****

**Department of Earth Sciences and Petroleum**

**College of Science**

**University of Salahaddin**

**Subject: Stratigraphy**

**Course Book – (Year 2)**

**Lecturer's name: Dr. Ali Ashoor Abid (Ph.D)**

**Academic Year: 2022/2023**

**Course Book**

|  |  |
| --- | --- |
| **1. Course name** | **Stratigraphy** |
| **2. Lecturer in charge** | **Ali Ashoor Abid** |
| **3. Department/ College** | **Geology/ science** |
| **4. Contact** | **e-mail: aliashoor60@yahoo.com****Tel: (optional)** |
| **5. Time (in hours) per week**  | **For example Theory: 2** **Practical: 8**  |
| **6. Office hours** | **Monday 9.00- 12.00 am** |
| **7. Course code** |  |
| **8. Teacher's academic profile**  | **BSc 1979 , M. Sc 1983, Ph.D 1997 : all from College of Science , University of Baghdad.****Assistant Lecturer 1984; Lecturer 1990 ;Assistant Professor 1999** |
| **9. Keywords** | **Units, Procedure, Relationships, Map, Correlation** |
| **10. Course overview:** Stratigraphy is considered among the essential sciences of the Earth Sciences because it relates to the mode of formation of strata (Sedimentary Rocks) and stratigraphic column which includes the main stratigraphic units. Additionally, it is necessary to become familiar with a number of operations and procedures used in the gathering and analysis of stratigraphic data and materials. An important pedagogical purpose of this course is to acquaint the student with standard literature of stratigraphy. This purpose is accomplished by selected readings from a number of text books and periodicals.  |
| **11. Course objective:**Two objectives have been kept in mind. First one is to direct the student attention to other sources for further information on topics necessarily treated briefly; the other is to make available to the student other points of view than those discussed in this course.  Also, it is the purpose of this course to assemble and integrate the facts, principles, and hypothesis bearing upon stratigraphy and sedimentation in a form that may be studied and assimilated in an efficient manner. The course was designed to meet the needs of senior students in geology and to serve as an introduction in advanced stratigraphy for beginning graduate students. Prerequisites include the normal sequence of undergraduate courses in geology and related sciences.  We mixed the ancient arrangement of chapters in Krumbein and Sloss(1963) with modern information in Boggs(2006) to keep more precise lecture and acceptable arrangement of the materials. This fact of the mixing has been made in response to the rapid expansion and diversification of stratigraphy during the last 45 years. For getting more advantage ,we used more modern reference of Nichols(2009).  |
| **12. Student's obligation**Always, be present in the hall before the instructor. You must close mobile before entering the hall. |
| **13. Forms of teaching**Teaching includes different manners|: Power point presentations Explanations on blackboard Classroom discussions |
| **14. Assessment scheme** Theoretical part equals 15%; this degree will be approached by at least two examinations in addition to quizzes plus the degree of the scientific trip. Always the activity of the students within the classroom is evaluated and counted with the above-mentioned degrees. Practical part takes 35% (details are shown in attached papers of practical part). Final Examination : 50% only theoretical  |
| **15. Student learning outcome:**Most of the graduated student s followed the oil companies those work in the Kurdistan Region especially in the last years.   |
| **16. Course Reading List and References‌:** Krumbein,W.C. and Sloss,L.L.,1963.Stratigraphy and Sedimentation. Freeman and Company,San Francisco,660p. Boggs,Jr,S.,2006.Principles of Sedimentology and Stratigraphy.Prentice-Hall, New York,662p. Nichols,G.,2009.Sedimentology and Stratigraphy. Second Edition.Wiley-Blackwell,419p. |
