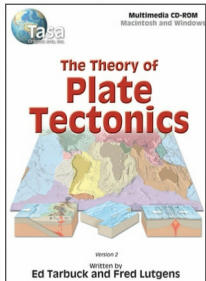


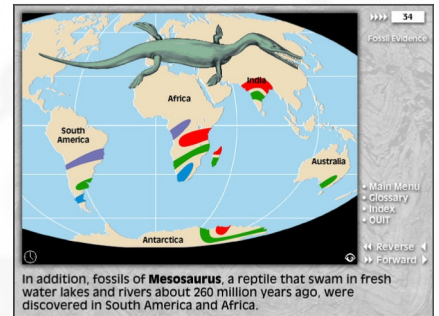
# EARTH SCIENCES SOFTWARE

Cat.# TG-3 - THE THEORY OF PLATE TECTONICS - Version 2.5

Windows & Macintosh



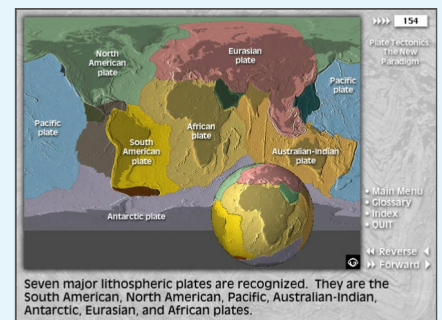
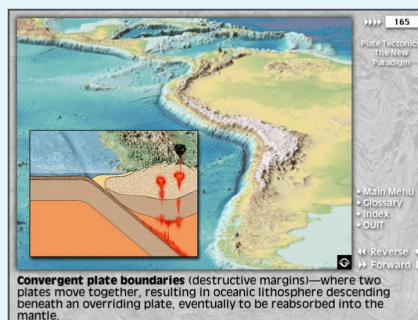
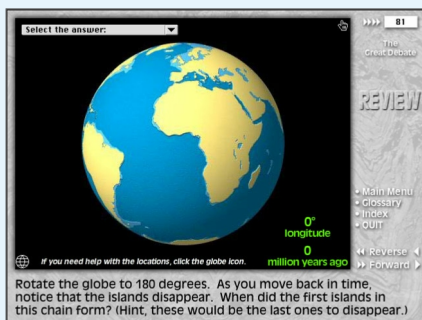
*The Theory of Plate Tectonics* is a dynamic, interactive exploration of how Earth's lithospheric plates change through time. Detailed animations, which are easily manipulated by the user, enhance understanding. Features include an illustrated glossary with audio pronunciations, an index, easy navigation, and scored review activities that may be printed for easy teacher assessment. This excellent learning tool is appropriate for self-directed study by students and for classroom demonstrations by instructors. Version 2.2 appears in a resizable window on the desktop. This CD-ROM includes two levels: Intermediate and Advanced. Levels 7 through 12 and College.



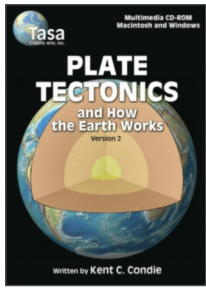
Here are some of the fascinating interactive explorations you and your students will encounter:

1. Move and rotate a globe to observe the movement of continents over the past 200 million years.
2. Study the history, development, and evidence for the theory of plate tectonics.
3. Move and rotate the continents of Africa and South America to see how they fit together.
4. Move the continents to study the changes in climate through time.
5. Build the supercontinent of Pangaea.
6. Study the movement of the continents through time and answer questions about specific events that occurred in different locations on the globe.
7. Study the evidence of paleomagnetism by tracking the positions of the magnetic and rotational poles.
8. Calculate water depth using echo travel time, then plot data on a graph to construct a profile of the ocean floor.
9. Find out what causes seafloor spreading.
10. Assemble the plate tectonics "puzzle."
11. Experience the major interactions along plate boundaries and study the differences between convergent, divergent, and transform fault boundaries.
12. Rotate the globe to view the oceanic ridge system and see oceanic lithosphere being created.
13. Study continental rifts and explore current examples of the initial breakup of a continent.
14. Examine how extensional forces in the Basin and Range region of the U.S. created fault block mountains.

