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**Department of Biology**

**College of Education**

**Salahaddin University**

**Subject: Invertebrates**

**Course Book – (Year: 2)**

**Lecturer's name: Asst. Prof. Dr. Luay Abdul-Qader Ali**

**Academic Year: 2017/2018**

**Course Book**

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| **1. Course name** | **Invertebrates** | |
| **2. Lecturer in charge** | **Dr. Luay Abdul-Qader Ali** | |
| **3. Department/ College** | **Biology Dept./ College of Education** | |
| **4. Contact** | **e-mail: [luay.ali@](mailto:luay.ali@)su.edu.krd** | |
| **5. Time (in hours) per week** | **Theory : 4hrs practice: 12 hrs** | |
| **6. Office hours** | **4 hrs** | |
| **7. Course code** |  | |
| **8. Teacher's academic profile** | **B.Sc. in Biology 1995**  **MSC. In Ecology 2002**  **Ph.D. in invertebrates 2007** | |
| **9. Keywords** |  | |
| **10. Course overview:**  The invertebrates included those animals which are without backbone as opposed to vertebrates in which a series of vertebrae constitute a backbone, but this division of the animal kingdom into invertebrates and vertebrates is largely a matter of convenience. The invertebrates constitute about 90% of the known animals which number over a million. Vast and heterogeneous groups have been placed in the invertebrates. There is not even one positive character which is common to all invertebrates, and the differences between the groups are very large, each group of invertebrates has certain structural peculiarities, a special terminology, and a distinct classification. However, the life of invertebrates is as fascinating, revealing and complicated a subject as that of vertebrates. Without a thorough and careful study of invertebrates it is hardly possible to peep into the secrets of life of animals on the whole. | | |
| **11. Course objective:**   1. To know what are invertebrates 2. To develop critical thinking skills by reviewing journal articles 3. To understanding the habit and habitat, structure, organization, respiration, excretion and reproduction in invertebrates. | | |
| **12. Student's obligation**  Students are expected to attend all classes. The official college attendance policy is followed. Attendance in each class is counted from the first day the student is eligible to attend the class as given on the student’s assessment sheet registration card or student change notice. Student may obtain an excuse for the emergency absence from the dean of students upon presentation of satisfactory documentation. | | |
| **13. Forms of teaching**   1. Using of power point presentation and data show for head titles, introduction of subjects, definitions, figures, systematics position of invertebrates organisms. 2. Using white board 3. Classroom discussions about the lecture subjects and students questions. | | |
| **14. Assessment scheme**   1. The students are required to do two closed book exams during the academic year. 2. Weekly quiz. ‌ 3. Attendance equal to 3% 4. Comprehensive final examination equal to 60% (40% theoretical + 20% practical). | | |
| **15. Student learning outcome:**  At the completion of this subject, students are expected to be able to :   1. Understand and describe the invertebrates organism 2. Understand the habit and habitat of invertebrates and it is structure , reparation, and methods of reproductions. 3. Think critically in terms of their learning and research. 4. Evaluation critically the published literature. | | |
| **16. Course Reading List and References‌:**  ▪ “Invertebrate zoology", E. L. Jordan and P. S. Verma.  ▪ “Animal life in fresh water-A guide to fresh water invertebrates", H. Mellanby. | | |
| **17. The Topics:** | | **Lecturer's name** |
