



UNIVERSITI  
MALAYSIA  
KELANTAN

KULIAH 1

# BGT 2062 MINERALOGY INTRODUCTION



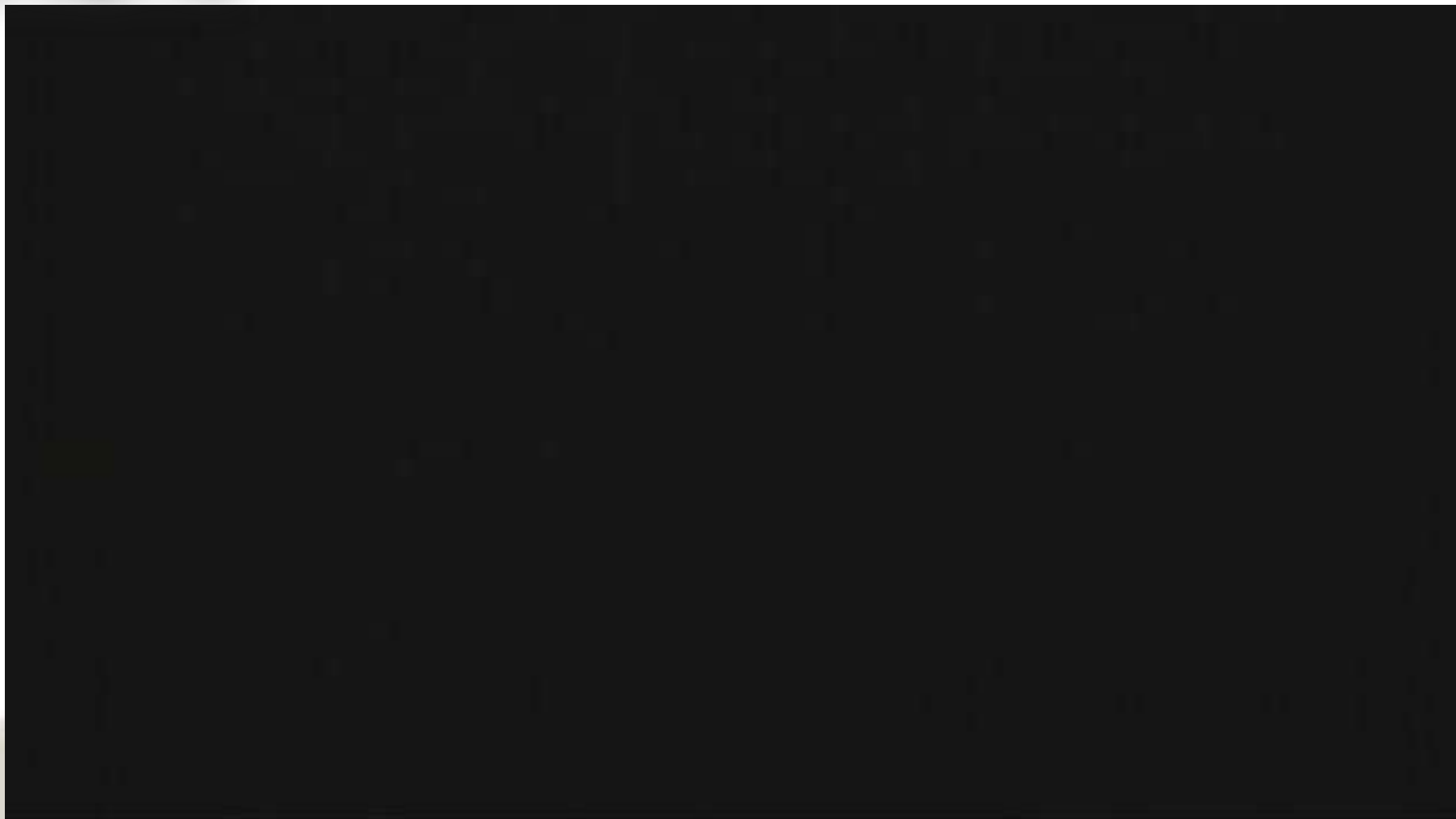
# SYLLABUS

1. INTRODUCTION (AMB)
  2. PHYSICAL PROPERTIES OF MINERALS (AMB)
  3. ELEMENT OF CRYSTAL CHEMISTRY (AMB)
  4. ASPECT OF CRYSTAL STRUCTURES (AMB)
  5. CHEMICAL COMPOSITION OF MINERALS (NSS)
  6. CRYSTALLOGRAPHY I (NSS)
  7. CRYSTALLOGRAPHY II (NSS)
- MID SEMESTER BREAK**
8. OPTICAL MINERALOGY (NSS)
  9. OPTICAL MINERALOGY (NSS)
  10. INTRODUCTION TO X-RAY CRYTALLOGRAPHY (NSS)
  11. UNIAXIAL AND BIAXIAL MINERALS (NSS)
  12. MINERAL GROUPS (AMB )
  13. MINERAL GROUPS (AMB)
  14. ORE MINERALS (AMB)

# ASSESSMENT SCHEME



↗ PBL ( <i>Problem Based Learning</i> )	
🦆 FILA Table	10 %
🦆 Penglibatan	5 %
🦆 Pra Pembentangan	5 %
