FUTURE UNIVERSITY IN EGYPT
جامعة المستقبل

## Faculty of Engineering & Technology

## Structural Geology

**Information :**

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|---|---|---|---|---|---|
| **Course Code :** | GEO 301 | **Level :** | Undergraduate | **Course Hours :** | 2.00- Hours |

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|---|---|
| **Department :** | Department of Petroleum Engineering |

**Instructor Information :**

| Title | Name | Office hours |
|---|---|---|
| Lecturer | Mostafa Abdou Roshdy Ahmed Teama | 3 |
| Lecturer | Mostafa Abdou Roshdy Ahmed Teama | 3 |
| Assistant Lecturer | YOUSSEF ELSAYED ABDELHAFEZ KANDIEL | |
| Assistant Lecturer | YOUSSEF ELSAYED ABDELHAFEZ KANDIEL | |

**Area Of Study :**

Expand the scope of knowledge of the petroleum engineer to include the importance Structural Geology and hydrocarbon entrapment.
Understand the kinematic analysis and different rock behavior (Stress-strain relationship).
Identify the different types of deformation (brittle and ductile) and the structuration resulted.

**Description :**

The course gives a fundamental and thorough introduction to structures formed by brittle and ductile deformations. The structures will be discussed in terms of geometrical, kinematical, and mechanical analysis with emphasis on process understanding. Particular subjects that will be taught are: stress and strain analysis, fractures and faults, folding, shear zones, deformation mechanisms and rheology. The implication on the petroleum entrapment styles as well as the impact of structures on reservoir quality will also take place in this course.

**Course outcomes :**

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| **a.Knowledge and Understanding: :** | |
| 1 - | Identify the probable type of stress that created a structure. |
| 2 - | Identify the different deformation types (brittle and ductile deformations) and their associating structures. |
| 3 - | Discriminate the different types and geometries of faults and folds. |
| **b.Intellectual Skills: :** | |
| 1 - | Recognize different types of "tops-up" indicators. |
| 2 - | Interpret the structural evolution of a complicated geometry. |
| **c.Professional and Practical Skills: :** | |
| 1 - | Solve the 3-point problems to determine subsurface strike and dip of a bed. |
| 2 - | Solve the folding and faulting geological maps to determine the throw amount. |
| 3 - | Construct different topographic and geologic cross-sections. |


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| d.General and Transferable Skills: : | |
|---|---|
| 1 - | Use the geologic structure knowledge and experience to specify a case study petroleum trapping/sealing type via report writing. |
| 2 - | Identify structures via field trip to Abu Roash area. |

**Course Topic And Contents :**

| Topic | No. of hours | Lecture | Tutorial / Practical |
|---|---|---|---|
| Plate tectonic theory | 3 | 2 | 1 |
| Kinematic analysis | 6 | 4 | 2 |
| Joints | 6 | 4 | 2 |
| Extensional faults | 9 | 6 | 3 |
| Compressional faults | 9 | 6 | 3 |
| Shear faults | 3 | 2 | 1 |
| Folds | 9 | 6 | 3 |

**Teaching And Learning Methodologies :**

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|---|
| Interactive lecturing and discussion |
| Structural problem-solving |
| Presentation/Research |
| Field trip |

**Course Assessment :**

| Methods of assessment | Relative weight % | Week No | Assess What |
|---|---|---|---|
| Final exam | 40.00 | | |
| Mid-Term exams | 25.00 | | |
| Quizzes | 20.00 | | |
| Report and assignments | 15.00 | | |



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