Analysis Using Redox Titration (29:05) ★ ★ ★ ★ ★ Emphasizes the usefulness of redox titration as an analytical technique. Explains titration procedures and techniques and how to determine the endpoint of a redox titration. Experiments demonstrate how to collect and analyze data to obtain a quantitative result. © 1998 United Learning
Chemistry	Chemistry Connection : Quantitative Electrolysis (29:05) ★ ★ ★ ★ Discusses Michael Faraday's contributions to science. Explains electrical units and the Faraday, and the relationship between current, time and moles of electrons. Sample problems demonstrate this relationship, and the stoichiometric connection to electrolysis is demonstrated using problems with STS context. © 1998 United Learning
Chemistry	Chemistry Connection : Risk Benefit Analyses of Energy Sources (29:05) ★ ★ ★ Our reliance on fossil fuels is the basis for the students' risk/benefit analysis of energy sources. The advantages and disadvantages of fossil fuels are discussed, and several alternate energy sources are reviewed. © 1998 United Learning
Chemistry	Chemistry Connection : Specific Heat Capacity and Calorimetry (29:06) ★ ★ ★

LOCATION / TOPIC

TITLE & DESCRIPTION

Specific heat capacity is explained and Joule's experiment is duplicated to show how he determined the specific heat capacity of water. Experiments demonstrate that the heat released by one substance equals the heat absorbed by another. Students see that when this applied to calorimetry, the specific heat of different substances can be determined. © 1998 United Learning

Chemistry

Chemistry Connection : Voltage and Voltaic Cell (29:05) ★★

Explains and defines electrical measurements. Voltages are measured from laboratory and Daniell cells. Discusses reasons for a standard half-cell potential and explains the electric potentials on the Reduction Half-Reaction Table. The reduction table is then used to predict net voltage values for redox reactions and to determine if the reaction is spontaneous or non-spontaneous. Students are challenged to design a cell with a specific voltage. © 1998 United Learning

Chemistry

Chemistry Connection : Writing and Predicting Equilibrium for Bronsted-Lowry Equations (29:05) No rating yet

Prediction of Bronsted-Lowry acid-base neutralizations is based on acid-base strength determined from an acid-base data table. Reactions involving polyprotic acids and anions of polyprotic acids can be predicted by adding the proton transfer equations together. Students test and evaluate these predictions through laboratory activities. © 1998 United Learning

Chemistry

Elements of Chemistry: Acids, Bases, and Salts (20:00) ★★★

Acids and bases are two different classes of compounds that are fundamental to the functioning of our world. When they combine, acids and bases produce salts. Students explore the chemistry of acids and bases and focus on the pH scale, an ingenious measurement of the amount of acidity and basicity of compounds. The program concludes by illustrating how the level of acids and bases contribute to processes as varied as acid rain and the functioning of the cells in our bodies. © 2003 United Learning

Chemistry

Elements of Chemistry: Atoms: The Building Blocks of Matter (20:00) ★★★

The understanding of the structure of the atom is one of the greatest achievements of modern science. Atoms are the fundamental building blocks of all matter. Students explore the structure of atoms, what holds them together, what is the composition of different elements, isotopes, and ions. Finally, the program provides an introduction to the basic ideas of Quantum Theory, and shows how the knowledge of the atom has led to an understanding of how the millions of different substances that exist in the universe are formed. © 2003 United Learning

Chemistry

Elements of Chemistry: Carbon: The Element of Life (20:00) ★★★

All matter follows the same scientific principles, but there are significant differences in the chemical make up of organic and inorganic substances. Life as we know it could not exist without the element carbon. It provides the backbone of every living molecule. This program focuses on the unusual properties of carbon and shows how it is able to combine with other elements to produce the vast number of organic compounds from hydrocarbons to the molecules in human tissues. © 2003 United Learning