↗ Tugas Kumpulan	15 %
↗ Pembentangan	15 %
↗ Ujian	10 %
↗ Peperiksaan akhir	<u>40 %</u>
↗ <b>Jumlah</b>	<b><u>100%</u></b>





“Mineral are the basic stuff of the Earth, and their study will always remain at **the core of the Earth Science** “....  
(Frank C. Hawthorne, 1993)

**What is mineral ?**

**Definite (but not fixed ) chemical composition**

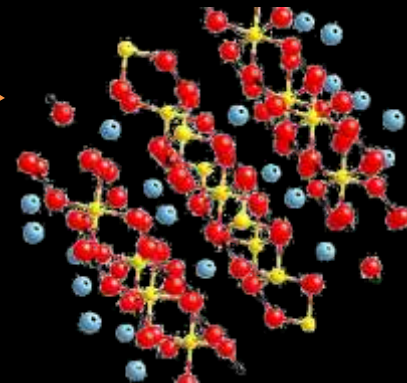
**highly ordered atomic arrangement**

**homogeneous solid**

**Naturally- occurring  
formed by inorganic  
process**

**Galena (PbS)**

**Siderite (FeCO<sub>3</sub>)**



**A MINERAL is a naturally occurring solid with a highly ordered atomic arrangement and a definite (but not necessarily fixed), homogeneous chemical composition. Mineral are usually formed by inorganic process.**





