

Department of

**College
Science**



of

University of Salahaddin/Erbil

Subject: Macropalaeontology

Course Book – Year 2

**Lecturer's name: Shawnm Qarani Othman(Ms.C.)
and Sazan**

Academic Year: 2018/2019

Course Book

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| 1. Course name | Invertebrate Palaeontology |
| 2. Lecturer in charge | Mrs. Shawnm Qarani Othman |
| 3. Department/ College | Geology/Science |
| 4. Contact | e-mail: shawnm.alsaideahmad@su.edu.krd |
| 5. Time (in hours) per week | Theory: 2 Practical: 3 |
| 6. Office hours | 2 |
| 7. Course code | |
| 8. Teacher's academic profile | First assignment in University of Salahaddin/Erbil in 1985 as assistant Geology. Attainment of Ms.C. degree and Assistant lecturer title in 1996. |
| 9. Keywords | |
| 10. Course overview: | <p>Palaeontology means in Greek the science that studies the ancient life, through the remains or traces of prehistoric organisms often preserved within sedimentary rocks. Palaeontology is important because life on the earth has not always been as its now. By studying the fossils in progressively older rocks, the Palaeontologist attempts to establish an account of how all the animals and plants, which make up the modern biosphere evolved from their earliest beginnings.</p> <p>The field of palaeontology is quite diverse and comprises several sub disciplines, each of which has relevance to different branches of geology and biology.</p> <p>Fossils are important to geologists for three reasons: they provide age determination of rocks in which they occur, they provide establishment of environment of formation of the sediments of the past in which they occur and hence the key to palaeoecological and palaeogeographical reconstructions, and they provide the raw data for determining the evolution of past organisms.</p> |
| 11. Course objective: | The course aims to give a preliminary and concise knowledge on the invertebrate palaeontology to the undergraduate students as a base for the following courses of biostratigraphy, palaeoecology, |

sedimentology and geology of Iraq.

Upon completing this course students will be able to use the fossil record for determination the relative age of fossil bearing rocks, and to make inferences about palaeoenvironments. Therefore, it will be required that students demonstrate a general understanding of the various groups of fossil organisms and their stratigraphical occurrence.

Specifically students should:

- . 1- Demonstrate ability to identify fossils of major taxonomic groups.
- . 2- Demonstrate knowledge of morphology of major fossil groups.
- . 3- Demonstrate knowledge of the age and stratigraphical significance of major fossil groups.
- . 4- Be able to collect and interpret palaeontological data from the field.

12. Student's obligation

In this section the lecturer shall write the role of students and their obligations throughout the academic year, for example the attendance and completion of all tests, exams, assignments, reports , essays...etc

لێره مامۆستا به رپرسیاریتی قوتابی خویندکار روونده کاته وه سه باره ت به کۆرسه که بۆ نمونه ئاماده بوونی قوتابیان له وانه کاندا، له تاقیکردنه وه کاندا، راپۆرت و ووتار نووسین... هتد.

13. Forms of teaching

The lecturer is using data show based on power point software in addition to the white board for some extra explanations.

لێره مامۆستا رینگه ی وانه ووتنه وه ده نووسیت، بۆ نمونه : داتاشو و پاوه رپۆینت، سه ر ته خته ره ش، ته خته ی سپی، سمارتپۆرد یان مه لزه مه ... هتد

14. Assessment scheme

Breakdown of overall assessment and examination

لێره مامۆستا جۆری هه لسه نگاندن (تاقیکردنه وه کان یان نه زمونه کان) ده نووسیت بۆ نمونه تاقیکردنه وه ی مانگانه ، کویزه کان، بیرکردنه وه ی ره خنه گرانه (پریزه نته یشن)، راپۆرت نووسین، ووتار نووسین یان ئاماده نه بوونی خویندکار له پۆلدا... هتد. ئامانه چه ند نمره ی له سه رده بئیت و مامۆستا چۆن نمره کان دابه شده کات؟

15. Student learning outcome:

پیرکردنه وه ی نه م خانه یه زۆر گرنگه ، مامۆستا ده رئه نجامه کانی فیربوون ده نووسیت. بۆ نمونه : روونی ئامانجه سه ره کیه کانی کۆرسه که (بابه ته که) بۆ خویندکار گونجاندنی ناوه رۆکی کۆرسه که به پئویستی ده ره وه و بازاری کار قوتابی چی نوئ فیرده بئیت له رینگه ی پیدانی نه م کۆرسه وه ؟

This should not be less than 100 words

16. Course Reading List and References:

Clarkson, E.N.K. 1996. Invertebrate Palaeontology and Evolution. 3rd Edition. Chapman and Hall, London, 434p.