LOCATION / TOPIC	TITLE & DESCRIPTION
Chemistry	Elements of Chemistry: Compounds and Reactions (20:00) ★ ★ ★ If there are only 92 elements found naturally in the universe, how is it possible that there are millions of different substances? Elements bond together into compounds and it is these compounds that make up the great variety of substances. Students explore how different types of compounds are formed, and examine the chemical reactions of elements when they bond into other substances. The program concludes with a look at electrochemistry, a special type of chemical reaction. © 2003 United Learning
Chemistry	Simply Science: Discovering the Elements (27:14) ★ ★ ★ Experiments are conducted to establish the physical and chemical properties of a number of representative elements. These elements are then grouped logically, first into metals and non-metals, then into groups based on the observation of reactions. Finally, students compare their table to Mendeleev's to confirm their findings. © 1998 United Learning
Chemistry	Simply Science: Periodic Table (27:04) ★ ★ Reviews Mendeleev's periodic table and the theory of the nuclear structure of the atom. An examination of Bohr's model of the atom explains how this theory led to the organization of the modern periodic table. Students then explore the modern periodic table, comparing it to Mendeleev's and using it to make predictions about the chemical properties and reactions of the representative elements. © 1998 United Learning
Chemistry	Simply Science: Reaction Equations (27:04) ★ ★ Discusses formation and decomposition reactions; how to predict and test compound classification as ionic, molecular, acid or base; how to name the compounds involved; the law of conservation of mass; and how to balance equations. A geologist explains the formation of valuable mineral compounds within the earth, mechanisms such as hydrothermal vents which concentrate minerals in locations to be extracted, and refining methods using decomposition reactions. © 1998 United Learning
Chemistry	Simply Science: Water's Structure (27:10) ★ ★ ★ Explains that water's unique characteristics result from the structure of the water molecule. Using a Hoffman apparatus, students discover that water can be decomposed to one part oxygen and two parts hydrogen. In another lab, they discover water is a polar molecule, attracted to both positive and negative charges. This history of the atomic model is explored, from the days of alchemists to present day. Bohr's model is used to explain how hydrogen and oxygen form a covalent bond. © 1998 United Learning
Physics	Eccentricity of the Ellipse (29:15) ★ Orbits and sewers are just two of the examples used in this study of the eccentricity definition of ellipses. Traces the origins of the concept from Plato, to Kepler, and beyond. Eccentricity is defined, the shape of an ellipse as e approaches 0 and 1 is observed, and problems are solved using the eccentricity. © 1998 United Learning

LOCATION / TOPIC

TITLE & DESCRIPTION

Physics

Elements of Physics : Energy: Work and Power (56:00) ★★★★★

This program explores the many different forms of energy from sound, heat, light, and chemical energy. One of the greatest forms of energy is nuclear energy locked within the nucleus of atoms. Energy can be converted from one form to another and much of the success of our industrialized society has been in our ability to harness energy for our needs. Although classical physicists saw energy and matter as separate and distinct, modern physics has shown that the two are fundamentally linked. © 2006 United Learning

Physics

Elements of Physics : Light Optics and Electricity (56:00) ★★★★★

Light is one of the most fundamental forces in the universe and proved to be one of the most difficult riddles to unravel. The program begins by describing the field of optics and how scientists came to understand such principles as refraction, reflection, and the behavior of light as it passes through lenses. James Clerk Maxwell's theory of electromagnetism is reviewed along with the importance of the speed of light. The program concludes by showing how these theoretical insights have led to developments in electricity and telecommunications that have transformed our lives. © 2006 United Learning

Physics

Elements of Physics : Matter, Atoms and Molecules (56:00) ★★★★★

All matter is made up of atoms, and atoms, in turn, are made up of electrons that swarm around a nucleus comprising neutrons and protons. This program explains the common characteristics of atoms and shows how each element is made up of atoms, which have the same number of electrons and protons. The way these different elements combine into molecules explains how a small number of elements can form into the millions of different substances that we find in the universe. © 2006 United Learning

Physics

Elements of Physics : Modern Physics and Cosmology (56:00) ★★★★★

This is a program on the way that modern physics has revolutionized the way we understand our universe. Physicists found that the sub-atomic world does not follow the laws of classical physics and developed quantum theory to give a more exact explanation. Einstein developed his special theory of relativity to explain what happens when objects travel close to the speed of light and later developed the general theory of relativity, which provided a new explanation of gravity. These theories have shed light on the existence of black holes and the origins of the universe. © 2006 United Learning

Physics

Elements of Physics : Motion, Force and Gravity (56:00) ★★★★★

When Isaac Newton formulated his three laws of motion, he transformed physics because these laws allowed precise predictions of the movement of objects at all times and in all circumstances. From this, Newton deduced the law of gravity, which explained the movement of planets and stars. This program describes these theories and goes on to outline the four fundamental forces of the universe and how Einstein revolutionized the way we understand gravity with his general theory of relativity. © 2006 United Learning

