****

**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 1  Introduction-Scope of Stratigraphy  -Relationship of the Stratigraphy with other sciences  -Code of Stratigraphic Nomenclature  -Basic Principles of Stratigraphy  Weeks 2,3  Stratigraphic 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 Data  Week 6 – First Examination  Week 7  Stratigraphic 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  Others  Weeks 8,9  Stratigraphic 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 Overstep  Weeks 10,11  Stratigraphic 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 Chart  Weeks 12,13  Stratigraphic 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 Maps  Week 14 - Second Examination | | Dr. Ali Ashoor Abid  ex: (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 name  ex: (2 hrs)  Aveen Hameed |
| **20. Extra notes:**  None | | |
| **21. Peer review** | | |