Black, R.M. 1995. The Elements of palaeontology. 2nd Edition. Cambridge University Press, 404p.

Moore, R.C. (ed.) 1953. Treatise on invertebrate Palaeontology. Kansas University Press. A series of volumes each dealing with a major invertebrate group on a detailed and systematic basis.

Murray, J.W. (ed.) 1985. Atlas of Invertebrate Macrofossils. Longman Group Ltd, Harlow. 241p.

ADDITIONAL READINGS

Nield, E.W. and Tucker, V.C.T. 1985. Palaeontology-An Introduction. Pergamon Press Ltd, England. 172p.

Prothero, D.R. 2004. Bringing Fossils to Life: An Introduction to Palaeobiology. 2nd Edition. McGraw-Hill, 503p.

| 17. The Topics: | Lecturer's name |
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| <p>Week.1: Introduction- Palaeontology; Fossils; The origin of life; Precambrian fossils; Preservation of fossils, Conditions favourable for preservation, Types of preservation- Unaltered remains.</p> <p>Week.2: Altered remains, Traces of soft parts, Traces of animal activities, Coprolites, Pseudofossils; Uses of fossils; Habitats and habits of animals; Classification of organisms.</p> <p>Week.3: Phylum Porifera (Sponges) - Nature and shape of the animal, The body wall, Grades of organisation; Classification: Subphylum Gelatinosa: Class Demospongia: Spicular demosponges, Sclerosponges, Chaetetids.</p> <p>Week.4: Stromatoporoids, Sphinctozoans; Class Calcarea; Subphylum Nuda: Class Hexactinellida; Incertae sedis Archaeocyatha; Geological importance of sponges.</p> <p>Week.5: Phylum Cnidaria- Living organism, The skeleton, Classification- Class Hydrozoa, Class Scyphozoa, Class Anthozoa- Subclass Ceriantipatharia, Subclass Octocorallia, Subclass Zoantharia, Order Rugosa-Form of corallum, Types of septa, Axial structures.</p> <p>Week.6: Order Rugosa- Tabulae and dissepiments, Calice, Corallum increase and budding, Rejuvenescence, Classification, Ecology of rugosan corals; Order Tabulata- Form of corallum.</p> <p>Week.7: Order: Tabulata- Skeletal elements, Axial budding and growth, Classification, Ecology; Order Scleractinia- Type and habit, Septa and associated structures, Asexual reproduction and colony formation, Classification, Ecology; Geological uses of corals.</p> | <p>Mrs. Shawnm Qarani Othman</p> |

Week.8: First Term Exam.

Week.9: Phylum: Bryozoa- Recent bryozoa: Morphology of two genera: 1- *Bowerbankia*, 2- *Smittina*; Fossil bryozoa: 1- *Dekayella* (Order: Trepostomata), 2- *Fenestella* (Order: Cryptostomata); The functional morphology of bryozoans' colonies (Fenestellid colonies); Classification.

Week.10: Phylum Brachiopoda- Morphology, Subphylum: Rhynchonelliformea- Morphology of three genera: 1- *Magellania*, 2- *Visbyella*.

Week.11: 3- *Eoplectodonta*; Major features of brachiopod- Form of shells, Microstructure of shells, Punctuation in brachiopod shells, Hinge and articulation;

Week.12: Muscle attachments; Lophophore; Subphylum: Linguliformea-Shell structure in *Lingula*; Ecology of brachiopoda.

Week.13: Phylum Mollusca- Fundamental organisation; Classification; Shell morphology and growth: 1- Coiled shell morphology, 2- Septation of the shell; Class Bivalvia: 1- Shell morphology and orientation, 2- Internal anatomy.

Week.14: Features of bivalves: 1- Shell structure and mineralogy, 2- Dentition, 3- Ligaments and muscles, 4- Other shell structures, 5- Gill morphology; Mode of life; Classification.

Week.15: Class: Gastropoda- Morphology: 1- Soft body, 2-Shell- coiling, The aperture, Ornament, orientation; Classification.