Physics

Elements of Physics : Waves: Sound and Electromagnetism (20:00) ★★★★★

LOCATION / TOPIC

TITLE & DESCRIPTION

Energy, whether it is sound, light, heat, or some other form, is propagated as waves. This program looks at two different types of waves, longitudinal and transverse waves, and the common characteristics of all waves. Sound and light waves are examined in some detail, and then the program concludes with a look at a modern theory called the wave-particle duality, which holds that all matter and energy have characteristics of both waves and particles. © 2006 United Learning

Physics

Future of the Milky Way, The (52:00) ★ ★ ★

Scientists from around the globe probe to find clues about the origins of our galaxy. See how they attempt to pinpoint the location of a strange and dangerous presence, a massive black hole, hidden at the core of the galaxy. Watch the dramatic animation of the birth and life of the Milky Way Galaxy and learn what the future holds for the cosmos. © 2003 Discovery Channel School

Physics

Great Books: Galileo's Dialogue (27:00) ★ ★ ★ ★

Perhaps the most visionary and controversial book of its time, Galileo's Dialogue asserted that Earth was not the center of the universe. It landed Galileo in jail until his death for contradicting the teachings of the medieval church. Egotistical visionary against bullheaded pope, science against theology — the profound conflicts caused by this book unfold through dramatic reenactments. © 1997 Discovery Channel School

Physics

Measure for Measure: Space: Distance and Time (23:00) ★ ★ ★ ★

Since the time of the ancient Egyptians, the skies have changed, but the questions they inspire are the same: how vast are the heavens and how old is the universe? Our solar system stretches for billions of miles, but it is minuscule in the context of the Milky Way galaxy. © 2001 Discovery Channel School

Physics

Measure for Measure: Weight and Energy (55:50) ★ ★ ★ ★

With its focus on exciting activities and interesting historical scenes, this lively presentation introduces students to the concepts and measurement of force and motion. © 2004 Discovery Channel School.

Physics

Physics: A World in Motion: Atomic Spectra (29:00) ★ ★ ★

Students observe the visible spectra of a number of gases, and in the process begin to see the analytical power of spectral analysis. This line of thought leads to a number of applications and Rutherford's model of the atom. © 1998 United Learning

Physics

Physics: A World in Motion: Biomedical Applications of EMR (29:00) ★ ★ ★

The relative energy of electromagnetic waves of different frequencies is discussed in terms of their penetrating ability in human tissue. The student's exploration focuses on the many EMR devices used in biomedical applications. Using the risk-benefit model, they discuss the merits of tanning during a planned vacation. © 1998 United Learning

Physics

Physics: A World in Motion: The Bohr Model of the Atom (29:00) ★ ★ ★

LOCATION / TOPIC

TITLE & DESCRIPTION

The ideas of the atomic spectra and the specifics of the hydrogen spectrum are synthesized to present Bohr's model of the hydrogen atom. The laser provides a context for discussing energy levels and emission of radiation due to energy transitions. © 1998 United Learning

Physics

Physics: A World in Motion: Charge on the Electron (29:00) ★★★

Students repeat the procedure used by R.A. Millikan in his oil-drop experiment. They measure, collect and carry out a detailed analysis of the data to determine the charge on one electron. With the help of a model, they reinforce vector addition of forces and terminal velocity as applied in the procedure and analysis of Millikan's experiment. © 1998 United Learning

Physics

Physics: A World in Motion: Charge to Mass Ratio (29:00) ★★★★★

Students complete a detailed analysis of J.J. Thomson's charge-to-mass ratio experiment. They use this data to calculate the ratio of charge to mass for one electron. The concepts used in the investigation are linked to television technology. © 1998 United Learning

Physics

Physics: A World in Motion: Charged Particles in Magnetic Fields (29:00) ★★★★★

Auroras provide a context to study moving charges within a magnetic field. Students learn that moving electric charges experience a force in magnetic fields and discover how to quantify this force and find its direction using hand rules. © 1998 United Learning