# **MINERALOGY**

**PETROLOGY**

**ECONOMIC GEOLOGY**

**METEORITIC AND PLANETARY STUDIES**

**GEOCHEMISTRY**

**FORENSIC GEOLOGY**

**GEOPHYSIC**

**PALEONTOLOGY**

**STRUCTURAL GEOLOGY AND TECTONICS**





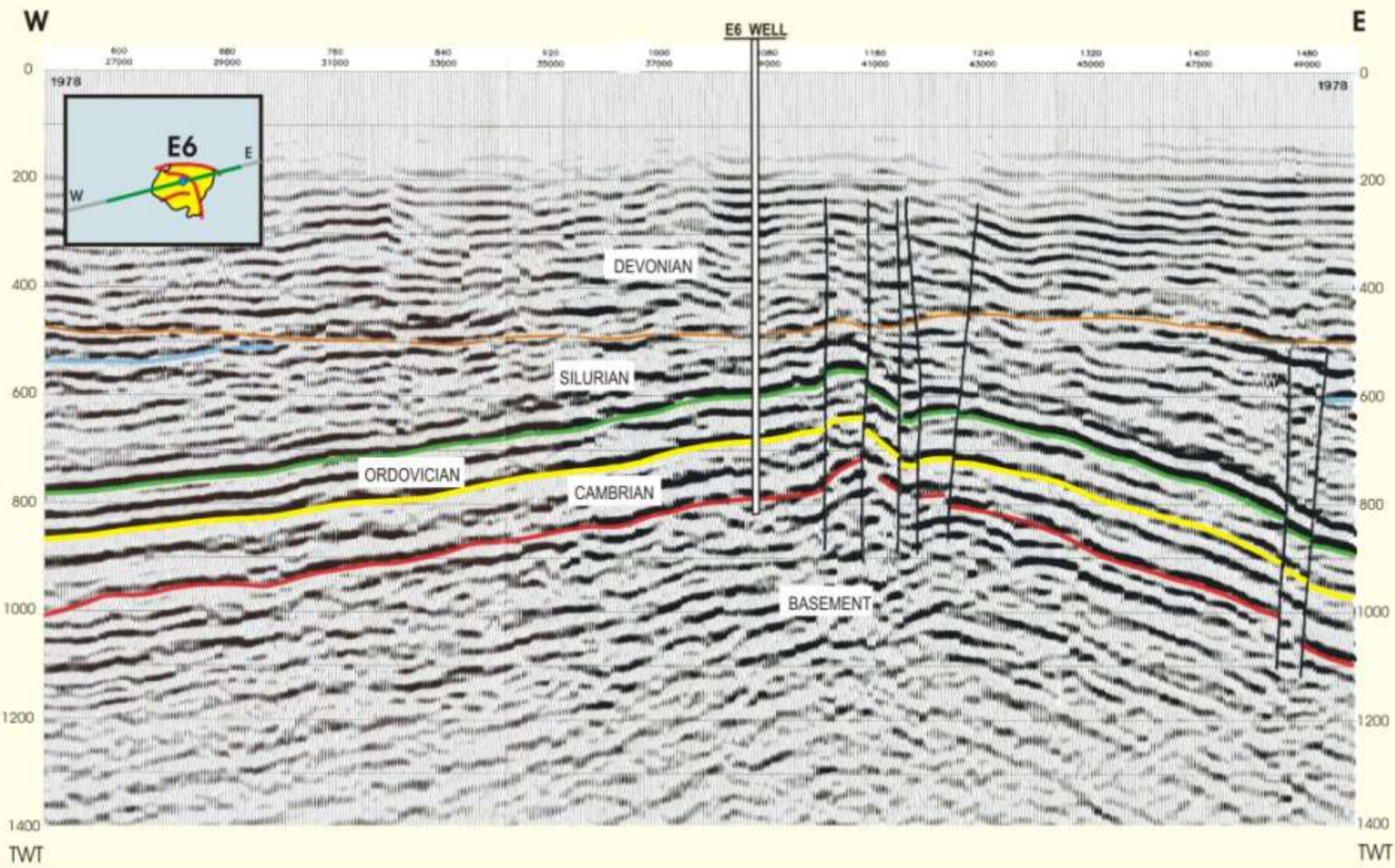












Post-Stack reprocessing seismic section (part) crossing E6 structure