| Week l:  Definition of invertebrates, History, present invertebrates phyla, general characteristics of invertebrates.  Week 2:  **Protozoa: *Amoeba***  Systematic position, habit and habitat, structure, locomotion, feeding (nutrition), respiration, excretion and reproduction.  Week 3:  **Protozoa: *Trypanosoma***  Systematic position, habit and habitat, structure, locomotion, feeding (nutrition), respiration, excretion and reproduction.  Week 4:  **Protozoa: *Plasmodium***  Systematic position, habit and habitat, structure, locomotion, feeding (nutrition), respiration, excretion and reproduction.  Week 5:  **Protozoa: *Paramecium***  Systematic position, habit and habitat, structure, locomotion, feeding (nutrition), respiration, excretion and reproduction.  Week 6:  **Porifera: Sponges**  Systematic position, habit and habitat, structure, locomotion, feeding (nutrition), respiration, excretion and reproduction.  Week7:  **Coelenterata: *Hydra***  Systematic position, habit and habitat, structure, locomotion, feeding (nutrition), respiration, excretion and reproduction.  Week8:  **Coelenterata: *Obelia***  Systematic position, habit and habitat, structure, locomotion, feeding (nutrition), respiration, excretion and reproduction.  Week9:  **Coelenterata: *Aurelia***  Systematic position, habit and habitat, structure, locomotion, feeding (nutrition), respiration, excretion and reproduction.  Week10:  **Platyhelminthes: *Dugesia***  Systematic position, habit and habitat, structure, locomotion, feeding (nutrition), respiration, excretion and reproduction.  Week11:  **Platyhelminthes: *Fasciola***  Systematic position, habit and habitat, structure, locomotion, feeding (nutrition), respiration, excretion and reproduction.  Week12:  **Platyhelminthes: *Taenia***  Systematic position, habit and habitat, structure, locomotion, feeding (nutrition), respiration, excretion and reproduction.  Week13:  **Nematoda**  Systematic position, habit and habitat, structure, locomotion, feeding (nutrition), respiration, excretion and reproduction.  Week14:  **Annelida: Earthworm (Oligocheata)**  Systematic position, habit and habitat, structure, locomotion, feeding (nutrition), respiration, excretion and reproduction.  Week15:  **Annelida: Hirudinea**  Systematic position, habit and habitat, structure, locomotion, feeding (nutrition), respiration, excretion and reproduction.  Week16:  **Arthropoda: Crustacea**  **Crustacea: Cladocera (Water-Fleas)**  Habit and habitat, structure, locomotion, feeding (nutrition), respiration, excretion and reproduction.  Week17:  **Crustacea: Copepoda**  Habit and habitat, structure, locomotion, feeding (nutrition), respiration, excretion and reproduction.  Week18:  **Crustacea: Ostracoda**  Habit and habitat, structure, locomotion, feeding (nutrition), respiration, excretion and reproduction.  Week19:  ***Chirocepalus* sp.(Fairy Shrimps)**  Systematic position, habit and habitat, structure, locomotion, feeding (nutrition), respiration, excretion and reproduction  Week20:  **Mollusca: Gastropoda**  Systematic position, Habit and habitat, structure, locomotion, feeding (nutrition), respiration, excretion and reproduction.  Week 21:  **Mollusca: Unio (Bivalve)**  Systematic position, Habit and habitat, structure, locomotion, feeding (nutrition), respiration, excretion and reproduction.  Week 22:  **Annelida: Nereis (Polycheata)**  Systematic position, habit and habitat, structure, locomotion, feeding (nutrition), respiration, excretion and reproduction.  Week 23:  **Echinodermata: Asterias**  Systematic position, habit and habitat, structure, locomotion, feeding (nutrition), respiration, excretion and reproduction.  Week 24:  **Protozoa: *Vorticella***  Systematic position, habit and habitat, structure, locomotion, feeding (nutrition), respiration, excretion and reproduction. | | 2 hours  2 hours  2 hours  2 hours  2 hours  2 hours  2 hours  2 hours  2 hours  2 hours  2 hours  2 hours  2 hours  2 hours  2 hours  2 hours  2 hours  2 hours  2 hours  2 hours  2 hours  2 hours  2 hours  2 hours |
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| **19. Examinations:**  ***1. Full the following blanks***  ***2.******True or false***  ***3. Multiple choices***  ***4. Match the tow following columns***  ***5. Draw with lable*** | | |
| **20. Extra notes:** | | |
| **21. Peer review** | | |