Physics

Physics: A World In Motion: Collinear Momentum (29:00) ★★★

The biathlon provides the context for investigating the law of conservation of momentum in the laboratory and on location. Students identify different types of collisions in which momentum is conserved: explosion, hit and stick, and hit and rebound. They develop an appropriate quantitative problem-solving strategy for each. © 1998 United Learning

Physics

Physics: A World in Motion: Conservation of Momentum and Energy (29:00) ★★★★★

Exploring the physics of a soccer game, a projectile spring and a ballistic pendulum, students apply their understanding of the concepts of energy and momentum. Problem solving and combining many physics ideas into one solution are emphasized. © 1998 United Learning

Physics

Physics: A World in Motion: Coulomb Forces in Nature (29:00) ★★★★★

Ionic crystals provide students with a real-life application of quantifying electrostatic forces between point charges. They use large-sized models to facilitate advanced Coulomb's law problem solving, using vectors and vector components. © 1998 United Learning

Physics

Physics: A World in Motion: Coulomb's Law (29:00) ★★

Students use torsion balance, in a quantitative analysis of the relationship among charge, distance and electrostatic force, to verify Coulomb's law. They compare, analytically, Coulomb's law of electrostatic force and Newton's law of universal gravitational force. © 1998 United Learning

**LOCATION /
TOPIC**

TITLE & DESCRIPTION

Physics

Physics: A World in Motion: Current Electricity (29:00) ★★

Students are challenged to devise a source of potential difference from provided materials. Throughout the program, they investigate electric-current concepts by discussion, laboratory work and interviews. They complete calculations involving the change in energy for various loads in an electric circuit. © 1998 United Learning

Physics

Physics: A World in Motion: Elastic and Inelastic Collisions (29:00) ★★ ★★

Elastic and inelastic collisions are analyzed. A montage of sports images leads students to recognize most collisions as inelastic. With teacher guidance, students use criteria of conservation of kinetic energy for elastic collisions to solve for an unknown quantity in several examples. © 1998 United Learning

Physics

Physics: A World in Motion: Electric Fields Between Plates (29:00) ★★ ★★

Investigating the shape of electric fields between and around plates, students discover the uniformity of such fields. They analyze the behavior of moving electric charges in uniform fields quantitatively, using vector sum calculations. Lightning and particle accelerators provide a context for reviewing the effects of electric fields. © 1998 United Learning

Physics

Physics: A World in Motion: Electrical Potential (29:00) No ratings yet

Comparing electric and gravitational effects, students define electric potential and electric potential difference. Students compare a ride on a water slide to the effects of potential difference on charged particles. Lightning and particle acceleration are explained using the concept of electrical potential. © 1998 United Learning

Physics

Physics: A World in Motion: Electromagnetic Forces (29:00) ★★ ★★

The concept of electromagnetism is introduced and investigated. Students then apply principles learned in the lab to workings of a malfunctioning speaker. © 1998 United Learning

Physics

Physics: A World in Motion: Electromagnetic Waves and Communication (29:00) ★★ ★★

Emphasis is placed on how transmission and reception occur through a studio model of a transmitter and receiver and interviews with experts. Students explore the roles of different parts of the EMR spectrum in telecommunications. © 1998 United Learning

Physics

Physics: A World in Motion: Electrostatics (29:00) ★★

Historic views, from the two-fluid concept of the Greeks to Franklin's single positive fluid, lead students to understand electrostatic charge in terms of electrons, as based on the atomic model of matter. Concepts of electrostatics are developed as students consider static charge build up, the dangers of uncontrolled discharge, and controlled discharge in everyday situations. © 1998 United Learning

Physics

Physics: A World in Motion: EMR and the Stars (29:00) ★

**LOCATION /
TOPIC**

TITLE & DESCRIPTION

Students discover that astronomers use different parts of the electromagnetic spectrum to explore the universe. They discuss the value of satellite-observing platforms, explore possible situations to ground-based viewing, and compare images of the same object obtained using different wavelengths. © 1998 United Learning

Physics

Physics: A World in Motion: EMR Fundamentals (29:00) ★★

The historic development (Oersted, Ampere, Faraday and Maxwell) of electromagnetic theory is a major focus. Students perform a variety of mini-labs to demonstrate the wave-like behavior of EMR -specifically microwaves- and they undertake a research project to investigate the constituents of the electromagnetic spectrum. © 1998 United Learning

