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*
   - "Visualizing Geology", Barbara W. Murck, Brian J. Skinner,3d Edition, 2012, Wiley, Hoboken, NJ, USA
   - "Engineering Geology", Mathewson, C.C., latest Edition, Bell & Howell Co., Columbus, OH 43216, USA.

   a. *other supplemental materials*
      - " Soil Mechanics Principles and Parctice", Graham E. Barnes, 3rd Edition, 2010, Palgrave Macmillan

5. Specific course information
   a. *brief description of the content of the course (catalog description)*
      Introduction to engineering geology.Earth surface and physical properties of earth materials. Minerals and Rocks.Properties and classification of Rocks,Superficial Deposits.Geological processes.Structural geology.Soil formation and types.Groundwater. Site Investigation. Engineering Geology in Practice.

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