**System Requirements:** Mac OS X 10.4.11 or later, Windows XP, Vista, 7, 8.1 and 10.



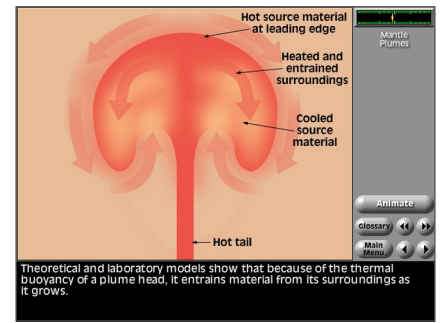
Available as a Single User licence and a Multi-user licence covering 20 computers. Prices are on [page 19](#)



*Plate Tectonics and How the Earth Works* is designed to aid advanced students in the geological sciences in visualizing and learning about processes within Earth and how these processes are related to plate tectonics. This interactive program includes a chapter entitled "Crustal and Mantle Evolution" which delves into the origin and evolution of continents and the early history of the Earth.

Using animations, interactive diagrams, and colour photos, new and exciting developments are reviewed relating to plate reconstructions in the past, hotspots, mantle plumes, seismic discontinuities in the mantle, and supercontinent cycles.

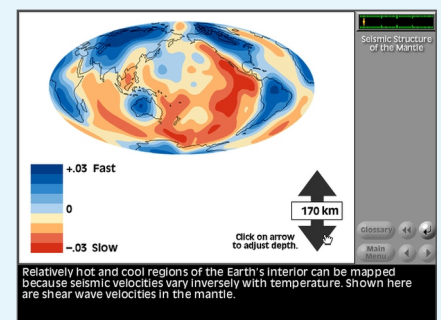
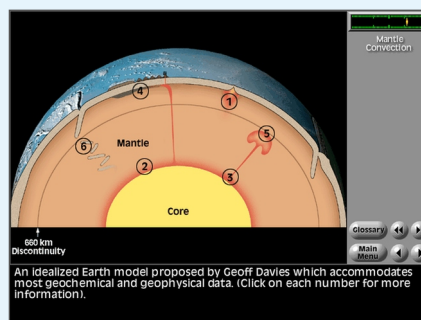
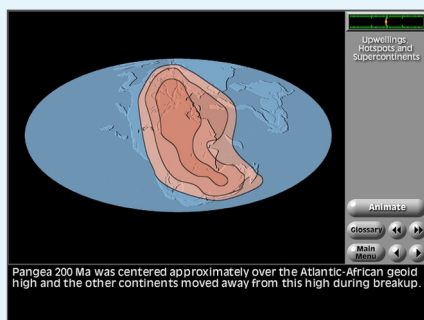
Also included is a graphic portrayal of the crust (both oceanic and continental), mantle, and core, as well as recent ideas as to how Earth systems interact with each other. In addition, the student can examine each of the major tectonic settings on Earth as well as track these settings into the past, some as far back as 4 Ga. Level: College.



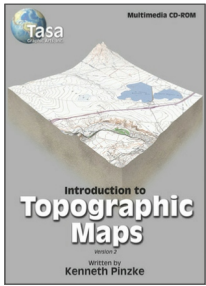
**Table of Contents:**

1. Introduction
2. Plate Tectonics: General Features | Structure of the Earth | Subduction Zones | The Wilson Cycle | Magnetic Anomalies on the Seafloor | Apparent Polar Wander Paths | Hotspots | Organic Evolution and Plate Tectonics | The History of Pangea | Interactive Earth Systems | Review
3. The Earth's Crust: Crustal Types | Heat Flow | Exhumation and Cratonization | Rheology of the Continental Crust | Measured Seismic Wave Velocities in Rocks | Sampling of the Lower Continental Crust | Chemical Composition of the Crust | Terranes and Crustal Provinces | Review
4. Tectonic Settings: Introduction | Ophiolites | Mantle-Plume-Related Tectonic Settings | Cratons and Passive Margins | Continental Rifts | Convergent Margins | Orogens | Anorogenic Granites | Archean Greenstones | Mineral Deposits | Energy Deposits | Review
5. The Earth's Mantle and Core: Seismic Structure of the Mantle | Geoid Anomalies | Composition of the Mantle | The Lithosphere | The Deep Mantle | Mantle Plumes | Upwellings, Hotspots, and Supercontinents | Mantle Geochemical Components | Mantle Convection | The Core | Review
6. Crustal and Mantle Evolution: The Earth's Oldest Rocks and Minerals | Plate Tectonics in Time | Origin of the First Continents Characteristics of the Archean Crust | The Growth of Continents | Superevents in Earth History | Possible Causes of Mantle Plume Events | Review