Physics

Physics: A World In Motion: Energy Conservation (29:00) ★★

Students analyze the transformation of gravitational potential energy to kinetic energy using algebraic and graphical means. The motion of mass on a spring, a bungee jump and an athlete on a trampoline provide the data for detailed analyses that support the principle of energy conservation. © 1998 United Learning

Physics

Physics: A World In Motion: Energy Transformation (29:00) ★★ ★

Students use the work-energy theorem to solve problems involving a change of gravitational potential energy to mechanical kinetic energy and the work done against friction. Roller coasters, water slides and athletic events provide real-world examples for algebraic and graphical analysis. © 1998 United Learning

Physics

Physics: A World in Motion: Fields Around Point Charges (29:00) ★★ ★ ★

The concept of field and field strength around point charges is developed from the parallel ideas in gravitation. Students investigate the shape of electric fields around point charges and quantify field strengths and forces. © 1998 United Learning

Physics

Physics: A World in Motion: Fission and Fusion (29:00) ★★ ★ ★

This program looks to the future. In the context of speculating how electricity will be generated 40 years from now, students investigate the nature of fission and fusion, comparing these two options to a coal-fired system. © 1998 United Learning

Physics

Physics: A World in Motion: From Cathode Rays to X-Rays (29:00) ★★ ★ ★

Students trace historical events that led up to the discovery of cathode rays and X-rays, including limitations imposed upon scientists by the available technology and their attempts to overcome these problems. Students find that science often progresses in a haphazard way: one chance observation may lead to a whole new field of inquiry with a completely unexpected set of applications. © 1998 United Learning

Physics

Physics: A World in Motion: Generator Effect (29:00) ★★ ★ ★

**LOCATION /
TOPIC**

TITLE & DESCRIPTION

Students investigate induction and provide explanations of the effect based on their knowledge of magnetic field-current interactions. In discussion with musicians and audio-recording personnel, students apply the concept of electromagnetic induction to sound equipment and investigate the workings of an acoustic microphone and magnetic tape playback equipment. © 1998 United Learning

Physics

Physics: A World in Motion: Kirchhoff's Rules (29:00) ★★

Students survey the development of electrical systems in automobiles, starting with cars from the turn of the century and ending with a hybrid electric vehicle. Using a component of automobile circuitry as a model, students apply Kirchhoff's rules, and make the connection to conservation of charge and energy. © 1998 United Learning

Physics

Physics: A World in Motion: Lenz's Law (29:00) ★

Students investigate the self-regulating nature of electric-motor speeds and discover the application of Lenz's law as a method of explaining the event. They complete measurements and calculations based on conservation of energy to determine the back EMF of an electric motor. The Meissner effect and induction furnaces are compared and contrasted in terms of eddy currents and energy conversions. © 1998 United Learning

Physics

Physics: A World in Motion: Magnetism (29:00) ★

During their investigation of magnetism, students examine the use of a compass needle in navigation and link its behavior to the Earth's magnetic field. They explain how other common magnetic objects work and are challenged to identify the connection between an aurora display and magnets. © 1998 United Learning

Physics

Physics: A World In Motion: Momentum and Impulse (29:00) ★★

Students gather information from two police officers- a vehicle-safety expert and a self-defense instructor- and use it in an exploration of the concepts of momentum and impulse. Teacher-guided analyses relate additional demonstrations of the principles of momentum and impulse. © 1998 United Learning

Physics

Physics: A World In Motion: Momentum: Vector Addition (29:00) ★★

Student explore the conservation of momentum in two dimensions on location at a curling rink and in the laboratory with an air table. They use orthogonal components to make two-dimensional analysis uniform. They then apply conservation to the analysis of an automobile accident. © 1998 United Learning

Physics

Physics: A World in Motion: Motor Effect (29:00) ★★ ★

Students apply motor-effect principles to the design of electric DC motors. They also perform a quantitative investigation to determine the force on a conductor in a magnetic field. Design, advantages and applications of DC motors are presented. © 1998 United Learning

Physics

Physics: A World in Motion: Networks (29:00) No ratings yet

**LOCATION /
TOPIC**

TITLE & DESCRIPTION

Students develop a five-step procedure for analyzing networks circuits and use it to analyze a model circuit built by referring to historic trolleys. Alternatives for public transit are identified using a risk-benefit model. © 1998 United Learning