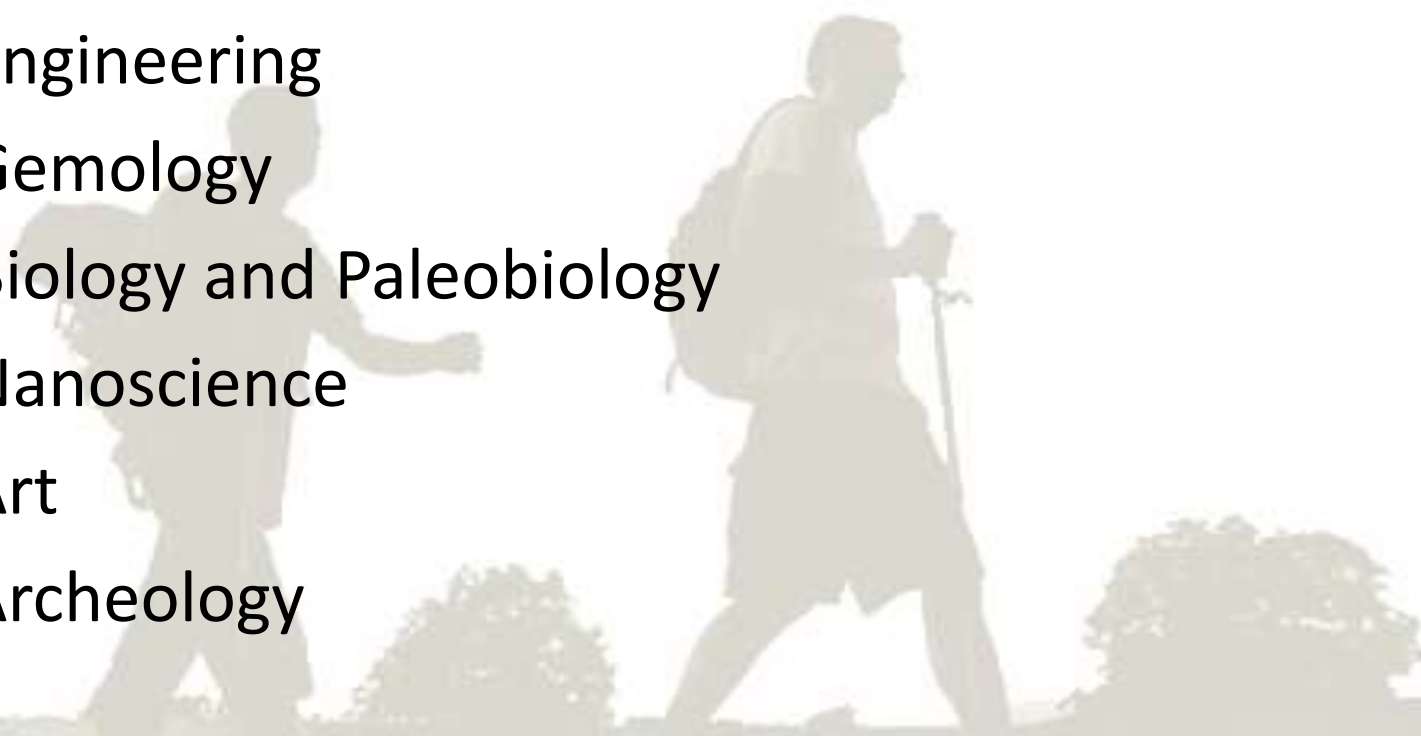




# What is mineral ?

## ➤ Mineralogy as important to other fields

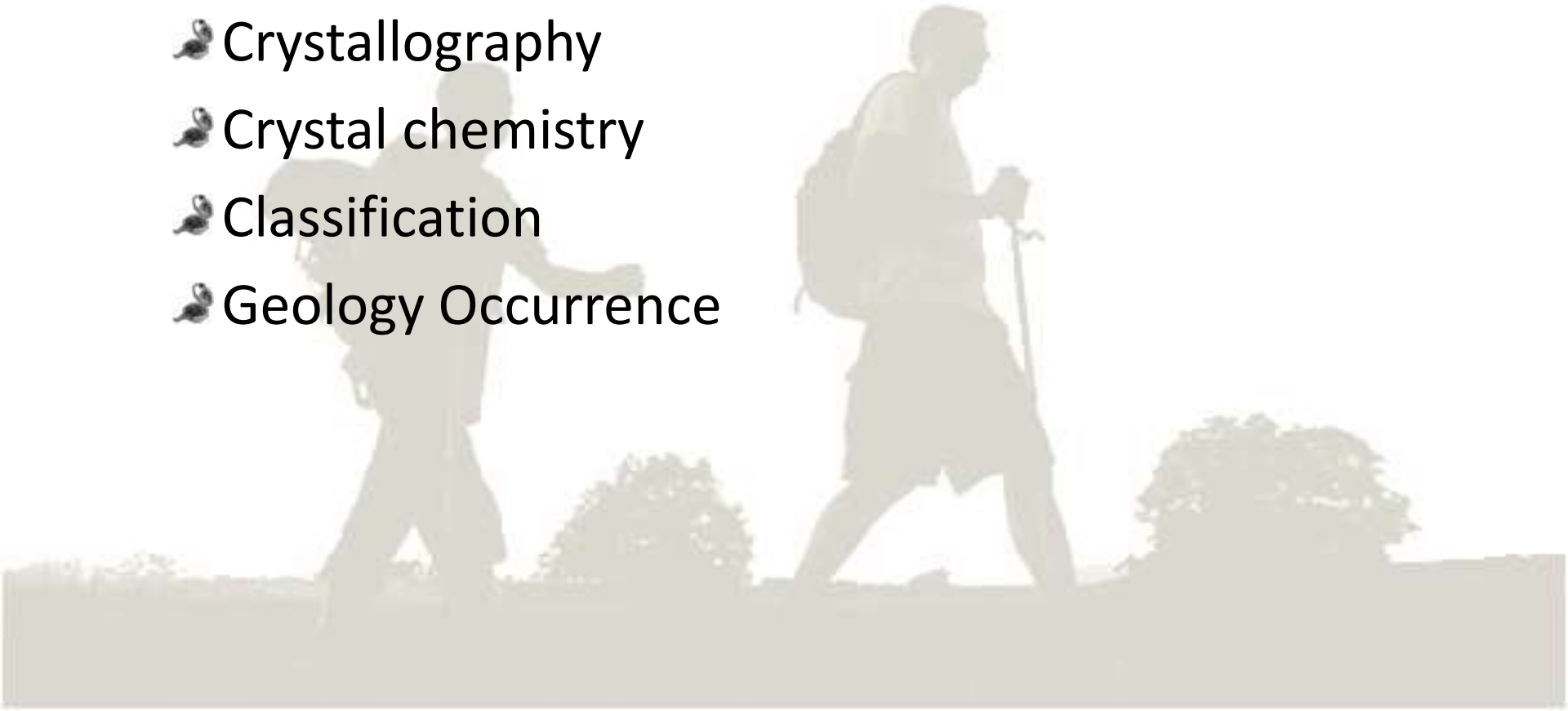
- 🦋 Inorganic chemistry