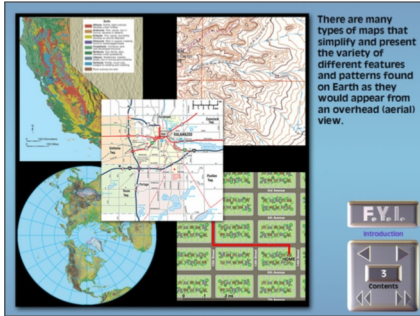
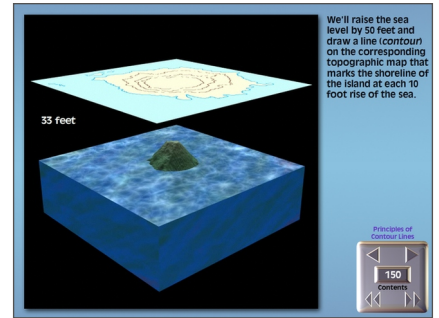
**System Requirements:** Mac OS X 10.4.11 or later, Windows XP, Vista, 7, 8.1 and 10; QuickTime is required.



Available as a Single User licence and a Multi-user licence covering 20 computers. Prices are on [page 19](#)



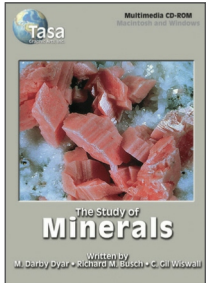
With *Introduction to Topographic Maps*, you will learn how to use these maps to determine elevations, landform types, principles of scale, location, and much more. You will read, draw, and print contour lines based on points of known elevations, construct topographic profiles, and determine slope relief. This CD-ROM includes full colour photos, animations, as well as related topics on map projections, U.S. Geological Survey, and using a compass and map.



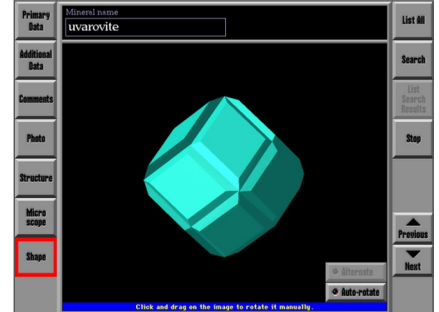
A scored review section can be printed for easy teacher assessment. Version 2.0 appears in a resizable window on the desktop. Years 7 to 12 and College.

**System Requirements:** Mac OS X 10.4.11 or later, Windows XP, Vista, 7, 8.1 and 10.

Available as a Single User licence and a Multi-user licence covering 20 computers. Prices are on [page 19](#)

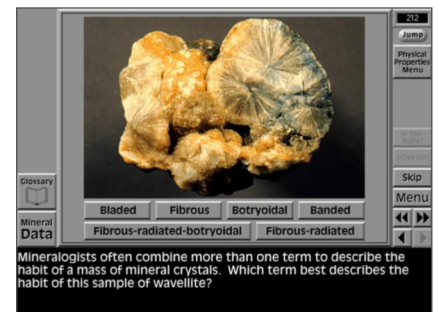


Learn what minerals are, how crystals form, and explore their symmetry, chemical compositions and properties through 3-D graphics and animated sequences. The learning process is enhanced by interactive activities, abundant photographs, video clips, a glossary, and a database of mineral properties. The illustrated database of over 150 minerals includes photographs, microscopic thin sections, with mineral shapes and molecular structures you can rotate 360°. Level: College.



