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

GE103 – FIELD GEOLOGY I

I. GENERAL INFORMATION

CODE	**:**	GE103 Field Geology I
SEMESTER	**:**	10
CREDITS	**:**	3
HOURS PER WEEK	**:**	5 (Theory–Practice–Laboratory)
PREREQUISITES	**:**	GE102 Field Geology I
CONDITION	**:**	Elective
DEPARTMENT	**:**	Geological Engineering

II. COURSE DESCRIPTION

Geological mapping at different scales. The use of applied software to geology. Weekly field practices supplemented by additional outputs. Elaboration of step-by-step report.

III. COURSE OUTCOMES

1. Organize the types, methods and criteria of surface and underground geological mapping.
2. Explain the software and tools management applied to geology.
3. Interpret the basics of geomechanical mapping for rock mass.

IV. LEARNING UNITS

1. INTRODUCTION

Types, methods and criteria of surface and underground geological mapping. Quality Control. Monitoring laws. Calculation and estimation of reserves. Various cases. Mineralogical zonings.

2. CONSTRUCTION OF GEOLOGICAL SERVICES

Software and tools management applied to geology (MapInfo, ArcView and Dips). Drawing (AutoCAD and Corel Draw) and database processing (SPSS and MS Access).

3. BASICS ON GEOMECHANICAL MAPPING OF ROCKY MASSES (UNDERGROUND AND SURFACE)

Drafting and preparation of the final report.

V. LABORATORY AND PRACTICAL EXPERIENCES

1. Surface Geological Mapping (lithology, structural and alterations) and sampling. Underground geological mapping (lithological, structural, alterations and mineralogical zoning). Sampling and reserve estimation. Bank mapping. Various cases.
2. Preparation of stratigraphic columns. Stratigraphic correlation. Paleo-environmental interpretation and face models. Digitizing and preparation of plans and geological sections (impressions drafts). Editing images (photos and movies). Editing panels and / or poster.

3. Geomechanical mapping for rock mass. Slope stability. Road under construction. Development of rosettes and pole diagrams. Interpretation of geomechanical behavior of rock masses.

VI. METHODOLOGY

The course will be conducted with theory, practice and computer lab sessions. In the theory sessions, the instructor introduces the concepts, theorems and applications. In the practical sessions, various problems are solved and their solutions are analyzed. In the laboratory sessions, specialized simulation software is used to solve problems and analyze their solutions. At the end of the course the student must submit a capstone project. In all sessions, the active participation of the student is encouraged.

VII. EVALUATION FORMULA

The Average Grade PF is calculated as follow:

PF = (EP + EF + PP) / 3

EP: Mid-Term Exam
EF: Final Exam
PP: Average of practices

VIII. BIBLIOGRAPHY

1. **COMPTON, ROBERT**
   Field Geology, Editorial Pax – México, (2010), México.
2. **COBBING, JOHN**
   The Geology and Mapping of Granite Batholiths. Editorial Springer, (2010), United Kingdom.