- 🦋 Engineering
- 🦋 Gemology
- 🦋 Biology and Paleobiology
- 🦋 Nanoscience
- 🦋 Art
- 🦋 Archeology



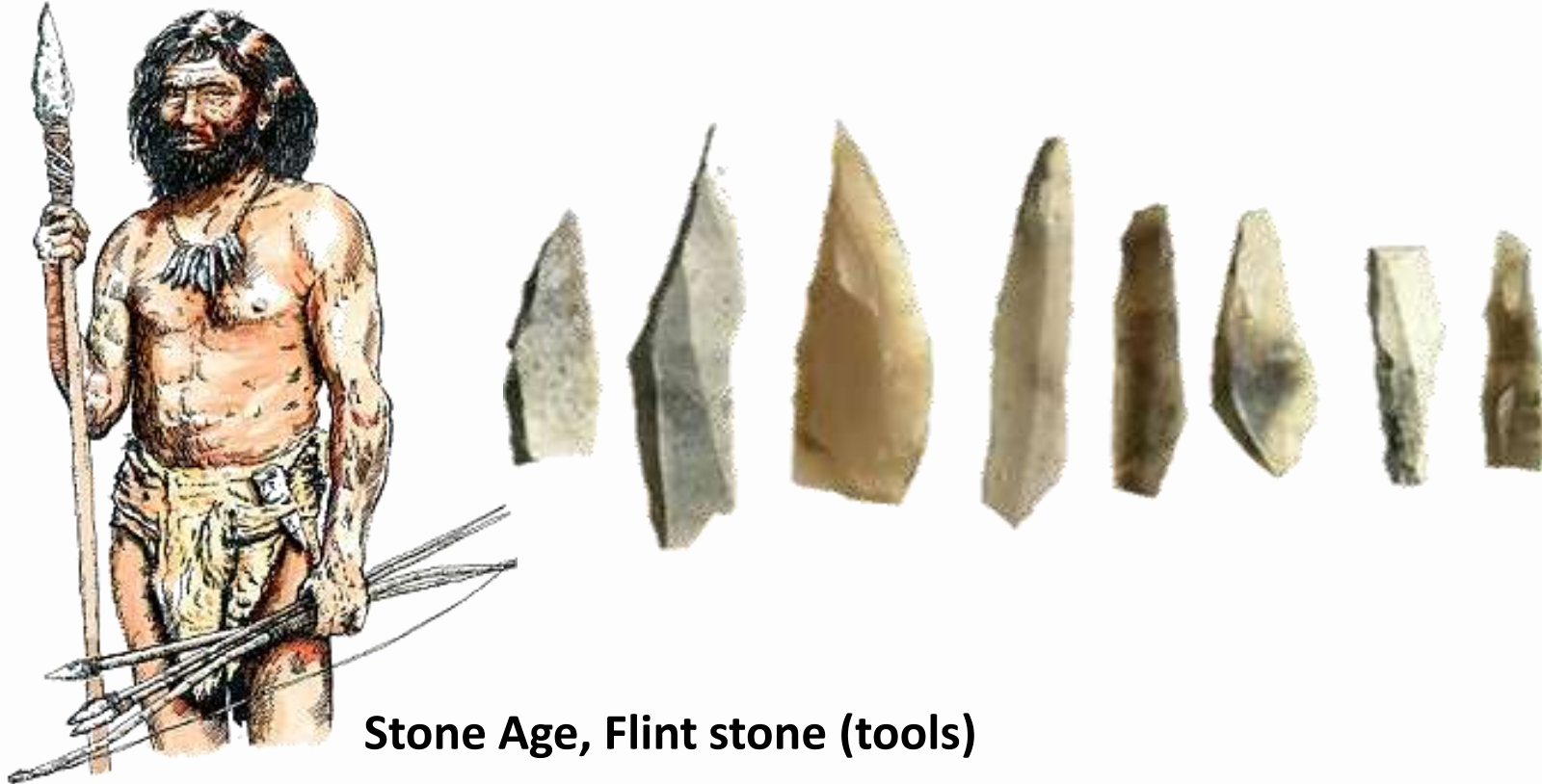
# What is mineral ?