**Table of Contents:**

1. Minerals, Crystals, and Rocks
2. Mineral Symmetry - How Nature Builds Mineral Mineral Chemistry and Chemical Classification
3. Physical Properties and Hand Sample Identification
4. Microscopic Analysis and Identification
5. Laboratory Analysis and Identification Gemstones
6. Mineral Exploration and Mining
7. Mineral Database

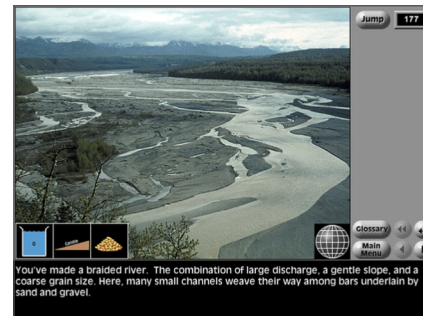


**System Requirements:** Mac OS X 10.4.11 or later, Windows XP, Vista, 7, 8.1 and 10.



*Earth's Dynamic Surface* is a useful tool for developing an understanding of the processes that shape Earth's surface.

In this exciting CD-ROM, you are guided through each concept with full color animations, illustrations, and photographs while listening to the author's narration. Review sections at the end of each chapter will reinforce the concepts covered. Interactive activities encourage participation and problem solving.



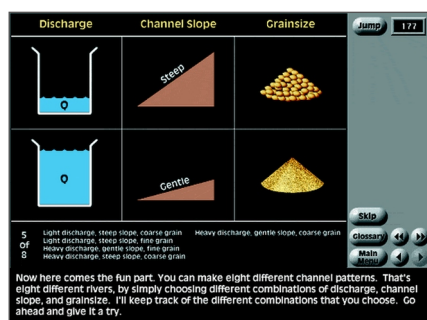
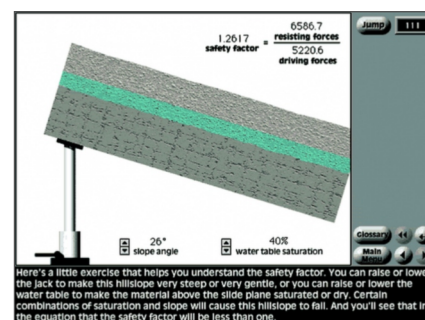
In addition, the animated Physiographic Province Tour enables you to travel to destinations across the U.S. The tour stops at 42 national parks, monuments, and points of interest demonstrating examples of each process of change introduced in the program. Grades 7 to 12 and college. Explore the following topics illustrated with full colour photographs, graphics, and animations.

**Table of Contents:**

- Weathering and Soils-examines the two types of weathering processes and soil development throughout a landscape.
- Hillslopes-covers the interaction of rock-type and climate in the erosion of a landscape.
- Rivers-discusses flowing water as a process for erosion, transportation, and deposition of Earth's surface materials.
- Coastlines-examines the power of wind, waves, tides, and currents to shape unique landforms.
- Groundwater-covers the development of landforms due to flowing water below Earth's surface.
- Deserts and Winds-discusses changing landscapes due to the erosion, transportation, and deposition of surface material by wind.
- Glaciers and Climate-examines the process of flowing ice in the development of landforms.
- Physiographic Province Tour-takes students on a trip across the U.S. with stops at 42 National Parks and points of interest, including website links to each National Park appearing in the tour.

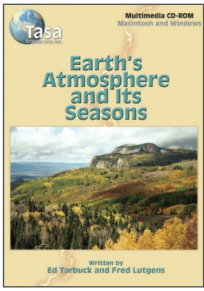
**Interactive activities include:**

1. Identify limits of a drainage basin.
2. Label rock types.
3. Study various weathering processes.
4. Identify soil age.
5. Explore reasons for hillslope failure.
6. Identify parts of a river system.
7. Calculate flow velocity.
8. Discover how sediment is transported.
9. Calculate currents.
10. Identify cave features.
11. Explore the effects of wind and water on a desert environment.
12. Identify types of sand dunes.
13. Discover the effects of seasons and climate on Earth.



