ABET course syllabus (Engineering Geology)

1. **Course number and name**
   0901230: Engineering Geology

2. **Credits and contact hours**
   3 Credit Hours

3. **Instructor’s or course coordinator’s name**
   Instructor: Wassel AL Bodour, Assistant Professor of Civil Engineering
   Course Coordinator: Wassel AL Bodour, Assistant Professor of Civil Engineering

4. **Text book, title, author, and year**
   - “Engineering Geology”, Mathewson, C.C., latest Edition, Bell & Howell Co., Columbus, OH 43216, USA.

   a. **other supplemental materials**

5. **Specific course information**
   a. **brief description of the content of the course (catalog description)**

   b. **prerequisites or co-requisites**
      Prerequisite: None

   c. **indicate whether a required, elective, or selected elective (as per Table 5-1) course in the program**
      Elective for Civil Engineering

6. **Specific goals for the course**
   a. **specific outcomes of instruction, ex. The student will be able to explain the significance of current research about a particular topic.**
      - The student will be able to Explain geology, earth surface features and process
      - The student will be able to Discuss rock formation and rock types.
      - The student will be able to Describe minerals and their physical properties
      - The student will be able to Classify earth materials according to engineering systems
• The student will be able to Recognize structural features of earth crust and engineering considerations
• The student will be able to Develop subsurface exploration programs
• The student will be able to Perform subsurface exploration programs
• subsurface exploration programs to Construct rock and soil profiles

b. explicitly indicate which of the student outcomes listed in Criterion 3 or any other outcomes are addressed by the course.
Course addresses ABET Student Outcome(s): k

7. Brief list of topics to be covered
• Introduction:
  o Engineering geoogy and civil engineering; Earth surface;
  o Physical properties of earth materials
• Physical Geology:
  o Surface processes; Work of Wind, River and Sea.
  o Weathering of rocks; physical and chemical weathering.
  o Landslides and Earthquakes
• Petrology:
  o Rock formation processes;
  o Types and properties of rocks; Igneous, sedimentary and metamorphic rocks
  o Tutorial: Lab study of rock specimens;
  o Types and properties of rocks; Igneous, sedimentary and metamorphic rocks
• Mineralogy:
  o Physical properties of minerals;
  o Tutorial: Lab study of mineral specimens; Hardness and streak
• Engineering Classification of Rock:
  o Rock substance classification
  o Tutorial: Lab study of Schmidt hammer test;
  o Rock mass classification;
  o Tutorial: Lab. Study of rock cores for RQD.
• Structural Geology:
  o Introduction to plate tectonics;
  o Dip and strike. Folds; Faults; Joints;
  o Engineering considerations.
• Ground Water
• Soil Formation:
  o Weathering and soils;
  o Important soil types.
• Clay Minerals:
  o Types of clay minerals;
  o Particle forces
• Subsurface Exploration
• Applications