Week.16,17: Class: Cephalopoda- Classification, Tetrabranchiata, Dibranchiata; Subclass: Nautiloidea, *Nautilus*: The shell, Buoyancy; Subclass: Endoceratoidea; Subclass: Actinoceratoidea; Subclass: Bactritoidea; Subclass: Ammonoidea- Morphology and growth, The ammonoid suture, Buoyancy in ammonoids, Ammonite jaws, Comparison with other cephalopods, Heteromorphs; Subclass: Coleoidea, Extinct coleoids.

Week.18: Phylum: Echinodermata- Classification, Subphylum: Echinozoa, Class: Echinoidea, Morphology of three genera: 1- *Echinus* (Order: Echinoida), 2- *Echinocardium*, (Order: Spatangoida), 3- *Mellita* (Order: Clypasteroida); Classification of Echinoids.

Week.19: Subclass: Perischoechinoidea; Subclass: Euechinoidea, Morphological characters: i- Apical disc, ii- Ambulacra, iii- Interambulacra and spines, iv- Gills; Class: Holothuroidea.

Week.20: Second Term Exam.

Week.:21 Class: Edrioasteroidea; Subphylum: Asterozoa, Class: Stelleroidea; Subphylum:

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| <p>Crinozoa, Class: Crinoidea; Subphylum: Blastozoa, Class: Diploporita and Rhombifera (Cystoids), Class: Blastoidea.</p> <p>Week.22: Phylum: Hemichordata- Class: Graptolithina; Preservation; Order: Graptoloidea, Order: Dendroidea; Mode of life.</p> <p>Week.23: Superphylum: Arthropoda Phylum or Class: Trilobita, General morphology- <i>Acaste downingiae</i> ; Morphology of trilobites: 1- Cuticle.</p> <p>Week.24: Morphology of trilobites: 2- Cephalon; Glabella, Cephalic sutures, Hypostome, Eyes; Enrollment and coaptative structures, 3- Thorax; 4- Pygidium; Ecdysis and ontogeny; Classification.</p> <p>Week.25: The fossil record: Originations and Extinctions.</p> | |
| <p>18. Practical Topics (if there is any)</p> | |
| <p>Week.1: Study and description of specimens represent various types of preservation.</p> <p>Week.2: Study and description of specimens represent various types of preservation.</p> <p>Week.3: Study and description of sponge fossil specimens.</p> <p>Week.4: Study and description of stromatoporoid and archaeocyathid fossil specimens.</p> <p>Week.5: Study and description of rugosan coral fossil specimens.</p> <p>Week.6: Study and description of rugosan coral fossil specimens.</p> <p>Week.7: Study and description of tabulate and scleractinian coral fossil specimens.</p> <p>Week.8: First Term Exam.</p> <p>Week.9: Study and description of bryozoan fossil specimens.</p> <p>Week.10: Study and description of brachiopod fossil specimens.</p> <p>Week.11: Study and description of brachiopod fossil specimens.</p> <p>Week.12: Study and description of brachiopod fossil specimens.</p> <p>Week.13: Study and description of bivalve fossil specimens.</p> <p>Week.14: Study and description of bivalve fossil specimens.</p> <p>Week.15: Study and description of gastropod fossil specimens.</p> <p>Week.16, 17: Study and description of ammonoid and coleoid fossil specimens.</p> <p>Week.18: Study and description of echinoid fossil specimens.</p> <p>Week.19: Study and description of echinoid fossil specimens.</p> <p>Week.20: second Term Exam.</p> <p>Week.21: Study and description fossil specimens of echinoid and other echinoderm groups.</p> | <p>Mrs. Shawnm Qarani Othman and Sazan</p> |

Week.22: Study and description of graptolite fossil specimens.

Week.23: Study and description of trilobite fossil specimens.

19. Examinations:

1. Compositional: In this type of exam the questions usually starts with Explain how, What are the reasons for...?, Why...?, How....?

With their typical answers

Examples should be provided

2. True or false type of exams:

In this type of exam a short sentence about a specific subject will be provided, and then students will comment on the trueness or falseness of this particular sentence. Examples should be provided

3. Multiple choices:

In this type of exam there will be a number of phrases next or below a statement, students will match the correct phrase. Examples should be provided.

20. Extra notes:

Here the lecturer shall write any note or comment that is not covered in this template and he/she wishes to enrich the course book with his/her valuable remarks.

21. Peer review:

Lecturer: Dr. Majeed Toma Hanna