**System Requirements:** Mac OS X 10.4.11 or later, Windows XP, Vista, 7, 8.1 and 10; QuickTime is required.

Available as a Single User licence and a Multi-user licence covering 20 computers. Prices are on [page 19](#)



*Earth's Atmosphere and Its Seasons* helps students investigate and understand the causes of the seasons, Earth-Sun relationships, the composition of the atmosphere, Sun's role as the main source of energy that drives weather and climate, the greenhouse effect, and more. Clear, narrated explanations along with thought-provoking review questions and lab activities, a visual index, clickable glossary, colourful animations, and video clips provide a fun way to learn many important lessons about weather and climate.

Version 1.1 adds student quiz scoring that can be used to generate a printed record of the student's responses to the quizzes. You may print the record, save it to file, or email it through your computer's print dialog or document viewer.

**Table of Contents:**

1. The Importance of Weather
2. Weather and Climate
3. Composition of the Atmosphere
4. Understanding Seasons
5. Earth-Sun Relationships
6. In the Lab: Sun Angle and the Seasons
7. Solar Radiation
8. What Happens to Incoming Solar Radiation?
9. The Greenhouse Effect
10. In the Lab: The Influence of Colour on Albedo
11. Basic Temperature Data
12. Controls of Temperature.

**Your students will investigate:**

1. Different types of weather and how it impacts them.
2. Differences between weather and climate.
3. The composition of air, and the important roles of water vapor and carbon dioxide.
4. Why we have seasons.
5. Earth's motions and orientation in relation to the Sun.
6. Why the amount of solar energy received on Earth varies for different latitudes.
7. The nature of solar radiation.
8. Paths taken by solar radiation.
9. The greenhouse effect.
10. How colour influences the amount of light reflected by a surface.
11. How to convert Fahrenheit and Celsius temperatures.
12. Why land and water heat up and cool off differently.
13. How ocean currents, altitude, and prevailing winds influence temperature.

**System Requirements:** Mac OS X 10.4.11 or later, Windows XP, Vista, 7, 8.1 and 10.

223  
Quit

June 21-22 Solstice

Step 1: How many degrees of latitude separate 23 1/2° N and 55° N (show fractions as decimals)?

Step 2: Subtract your answer in Step 1 from 90°

= Noon Sun angle at 55° N on June 21-22

Let's practice this method by calculating the noon Sun angle for 55° N latitude on June 21 or 22. Fill in the correct answers to steps one and two. Press the "return" or "enter" key to check your answer.

Main Menu

326  
Quit

Main Menu

The effects of a significant temperature increase are of great concern. Many impacts are possible including a shift in storm patterns...

209  
Quit

SUN

Angle A

Angle B

Angle C

0° (Equator)

Use the protractor to measure the angle between the surface and the Sun's rays at each of the following locations. Drag your response to the correct blank.

Main Menu

1:00  
CONTINUE

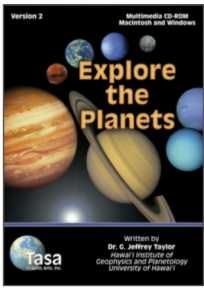
346  
Quit

Albedo experiment data table (temperatures in °C)

	Start	1 min	2 min	3 min	4 min	5 min
Black container	22					
Silver container	22					

When you are ready to collect data, turn on the light and start the timer. Record temperatures for each container at 1 minute intervals until the timer indicates that 5 minutes have passed. When the table is filled in, move on to the next frame.

Main Menu



*Explore the Planets* helps students investigate the planets and their satellites and understand the processes that shape them: volcanism, impact cratering, tectonics, landslides, flowing water, and wind. They will study the planets the way planetary scientists do, by comparing, for example, why some volcanoes on Mars are so much larger than their counterparts on Earth. They'll discover why impact craters are so widespread and much more. The program is fully narrated and contains new data and images from recent discoveries and missions into space.

