



**NATIONAL UNIVERSITY OF ENGINEERING  
COLLEGE OF GEOLOGICAL, MINING AND METALLURGICAL  
ENGINEERING**

**GEOLOGICAL ENGINEERING PROGRAM**

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**GE643 – PERUVIAN GEOLOGY**

**I. GENERAL INFORMATION**

<b>CODE</b>	: GE643 Peruvian Geology
<b>SEMESTER</b>	: 9
<b>CREDITS</b>	: 5
<b>HOURS PER WEEK</b>	: 7 (Theory, Practice, laboratory)
<b>PREREQUISITES</b>	: GE701 Mineral Deposits, GE915 Petroleum Geology
<b>CONDITION</b>	: Compulsory

**II. COURSE DESCRIPTION**

The course prepares students for the understanding and application of the principles and techniques of geology to reconstruct and understand the Peruvian geology, describing the evolution of orogenic cycles and its relationship with global tectonics. Students analyze the geologic processes changing Peruvian surface and subsurface, as well as the use of stratigraphy, structural geology and paleontology to describe the sequence of these processes.

**III. COURSE OUTCOMES**

At the end of the course, students:

1. Understand and brief on main Peruvian geological studies.
2. Understand and explain coast basal complex including lithological characteristics, metamorphism and structures.
3. Understand and interpret the Paleozoic in Peruvian geology.
4. Understand and explain the Mesozoic in Peruvian geology including paleo-geographic evolution, sedimentary basins, environmental deposition means.
5. Analyze main aspect of economic geology.

**IV. LEARNING UNITS**

**1. GEOLOGICAL STUDIES IN PERU**

Peru with the South America continental framework / Geographic context / Geological-tectonic context / Morpho-structural features of Peruvian territory.

**2. GENERALITIES**

Coast basal complex: lithological characteristics, metamorphism, structures / Precambrian substrate of western Andean mountains: lithological characteristics, metamorphism, structures / Precambrian tectonism.

**3. PALEOZOIC**

Paleo-geographic evolution. Basins. Depositional means / Stratigraphy of inferior and middle Paleozoic. Ordovician. Silurian / Metamorphism / Magmatism / Tectonic cycles: Caledonian. Eohercinic: structures, metamorphism and magmatism / Stratigraphy of superior Paleozoic: Mississippian, Pennsylvanian, Permian, Inferior, Middle and Superior / Tardihercinic tectonism: structure, magmatism, metamorphism / Plutonism: main Paleozoic intrusives.

#### **4. MESOZOIC**

Paleo-geographic evolution. Sedimentary basins. Depositional environmental means / Stratigraphy: Triassic, Jurassic, Cretacic / Marginal volcanism / Andean tectonism / Malmic phase / Intracretacic phase / Finicretacic phase / Andean plutonism / Jurassic intrusites / Cretacics / Coast batolite.

#### **5. CENOZOIC**

Paleogeological evolution and depositional basins / Tertiary and quaternary stratigraphy / Sea tertiary / Continental tertiary / Eocen, oligocen, miocen, pliocen / Glaciar sea quaternary / Glaciar lake, river, wind quaternary / Andean tectonism / Andean plutonism / Instrusites of inferior, middle and superior tertiary / Volcanic episodes.

#### **6. ASPECTS OF ECONOMIC GEOLOGY**

Metalogenic provinces / Types of deposits / Main mineral deposits / Hydrocarbon areas.

### **V. LABORATORY AND PRACTICAL EXPERIENCES**

1. Historical geology of several Peruvian zones.
2. Description of Paleozoic fossils.
3. Mesozoic fossils.
4. Nazca plate

### **VI. METHODOLOGY**

The course takes place in theory, practice sessions and field study sessions. In theory sessions faculty presents concepts and methods. In practice sessions, students analyze and solve diverse. In field visit sessions, students analyze the geology of the zone. Students present written reports summarizing their findings and conclusions. Active student participation is promoted.

### **VII. EVALUATION FORMULA**

The average grade PF is calculated as follows:

$$PF = (EP + EF + PP) / 3$$

EP: Partial examination

EF: Final examination

PP: Average grade of practice and experimental work

### **VIII. BIBLIOGRAPHY**

1. **KUMMEL B.**  
History of Earth. An Introduction to Historical Geology.  
Freeman and Company, San Francisco, USA, 2006
2. **GIGNOUX, MAURICE**  
Stratigraphic Geology  
Freeman and Company, San Francisco, USA, 2010