| **17. The Topics:** | **Lecturer's name** |
| Week 1Introduction-Scope of Stratigraphy -Relationship of the Stratigraphy with other sciences -Code of Stratigraphic Nomenclature -Basic Principles of StratigraphyWeeks 2,3Stratigraphic Column-Introduction -Evolution of Stratigraphic Classification -Present-Day Classification -Categories of Stratigraphic Units; Formal and  Informal Names and Units -Rock Stratigraphic(Lithostratigraphic) Units Boundaries; Ranks (Group, Formation,Member, Lentil and Tongue,Bed)(Sketch shows lentil and tongue of the some formations,Northern  Iraq)  Nomenclature; Rule of Priority -Soil Stratigraphic Units,Definition Distinction from Rock Stratigraphic Units Distinction from Pedologic Units -Biostratigraphic Units,Definition Fossil remains;Reworked Fossils;Leaked  Fossils;Definition and Kinds of Biozones  -Time Stratigraphic(Chronostratigraphic) Units Definition and Boundaries;Ranks(System,Series Stage) -Geologic Time (Geochronologic) Units Definition and Boundaries;Ranks(Eon,Era, Period,Epoch,Age) -Geologic Climate Units(For use in the Quaternary Definition;Kinds Weeks 4,5 Stratigraphic Procedures -Outcrop Procedures Measured Sections;Lithologic Samples; Fossil Collecting;Measuring Horizantal  Strata;Measuring Inclined Strata;Laboratory Study of Outcrop Samples -Presentation of Outcrop Data -Subsurface Procedures Cable-Tool Samples;Rotary-Tool Samples; Logging -Presentation of Subsurface DataWeek 6 – First ExaminationWeek 7Stratigraphic Paleontology  -Distribution of Organisms in Space Bathymetric Distribution  Geographic Distribution -Distribution of Organisms in Time The Catastrophist Concept The Concept of Organic Evolution -Classification of Organisms Taxonomic Classification Bionomic Classification OthersWeeks 8,9Stratigraphic Relationships -Lithosomes,Shapes and Classification -Vertical Relationship among Lithosomes Conformable Relationships Unconformable Relationships -Lateral Relationships among Lithosomes -Combined Lateral and Vertical Relationships Transgression and Regression Overlap and Offlap Onlap and OverstepWeeks 10,11Stratigraphic Correlation -Definition -Correlation of Lithostratigraphic Units Parastratigraphic Units -Methods of Rock Units Correlation -Problems of Rock Units Nomenclature and  Correlation -Correlation of Biostratigraphic Units Review of Definitions and Classifications Relation of Biostratigraphic Zones to Rock  Units Methods of Biostratigraphic Correlation -Time Stratigraphic Correlation Geologic Time as Continuum Geologic Time as a Dimension Methods of Interregional Time  Stratigraphic Correlation Methods of Local Time Stratigraphic Correlation Correlation ChartWeeks 12,13Stratigraphic Maps -Organization of Map Data -Classification of Stratigraphic Maps Structure Contour Maps Isopach Maps Interpretation of Isopach Maps Criteria for Contemparaneous Subsidence Paleogeomorphologic Maps Paleogeologic Maps Facies Maps Lithologic Maps Conventional Lithofacies Maps a.Single Component -Net Thickness Maps(Isolith ) -Percentage Maps b.Multicomponents -Ratio Maps -Facies Triangle  c.Multicomponents Single- Contour System Maps -Entropy Maps -Entropy-Ratio Maps -Facies-Departure Maps Facies-Pattern Maps Facies Tetrahedron Vertical-Variability Maps Intergrative and Derived Maps Trend Maps Interpretation of Lithofacies Maps Biofacies MapsWeek 14 - Second Examination  | Dr. Ali Ashoor Abidex: (2 hrs) |
| **18. Practical Topics (If there is any)** |  |
| In this section The lecturer shall write titles of all practical topics he/she is going to give during the term. This also includes a brief description of the objectives of each topic, date and time of the lecture  | Lecturer's nameex: (2 hrs)Aveen Hameed |
| **20. Extra notes:**None |
| **21. Peer review**  |