

G301:Stratigraphy (3 credits)

Instructor: Dr. Nawrast S. Abdalwahab

Contact information:

Office: No.6

Email: sci.lect.220@avicenna.uobasrah.edu.iq

Text required

- Brookfield, M.F.,2004. Principles of Stratigraphy. Blackwell Publishing, 340P.
- North American Stratigraphic Code. , 2005. AAPG Bulletin, v. 89, no. 11, pp. 1547–1591.
- Catuneanu, O., Galloway, W. E., Kendall, C. G. St., Miall, A. D., Posamentier, H. W., Strasser, A., and Tucker M. T., 2001. Sequence Stratigraphy: Methodology and Nomenclature. Newsletters on Stratigraphy, Vol. 44/3, pp. 173-24.
- Maill, A.D., (2016), Stratigraphy: A Modern Synthesis, Springer International Publishing AG Switzerland, 454P.

Aims of Stratigraphy Course

Stratigraphy: is the science of rock strata.

What does that mean?

- Stratigraphy is concerned with age relationships of strata.
- Successions of beds, local and worldwide correlation of strata.
- Stratigraphic order and chronological arrangement of beds in the geological column. • Stratigraphy gives you techniques for working out earth history.
- How has the earth and its life forms evolved?
- Test ideas on how varying combinations of processes affect the plants through time? • Together, history and process let you work out how, when, and why environments changed through time.
- Stratigraphy also helps you to understand how many economic materials formed and got distributed in the way they did- and so will help you find more.

Phases of Study:

- Basic concepts of stratigraphy
- Tracing environments in space and time using stratigraphic tools.

First course 2022-2023G301: Stratigraphy Dr. Nawrast S. Abdalwahab • Interpreting geologic history.

Lecture	Subject	Terms and concepts to learn
1	Introduction Principles of Stratigraphy	<ul style="list-style-type: none"> - Definition - Important of stratigraphy - Tracing environments in space and time requirements - Laws of Stratigraphy
2	Lithostratigraphy 1	<ul style="list-style-type: none"> - Lithostratigraphy concepts - Breaks in the record - Nature of lithostratigraphic units - Ranks of lithostratigraphic units - Type section - Boundaries - Key beds - Procedures for establishing and revising stratigraphic units
3	Biostratigraphy	<ul style="list-style-type: none"> - Definition - Facies fossils vs. zone fossils - Kinds of biostratigraphic units - Boundaries (biohorizons) - Name of biozone - Good zone fossils - Graphic correlation with fossils - Composite standard section
4	Geochronostratigraphy Geochronology	<ul style="list-style-type: none"> - Kinds of geological-time units - Units based on material referents - Units independent of material referents - Chronostratigraphy - Ranks of chronostratigraphic units - Chronozone - Nomenclature - Stratotype - Geochronologic units - Ranks and nomenclature of geochronologic units - Diachronic units - Ranks and nomenclature of diachronic units

5	First exam	
---	------------	--

2

First course 2022-2023G301: Stratigraphy Dr. Nawrast S. Abdalwahab

6	Interpreting the record: Facies analysis	<ul style="list-style-type: none"> - Key concepts in facies analysis - Facies analysis and facies successions - Facies models
7	Facies models	<ul style="list-style-type: none"> - Facies classification and interpretation - Facies relationships and facies association - Facies models and depositional environments
8	Cycles and cyclicity	<ul style="list-style-type: none"> - Concepts of cycle and sequence - The major types of stratigraphic cycle - Base level and eustasy - Allogenic controls on sedimentation - Autogenic controls on sedimentation - Scenarios of sea level
9	Sequence stratigraphy 1	<ul style="list-style-type: none"> - Introduction and historical development - Basic concepts - Sequence stratigraphic units - Sequence stratigraphic
10	Sequence stratigraphy 2	<ul style="list-style-type: none"> - Sequence stratigraphic surfaces - Hierarchy in sequence stratigraphy - Case study: sequence stratigraphy of nonmarine settings
11	Second exam	
12	Sequence stratigraphy 3	<ul style="list-style-type: none"> - Case study: sequence stratigraphy of marine settings

Lab	Subject	Skills to learn
1	-Introduction -Gathering stratigraphic information	<ul style="list-style-type: none"> - Formal writing of the basic stratigraphic information
2	Relative Geological Time and Stratigraphic Interpretations	<ul style="list-style-type: none"> - Identifying Unconformities - Reconstruct Relative Geological Time
3	Draw a stratigraphic section -1	<ul style="list-style-type: none"> - draw the basic lithological section - Identify stratigraphic contacts - Using scale - Using symbol

4	Draw a stratigraphic section -2	<ul style="list-style-type: none"> - draw the basic lithological section - Identify stratigraphic contacts - Using scale - Using symbol
5	Draw a correlation section	<ul style="list-style-type: none"> - draw regional stratigraphic section - Identify key beds - Draw correlation section - Using locations map for correlation

3

First course 2022-2023G301: Stratigraphy Dr. Nawrast S. Abdalwahab

Laboratory Instructor: Dr. Nawrast S. Abdalwahab

6	Using biostratigraphy data	<ul style="list-style-type: none"> - identify geological age using biostratigraphy - Record the biostratigraphic range - Identify biozones - Draw graphic biostratigraphy correlation
7	Stratigraphic map 1	Isopach map
8	Stratigraphic map 2	Facies map
9	Interpreting Stratigraphy in A Stratigraphic Log	<ul style="list-style-type: none"> - Interpreting Stratigraphic Log <ul style="list-style-type: none"> - Silclastic dominated system - Carbonate dominated system
10	Sequence stratigraphy	<ul style="list-style-type: none"> - identify sequence surface using subsurface data - Identify system tracts and sequence - Using different sequence schools for identify sequences
11	Sequence stratigraphy-2	<ul style="list-style-type: none"> - Draw subsurface correlation section
12	Exam	

Grades

First Exam	27%	
Second Exam	27%	

Lab Exam	8%	
Others	5%	

4

First course 2022-2023G301: Stratigraphy Dr. Nawrast S. Abdalwahab **Important**

date

	Date	Group
First Exam	Wednesday April 19, 2023	
Second Exam	Wednesday May 10, 2023	
Seminar	<i>To dated later</i>	
Laboratory Exam	<i>To dated later</i>	

5