FUTURE UNIVERSITY IN EGYPT جامعة المستقبل

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	2
Assistant Lecturer	Mohamed Ibrahim Mohamed Hussein	
Teaching Assistant	Haitham Sagheer Ahmed Nasr	2

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 -	Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve engineering problems.
2 -	Professionally merge the engineering knowledge, understanding, and feedback to improve design, products and/or services.
d.General and Transferable Skills: :	
1 -	Ability to work in a team.
2 -	Ability to share ideas and communicate with others
3 -	Ability to deal with others according to the rules of professional ethics.

Course Topic And Contents :

Topic	No. of hours	Lecture	Tutorial / Practical
Rock as a Material	3	Rock-forming minerals/The mechanical nature of roc	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 :

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

Books :

Book	Author	Publisher
Petroleum Related Rock Mechanics	Erling Fjar / R.M. Holt / A.M. Raaen	Elsevier

Course Notes :

Handouts for lectures and lecture notes