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

GE163 – SEDIMENTOLOGY

I. GENERAL INFORMATION

CODE	**:**	GE163 Sedimentology
SEMESTER	**:**	5
CREDITS	**:**	3
HOURS PER WEEK	**:**	5 (Theory – Practice)
PREREQUISITES	**:**	GE001 Geology, MA363 Statistics and Probabilities
CONDITION	**:**	Compulsory

II. COURSE DESCRIPTION

The course prepares students for the analysis of sediments, their properties and evolution. Students analyze diverse types of sediments including detritic sediments, limes and clays and sedimentary rocks. The relationships of sedimentology with other fields such as stratigraphy, sedimentary petrography, hydrogeology, mining geology, petroleum geology and civil engineering are clearly identified.

III. COURSE OUTCOMES

At the end of the course, students:

1. Analyze and interpret field sedimentological stations.
2. Explain the origin and properties of sediments.
3. Understand and interpret Cailleux morphometric indexes and Hjulstrom curves.
4. Interpret granulometric statistical graphs.
5. Construct and interpret histograms, frequency curves and accumulative curves of sediments granulometry.
6. Identify the types of sediments, rocks and minerals of sedimentary deposits.
7. Identify the relationship between sedimentology and other fields of science.

IV. LEARNING UNITS

1. GENERAL CONCEPTS

Sedimentology and relationship with other geological sciences / Concept of sediment / Sediment properties: size, selection, shape, roundness, chemical and mineralogical composition, porosity, permeability, specific weight / Statistical basics for the granulometric study of sediments / Graphical representation of sediment granulometry / Bimodal distrubutions.

2. GRANULOMETRIC SCALES

Wentworth scale / Cailleux and Tricart scale / Phi scale / Detritic sediments / Lithological nature of grits and gravel / Granulometry and morphology of grits and gravels / Cailleux morphometric indexes / Sands granulometry / Sand morphoscopy / Sand mineralogical composition.

3. LIMES AND CLAYS

Granulometric study / Clay identification and classification / Sedimentary structures / Interpretations.

4. STRATIGRAPHIC UNITS

Lithological / Chronolitological / Fundamental units / Sedimentary environments / Facies / Facies lateral variation / Facies models / Deposition.

5. SEDIMENTARY ROCKS
Clastic and non-clastic rocks / Sedimentology and its relationship with civil engineering / Soil properties / Aggregates for roads / Clays diverse uses.

6. SEDIMENTOLOGY AND ITS RELATIONSHIP WITH OTHER FIELDS
Sedimentology and its relationship with hydrogeology and marine geology / Sedimentology and its relationship with petroleum geology and mining geology.

V. PRACTICAL EXPERIENCES

1. Graphical representation of sediments granulometry.
2. Sediments seaving.
3. Field study at Morro Solar, Lima.

VI. METHODOLOGY

The course takes place in theory, practice, laboratory and field study sessions. In theory sessions faculty presents concepts and methods. In practice sessions, students analyze and solve diverse problems related to sedimentology. In laboratory and field study sessions student analyze samples and formulate conclusions. 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 = PP

PP : Average grade of practice, laboratory and field study work.

VIII. BIBLIOGRAPHY

1. **PETTIJOHN J.**
   Sedimentary rocks
   Eudeba Editions, Mexico, 2014
2. **FRIEDMAN G.M., SANDERS J.E.**
   Principles of Sedimentology
   Willey, 2016