The program aids learning with scored review questions. You may print the record, save it to file, or email it through your computer's print dialog or document viewer. Also included is a visual index, an illustrated glossary, colourful animations, video clips, and a planet database. Students can even pilot a spaceship through the solar system and test their knowledge of planetary bodies.

Version 2.1 appears in a window that can be moved and resized.. Levels: Years 5 to 12.

**Table of Contents:**

- Introduction
- Tour the Planets: Mercury / Venus / Earth / The Moon / Mars / Asteroids & Comets / Jupiter / Saturn / Uranus / Neptune / Pluto
- Planet Processes: Landslides / Volcanism / Flowing Water / Wind / Impact cratering / Tectonics / Atmosphere
- Planet Explorer Game
- Planet Database

**Features in Version 2.1:**

1. New images and information for Tour of the Planets sections: Mercury, The Moon, Mars,
2. Saturn, and Pluto.
3. Interactive panoramas and videos on Mars and asteroids.
4. Updated data and images in Planetary Database.
5. Fully narrated.
6. Visual index.
7. Interactive illustrated glossary.
8. Easy navigation including page numbers and a jump box on every frame.
9. Scored review questions that can be printed, saved to file, or emailed through your computer's print dialog or document viewer.

**System Requirements:** Mac OS X 10.4.11 or later, Windows XP, Vista, 7, 8.1 and 10.

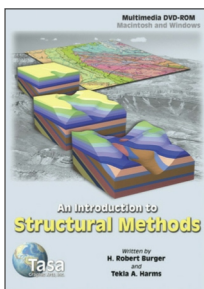
Available as a Single User licence and a Multi-user licence covering 20 computers. Prices are on [page 19](#)

**Screenshot 1: Saturn (427)**  
 Planet: Saturn  
 Inner Planets: Mercury, Venus, Earth, Mars  
 Average Density (g/cm<sup>3</sup>): 5.4, 5.2, 5.5, 5.3  
 Outer Planets: Jupiter, Saturn, Uranus, Neptune  
 Average Density (g/cm<sup>3</sup>): 1.3, 0.7, 1.5, 1.8  
 Text: Saturn has a density less than water, which means it would float.

**Screenshot 2: Mars (216)**  
 Planet: Mars  
 Diameter: 4,222 km  
 Distance from Sun (in millions): 227.9  
 Period of Rotation: 24.62  
 Period of Revolution: 686.9 d  
 Known Satellites: 2  
 Text: These two maps show how the elevation varies on Mars. The maps were made using the Mars Orbiter Laser Altimeter (MOLA). Each shows a different hemisphere. White and red colors are highest, blue is lowest.

**Screenshot 3: Mars (282)**  
 Planet: Mars  
 Diameter: 6,792 km  
 Distance from Sun (in millions): 227.9  
 Period of Rotation: 24.62  
 Period of Revolution: 686.9 d  
 Known Satellites: 2  
 Text: In 2004, two robotic rovers landed on the surface of Mars. For more than a year, each sent back spectacular images of Martian soil and geology. This high resolution panorama of Endurance Crater was taken by the Opportunity Rover.

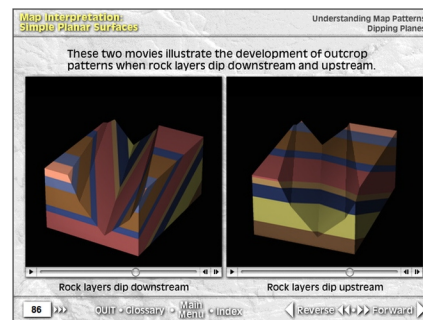
**Screenshot 4: Titan (433)**  
 Planet: Titan  
 Diameter: 5,150 km  
 Distance from Sun (in millions): 1,426.7  
 Period of Rotation: 15.95 d  
 Period of Revolution: 15.95 d  
 Known Satellites: 0  
 Text: The largest moon of Saturn is Titan. It is 5,150 kilometers (3,200 miles) in diameter, larger than the planet Mercury. Its density indicates it is roughly half rock and half ice. This false-color composite image was captured by Cassini's infrared camera.