## ➤ Disciplines of Mineralogy

- 🦋 Descriptive Mineralogy
- 🦋 Crystallography
- 🦋 Crystal chemistry
- 🦋 Classification
- 🦋 Geology Occurrence



# The History of mineral - Mineralogy



**Stone Age, Flint stone (tools)**

# The History of mineral - Mineralogy



**Cave Painting , Ochres and iron Oxide  
40.000 bc**

# The History of mineral - Mineralogy



**Bronze Age, Bronze Tools and Bronze**



**GEORGIUS AGRICOLA**  
**1912**

NICOLAVS STENONIVS

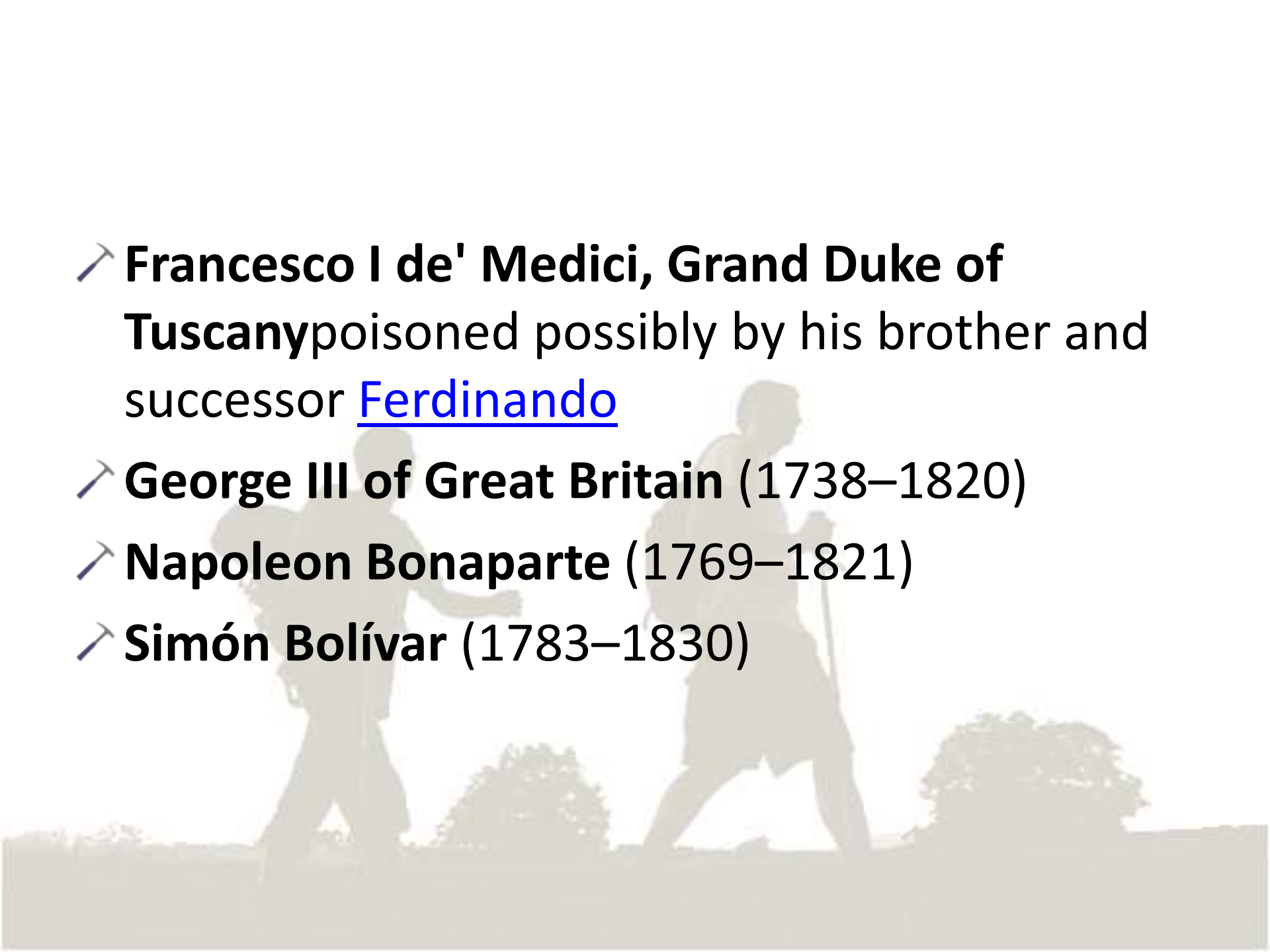




# What is mineral ?

## ➤ Mineral in our lives

- 🦉 Arsenic – Pesticide
- 🦉 Chalcocite – Electrical application
- 🦉 Cinnabar – Drug of immortality
- 🦉 Uranium – Nuclear weapon
- 🦉 Celestine – Fireworks
- 🦉 Hope Diamond, Queen Mother's Crown, Marie Louise Diadem,
- 🦉 Egyptian Gold

- 
- **Francesco I de' Medici, Grand Duke of Tuscany** poisoned possibly by his brother and successor [Ferdinando](#)
  - **George III of Great Britain (1738–1820)**
  - **Napoleon Bonaparte (1769–1821)**
  - **Simón Bolívar (1783–1830)**