Physics

Physics: A World in Motion: Ohm's Law and Energy (29:00) ★★

Students investigate the nature of resistance and its connection to safety when dealing with electric circuits. Locations interviews focus on the dangers posed by electric current, and methods of avoiding those dangers. Using Ohm's law and the power equation, students quantify the energy transfers occurring in theoretically valid situations and in laboratory experiment work. © 1998 United Learning

Physics

Physics: A World in Motion: Radioactive Decay (29:00) ★★

Radioactive decay is introduced using radioactive dating of artifacts and fossils as examples. Students learn to describe decay in terms of nuclear equations and half-life calculations. They practice half-life calculations using radioactive tracers. © 1998 United Learning

Physics

Physics: A World in Motion: Radioactivity (29:00) ★★

Radioactivity is introduced. Students explore the properties of alpha, beta and gamma radiation and conduct a risk-benefit assessment, in the context of food irradiation. © 1998 United Learning

Physics

Physics: A World in Motion: Risk-Benefit Analysis (29:00) ★★

In the process of exploring benefits and risks in personal safety equipment, students develop a generic Risk-Benefit Assessment model. Students use the model to reach personal decisions regarding the use of bicycle helmets. © 1998 United Learning

Physics

Physics: A World in Motion: Series and Parallel Circuits (29:00) ★★

Students gather and analyze quantitative data of simple series and parallel circuits. Their analysis develops mathematical expressions describing the relationships among current, voltage, resistance and power in electric circuits. They apply the concepts, both quantitatively and qualitatively, to describe the functioning of historic trolley trains. © 1998 United Learning

Physics

Physics: A World in Motion: The Hydrogen Spectrum (29:00) ★★

Students use the Rydberg equation to quantitatively analyze the hydrogen gas spectrum. The idea of energy levels within the hydrogen atom is introduced. Using the Doppler effect, they make the connection between absorption spectra and the motion of galaxies. © 1998 United Learning

Physics

Physics: A World in Motion: The Photoelectric Effect (29:00) ★★

Collecting and analyzing data, students investigate the photoelectric effect and begin to quantify the photon model of light. They apply the concepts to photosynthesis, photovoltaic cells, CCDs and vision. © 1998 United Learning

**LOCATION /
TOPIC**

TITLE & DESCRIPTION

Physics

Physics: A World in Motion: The Photon Model of Light (29:00) ★★

Students observe the behavior of light in experiments involving black body radiation and the photoelectric effect. They analyze their observations from the point of view of Maxwell's (classical) model of light. This leads them to understand that a new model for light is required to explain the results. © 1998 United Learning

Physics

Physics: A World in Motion: The Quantum Mechanical Model (29:00) ★★ ★

The phenomena of fluorescence and phosphorescence provide the context for students to explore, qualitatively, the main ideas of the quantum mechanical model of the atom. © 1998 United Learning

Physics

Physics: A World in Motion: Transferring Charge (29:00) ★ ★ ★ ★ ★

A viewer challenge, to explain Rice Krispies being initially attracted to a charged rod then flying off, introduces charging by conduction and induction. Students use a Van de Graaf generator and conduct interviews with a rock climber, photocopier technician and aerospace engineer, as they explore charging by conduction and induction. © 1998 United Learning

Physics

Physics: A World in Motion: Transformers (29:00) ★

Students discover the operating principles of the transformer and gather empirical evidence to deduce the relationships among the important variables at work. They assess the benefits of voltage transmission and explain how technology favored the use of AC. © 1998 United Learning

Physics

Physics: A World In Motion: Two-Dimensional Collisions (29:00) ★ ★ ★

Students explore the concept of conservation of momentum in two dimensions in the context of fireworks, bumper cars, open pit mining, and within the isolated system of an air table. The problem-solving strategy using components is reinforced. © 1998 United Learning

Physics

Physics: A World in Motion: Wave Particle Duality (29:00) ★ ★ ★ ★ ★

The medical uses of X-rays motivate students to examine X-ray production, the photoelectric and Compton effects, and wave-particle duality as it applies to photons. De Broglie's notion of matter waves is introduced as another example of wave-particle duality. © 1998 United Learning

Physics

Physics: A World In Motion: Work and Energy (29:00) ★ ★ ★

Elevators, escalators and an amusement park ride illustrate mechanical energy transformations and provide data for students to calculate the work done and power developed. Students examine a number of athletic activities illustrating the principles of work, power and energy, and analyze data obtained from an air table. © 1998 United Learning

