Department: Petroleum Engineering **Division**: Drilling

Level and Major: Undergraduate

Course Title: Drilling Engineering (II) **Number of Credits:** 2
Prerequisite: Drilling Engineering 1

Lecturer: Mohsen Dehvedar

Course Description:
Designing a well is the main purpose in drilling engineering 2. Predicting the pore pressure is the essential key in well planning. All devices that the students must know about the basic of designing were discussed in this course.

- **Pore pressure prediction:**
  - Normal & abnormal pressure
  - Fracture Gradient & Pore pressure
  - Mud Window & shoe set determination
- **Blow Out Control**
  - Kick & blow out
  - BOP stacks & blow out Control
  - Drillers Method; Wait& Weight Method
- **Casing Design**
  - Casing properties
  - Burst, Collapse and Yield Strength
  - Surface Casing design
  - Intermediate Casing Design
  - Liner Design
  - Production Casing Design
- **Hydraulic Design**
  - Rheology & Viscosity
  - YP, PV, Gs, AV, M.F
  - Hole Cleaning & Impact Force
  - Nozzle size design
  - Rheological Models (Bingham, Power law, …) and “n” & “K” estimation
  - A real Hydraulic Design especially for Iran
- **Making a Straight Hole**
  - Dogleg & Dogleg Severity
  - Key Seat
  - Different Drill stem design
- **Coring Operation**
  - Coring Methods & Coring Operation

Reading Resources:

- Hossain, M. E., & Islam, M. R. (2018). Drilling Engineering Problems and Solutions: A Field Guide for Engineers and Students. John Wiley & Sons.
- Bourgoyne Jr, A. T., Millheim, K. K., Chenevert, M. E., & Young Jr, F. S. (1986). Applied drilling engineering. Volume 2.
- Mitchell, R., & Miska, S. (2011). Fundamentals of drilling engineering. Society of Petroleum Engineers.
- Nguyen, J. P. (1996). Drilling: oil and gas field development techniques. Éditions Technip.

Evaluation: Midterm1: 6.5
Midterm 2: 5.5
Midterm 3: 6
Project: 3
Total: 21