

## Faculty of Engineering & Technology

### Rock Mechanics

#### Information :

**Course Code :** MAN 301

**Level :** Undergraduate

**Course Hours :** 2.00- Hours

**Department :** Department of Petroleum Engineering

#### Instructor Information :

Title	Name	Office hours
Associate Professor	Ashraf Fahmy Mohamed Ismael	7
Teaching Assistant	Akram Rabie Hamed Ragheb Tobar	

#### Area Of Study :

The course aims to familiarize the 3rd year students with the Stress analysis, strain analysis, stress strain relations, some important problems in rock mechanics, rock behavior and loads, theories of rock failures.

#### Course outcomes :

##### **a.Knowledge and Understanding: :**

1 -	To be familiar with mechanical and physical properties of rocks.
2 -	To differentiate between laboratory and in-situ tests for different types of rocks.
3 -	To be familiar with methodologies of solving rock engineering problems and data collection.

##### **b.Intellectual Skills: :**

1 -	Select appropriate solutions for engineering problems based on analytical thinking.
2 -	Think in a creative and innovative way in problem solving and design.

##### **c.Professional and Practical Skills: :**

1 -	Professionally merge the engineering knowledge, understanding, and feedback to improve design, products and/or services.
2 -	Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve engineering problems.

##### **d.General and Transferable Skills: :**

1 -	Ability to deal with others according to the rules of professional ethics.
2 -	Ability to share ideas and communicate with others
3 -	Ability to work in a team.

### **Course Topic And Contents :**

<b>Topic</b>	<b>No. of hours</b>	<b>Lecture</b>	<b>Tutorial / Practical</b>
Rock as a Material	3	Rock-forming minerals/The mechanical nature of rock	As above
Analysis of Stress and Strain	3	Displacement and strain	As above
Deformation and Failure of Rock	3	Mohr's hypothesis	As above
Laboratory Testing of Rocks	3	Hydrostatic tests	As above
Geological Aspects of Petroleum Related Rock Mechanics	3	Mechanical properties of sedimentary rocks	As above
Geological Aspects of Petroleum Related Rock Mechanics Stresses Around Boreholes. Borehole Failure Criteria.	3	Stresses and strains in cylindrical coordinates	As above

### **Teaching And Learning Methodologies :**

Oral lectures using white board for demonstrations

PowerPoint presentations on data show instruments

Handouts for lectures and lecture notes

### **Course Assessment :**

<b>Methods of assessment</b>	<b>Relative weight %</b>	<b>Week No</b>	<b>Assess What</b>
Final examination	40.00	15	
Quizzes	10.00	5	
Weekly assignments	10.00	1	

### **Course Notes :**

Handouts for lectures and lecture notes