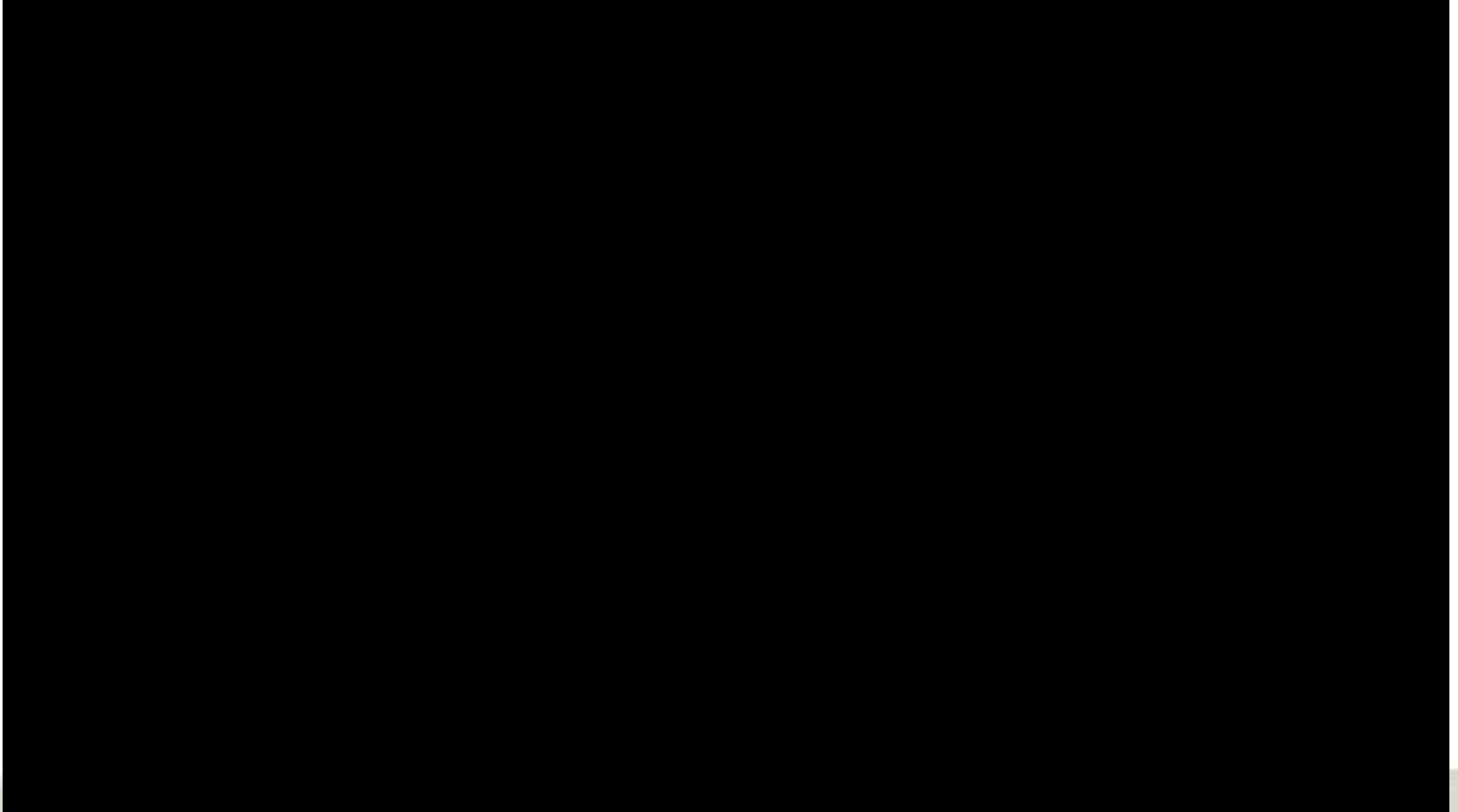


Little boy.....





# USS Washington.....









# Fireworks.....







Free Spirit Beauty





HOPE OF DIAMOND



# What is mineral ?

## ➤ Naming of minerals

- 🐜 Physical properties, Chemical properties, name after a locality, a public figure, a mineralogist, (by the person who first discover)
- 🐜 Albite latin albus (white) base on colour
- 🐜 Rhodocrosite – Rhudon (rose)
- 🐜 Chromite – chrome
- 🐜 Pyrite – pyros (fire)
- 🐜 Franklinite – Franklin
- 🐜 Silimanite – Prof Benyamin Siliman (Yale)

# Lesson Plan

## ➤ Pendahuluan

- 🐦 Perkenalan Diri
- 🐦 Penjelasan course mineralogy

## ➤ Diskusi tentang mineral

- 🐦 Mineral or not
- 🐦 Sebutkan mineral dalam kehidupan sehari-hari

## ➤ Pemberian nama lapangan

## ➤ Game

## ➤ Tugas

- 🐦 Paper hubungan mineralogy dengan disiplin ilmu lain.

## ➤ Amali

- 🐦 Membawa contoh mineral yang ada disekitar UMK





Galena