Physics

Simply Science: Conservation Laws (27:05) ★★

**LOCATION /
TOPIC**

TITLE & DESCRIPTION

Using the specific examples of van Helmont, Lavoisier, and Joule, students learn how the scientific method leads researchers to propose a hypothesis, design an experiment, record observations and draw conclusions. When sufficient data supports a single thesis, it can be considered a scientific law. Students then use physical and biological systems to investigate the physical and chemical aspects of kinetic and potential energy. © 1998 United Learning

Physics

Simply Science: Efficiency of Energy Conversions (27:25) ★ ★ ★

Investigates mechanical and biological systems to determine and compare efficiencies of energy conversions. By examining real and toy cars, various types of electrical power generation, and the packaging of various foods, students learn to use efficiency calculations. © 1998 United Learning

Physics

Simply Science: Energy Transformations (27:14) ★ ★ ★

The inner workings of a grain elevator demonstrate how the kinetic energy of a conveyor is used to increase the gravitational potential energy in stored grain. This is later converted back to kinetic energy when the grain is loaded onto rail cars. A time distance graph is used to determine the speed of an elevating bucket belt conveyor in the grain elevator. © 1998 United Learning

Physics

Simply Science: Harnessing Energy (27:04) ★ ★ ★

Drawing on many ideas and scenes developed in the first eight programs, students investigate a variety of energy-transfer situations to gain an understanding of strategies used to harness energy. Wind power, the transfer of potential to kinetic energy of water in hydroelectric production, and the use of fossil fuels to produce steam are all studied. Students discover that all of these systems can trace their energy to the sun. © 1998 United Learning

Physics

Simply Science: Producers Capture Solar Energy (27:04) ★ ★ ★ ★

Energy flow through the biosphere is facilitated by different types of organisms-producers, consumers and decomposers. A farm provides the backdrop to explain how producers and consumers acquire energy. Cell differences between plants and animals are identified and used to explain the different functions of these two types of organisms. © 1998 United Learning

Physics

Simply Science: Rate of Energy Conversion (27:14) ★ ★ ★ ★

Power is a word that has many connotations in everyday language, but in science it means just one thing: the rate of energy transfer. Students learn the scientific application of power and how to calculate it. They investigate a number of devices that convert energy, including an electric wheelchair. Cooking pizza in two different ovens, students compare the energy used by different devices to perform the same function. An interview with a representative from a power company covers many power generation and energy-saving strategies. © 1998 United Learning

Physics

Understanding: Electricity (49:38) ★ ★ ★ ★

**LOCATION /
TOPIC**

TITLE & DESCRIPTION

From the individuals who use it to the engineers who harness it, this video examines the power and purposes of electricity. It covers how electricity is generated and delivered to homes, as well as how innovative ideas about this force may combine the electricity in our bodies with man-made electrical systems. Produced by Discovery Channel School. © 1997 Discovery Channel School

Technology

Engineering at the Cutting Edge : Body Rebuilders (24:00) ★★

Through the experiences of two amputees, this program examines the construction of prosthetic body parts and the possibilities and limitations of prosthetics. © 2006 Channel 4

Technology

Engineering at the Cutting Edge : The Great Millennium Gamble (24:00) ★★ ★★

This program looks at two structures designed and built for the 21st century, the Millennium Bridge and the Falkirk Wheel, and what can go wrong when unforeseen forces are at work. © 2006 Channel 4

Technology

Engineering at the Cutting Edge : Revolution on the Road (24:00) ★★ ★★

This program looks at the work of two different teams of car engineers, focusing on how they developed the ideas for their innovative vehicles and how they constructed them. © 2006 Channel 4

Technology

Engineering at the Cutting Edge : Roller Coasters (24:00) ★★ ★★

This program focuses on the design and construction of roller coasters and the procedures used to ensure riders' safety. The Big One, a roller coaster in Blackpool, England, is the featured example. © Channel 4

Technology

Understanding: Bridges (24:58) ★★ ★★

Learn why some bridges are light and elegant, while others are massive slabs; why some are arched and some suspended; why some are concrete and others steel. See up close just how engineers pull off erecting these enormous structures and keep them standing. © 1999 Discovery Channel School