

# Lesson plan for GEOL 504 by Steve Ordonez

## INTRODUCTION TO MINERALS

- Objectives
1. Define Mineral
  2. Identify 6 common minerals

- Activity "Treasure Hunt"
1. Place 5 mineral and nonmineral samples in a box of sand
  2. Have 5 students answer yes or no on the mineral definition table while examining the samples as a group

### Mineral Definition Table

Sample Color	Naturally Occurring	Inorganic Solid	Specific Chemical Composition	Definite Crystal Structure
Gold				
Silver				
Clear				
Brown				
Black				

Closure - Quiz students orally on mineral definition

INSTRUCTION \* How do you identify a mineral?

Focus  
Next Time

1. Color - affected by impurities
2. Streak - powdered mineral
3. Luster - reflection of light
4. Hardness - scaled 1 (soft) to 10 (hard)
5. Cleavage - smooth breaks

Focus  
This Time

6. Crystal system or shape
  - i) Cubic - cubes
  - ii) Tetragonal - long + four sided
  - iii) Hexagonal - 6 sided
  - iv) Orthorhombic - short + four sided
  - v) Monoclinic - distorted rectangle + flat
  - vi) Triclinic - " " + thick

Model crystal systems by passing around plastic models of each one

Check for understanding of the notes

Guide students through practice on a few real minerals

Closure - Quiz students orally on crystal systems

## Independent Practice - Crystal Lab

Purpose - Can crystal system help identify minerals?

Materials - 1. Plastic, precut crystal system Kits  
2. 6 common minerals

Procedure - 1. Tape crystal system models together  
2. Use the models to help identify the 6 unknown minerals by comparing the crystal shapes

Analysis - 1. What four geometric shapes can you see on the sides of your crystal models?  
2. Is the crystal system easy to see in the minerals? Which were the most difficult?  
3. Use Appendix in your book to help identify your minerals  
4. What other properties were useful for your identification

Closure - 1. Go over the crystal models  
2. Identify the minerals  
3. Give out assignment to reinforce the lesson