**An Introduction to Structural Methods DVD-ROM**, narrated by the authors, is richly illustrated with 3-D diagrams, geologic maps, animations, and photographs all in full colour offering a new approach to teaching structural geology.

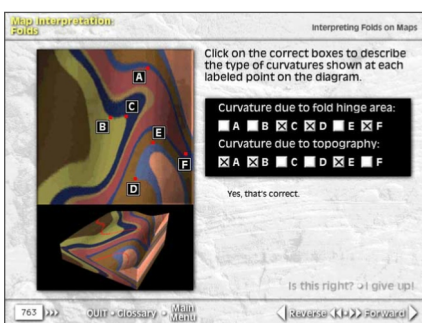
A useful tool for your classroom, this DVD-ROM improves students' spatial reasoning skills while applying structural concepts and techniques. It also provides interactive quizzes that test students' comprehension of key concepts and terminology while encouraging their mastery of techniques working with the types of problems they will likely confront as practicing geologists. College level.

likely confront as practicing geologists. College level.



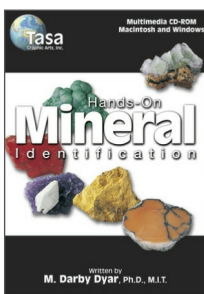
**Table of Contents:**

Elements of Lines and Planes | Map Interpretation: Simple Planar Surfaces | Stereographic Projection I | Constructing Geologic Sections  
 Map Interpretation: Faults | Stereographic Projection II | Map Interpretation: Folds | Map Interpretation: Unconformities, Intrusions |  
 Map Interpretation: Thrust Faults | Fold Analysis | Stress, Fracture, and Fault Analysis | Strain: Basic Principles.



**System Requirements:** Mac OS X 10.4.11 or later, Windows XP, Vista, 7, 8.1 and 10; QuickTime is required.

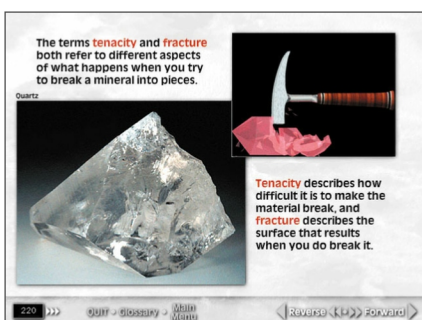
Available as a Single User licence and a Multi-user licence covering 20 computers. Prices are on [page 19](#)



This multimedia "field guide" helps you to identify over 14,500 mineral names and synonyms for both beginners and serious collectors.

**Hands-On Mineral Identification** provides detailed identification information on 500 of the most common mineral species, full colour animations, background information, and photographs on physical characteristics of minerals. Watch actual video demonstrations of physical property tests and read a detailed explanation of crystal classification systems - all narrated by the author!

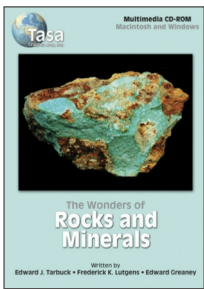
The searchable database includes physical properties, rotatable 3-D crystal shapes, colour photographs, worldwide localities, crystal class, and mineral associations for each species. Levels 7 to 12 and College.



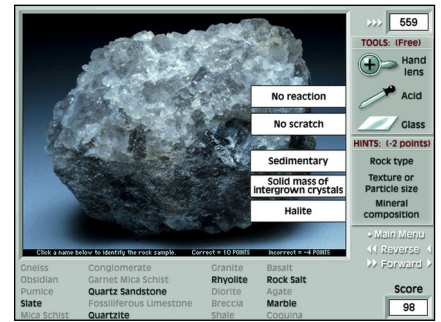
**Table of Contents:**

Introduction | Mineral Names, Nomenclature, and Classification | Colour and Streak | Lustre | Hardness | Cleavage and Parting | Crystal Systems and Forms | Habit, Appearance, and Twinning | Tenacity and Fracture | Density and Specific Gravity | Special Properties | Mineral Database

**System Requirements:** Mac OS X 10.4.11 or later, Windows XP, Vista, 7, 8.1 and 10; QuickTime is required.



*The Wonders of Rocks and Minerals* explores the world of geology in an exciting and highly interactive way. What are minerals and how are they different from rocks? What are the three groups of rocks and the geological processes involved in the formation of each? You will learn to identify and name minerals and rocks, just like a geologist does on a field trip. Includes stunning photographs, full colour animated sequences, a glossary, interactive exercises, and an illustrated database of over 50 minerals. Includes two levels of study: Years 3 through 6 and 7 through 12 (Two separate levels included on CD-ROM.).



**Table of Contents:**

1. Minerals: How are Minerals and Rocks Different?/ Important Mineral Properties/ How to Identify Minerals/ A Mineral Identification Key/ Important Minera
2. Groups/ Reviewing Minerals/ Basic Facts About Common Minerals
3. The Rock Cycle
4. Igneous Rocks: How Igneous Rocks Form/ Textures of Igneous Rocks/ Minerals in Igneous Rocks/ Naming Igneous Rocks
5. Sedimentary Rocks: How Sedimentary Rocks Form/ Conglomerate, Sandstone, and Shale/ Limestone, Chert, and Other Chemical Sedimentary Rocks/
6. Reviewing Sedimentary Rocks/ Interpreting Past Environments
7. Metamorphic Rocks: Metamorphic Rocks are Changed Rocks/ What Causes Metamorphism?/ How Metamorphic Rocks are Different/ Common Metamorphic Rocks
8. The Rock Review Challenge

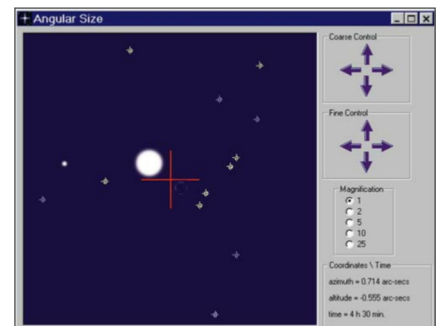
**System Requirements:** Mac OS X 10.4.11 or later, Windows XP, Vista, 7, 8.1 and 10.

See prices and available licences for these two programs on [page 19](#)

**Cat.# PCI-1 - VIRTUAL ASTRONOMY LABORATORY**

Windows

Many of the astronomical observations and measurements which are of interest in intro astronomy labs are not practical for a variety of reasons, including equipment restrictions, complexity, and night time viewing requirements. The 25 computer-based labs contained in *Virtual Astronomy Laboratory* are designed to give students a simulated view of the sky, allow them to make measurements on the computer, and analyze the data they have collected. Virtual Astronomy Laboratory brings a hands-on experimental lab component to astronomy courses, and requiring only basic math skills on the student's part, the carefully selected collection of labs are appropriate for introductory astronomy courses at the high school and college level.



*Virtual Astronomy Laboratory* puts some of astronomy's most useful instruments into the hands of students - precise telescope controls to measure angular size; a photometer to measure light intensity; and a spectrograph to measure Doppler-shifted spectral lines. Time-lapse and time-exposure photographic observing methods are also simulated. Each lab activity provides everything required to perform a thorough investigation from start to finish - (1) Lab manual which includes background information and step-by-step instructions, (2) interactive simulations for hands-on data collection, and (3) on-screen assistance including input fields allowing students to enter and check their results.

**Astronomy Lab Topics:** Scientific & Decimal Notation Conversion Scale of the Universe Graphs, Slopes, and Rate of Change Latitude, Axial Tilt, and Length of Day Celestial Coordinates Angular Size Measuring Planet Size Kepler's Laws Lunar Motion Planetary Motion Measurement of Saturn's Rings Stellar Occultation Circumpolar Stars Stellar Parallax Proper Motion of Stars Radial Motion of Stars Visual Binary Stars Eclipsing Binary Stars Cepheid Variable Stars Temperature of Stars Hertzsprung-Russell Diagram Spectroscopic Parallax Galactic Speeds and Hubble's Law Galactic Rotation Distribution of Mass in a Galaxy

**System Requirements:** Windows 95/98/NT/2000/Me/XP, 486 or Pentium class processor, 16MB RAM.