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**Postgraduate Course Book**

**Department:** Biology

**College:** Education College

**University:** Salahaddin University-Erbil

**Subject:** Plant Biosystematics

**Course Book Level:** Ph.D. Students; First semester

**Lecturer's name:** Prof. Dr. Abdulla Sh. Sardar

**Academic Year:** 2023/2024

**Course Book**

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| **1. Course name** | Plant Biosystematics | |
| **2. Lecturer in charge** | Prof. Dr. Abdulla Sh. Sardar | |
| **3. Department/ College** | Biology-Education | |
| **4. Contact** | 07504550582 | |
| **5. Time (in hours) per week** | Theory: 3  Practical: | |
| **6. Office hours** |  | |
| **7. Course code** |  | |
| **8. Teacher's academic profile** | There is no doubt that the teacher as a main factor of the teaching process, has a very good and important role in performance the teaching program and preparing the students, he is the follower of the results of teaching process and try to progress this process. The teacher is an affected factor among the teaching factors, and has effect on the student’s characters and their future, therefor; the teacher must beware in his treatment with the students and the teaching staff. For all the progress that take place in the world, in all the fields, such as cultural, social, scientific, technology, etc. … , the teacher must suit himself with all these changes and benefit from them in order he can finally to reach these benefits to all peoples that he treat with them. | |
| **9. Keywords** |  | |
| **10. Course overview:**  Plant Biosystematics is an introduction to the morphology, evolution, and classification of land plants. The objective is to present a foundation of the approach, methods, research goals, evidence, and terminology of plant systematics and to summarize information on the most recent knowledge of evolutionary relationships of plants as well as practical information vital to the field. Systematics, gives a general overview of the concepts and methods of the field of systematics. An introduction to the definition, relationships, classification, and importance of plants and summarizes the basic concepts and principles of systematics, taxonomy, evolution, and phylogeny must be involved. Evolution and Diversity of Plants, describes the characteristics and classification of plants. The beginning student may be given a basic understanding of the evolution of Green and Land Plants, Vascular Plants, Woody and Seed Plants, and Flowering Plants evolutionary approach to plant systematics makes learning the major plant groups and their features conceptually. I would like to propose that each of us, instructors and students, pause occasionally to evaluate why it is that we do what we do, this offer these suggestions as possible goals: 1- to realize and explore the beauty, grandeur, and intricacy of nature; 2- to engage in the excitement of scientific discovery; 3- to experience and share the joy of learning. | | |
| **11. Course objective:**  Systematics is a unique natural science concerned with the study of individual, population and taxon relationships for purposes of classification. The study of plant systematics is based on the premise that in the tremendous variation in the plant world, there exist conceptual discrete units (usually named as species) that can be recognized, classified, described, and named, on the further premise that logical relationships developed through evolution exist among these units. | | |
| **12. Student's obligation**  The role of students and their obligations throughout the academic year involve their attendance in the lectures, and completion of all daily (quizzes) and monthly tests, exams. | | |
| **13. Forms of teaching**  Different forms of teaching will be used to reach the objectives of the course: definitions, discussions and conclusions, plates and shapes by using Data-show (in power point) as well as using the white board to illustrate the lecture or sides of the lecture for the students. | | |
| **14. Assessment scheme** | | |
| **15. Student learning outcome:** | | |
| **16. Course Reading List and References:**  The objective of the course is to present a foundation of the approach, methods, research goals, evidence, and terminology of plant systematics and to summarize information on the most recent knowledge of evolutionary relationships of plants as well as practical information vital to the field. The student may learn to recognize and know the basic features of the major lineages of plants, diagnostic features that a student might use to recognize a plant family, and some economically important uses of family members. When the student be able to recognize and identify the plant specimens, he will be able to work in the herbaria, preparing the Floras, national parks, botanical gardens, as well as preparing the scientific researches. The student will learn from Plant systematics and all its subjects that: to realize and explore the beauty, grandeur, and intricacy of nature; to engage in the excitement of scientific discovery; and to experience and share the joy of learning. | | |
| **17. Topics Program** | | Lecture’s  Name |
| **Week 1:**  Introduction: Experimental Taxonomy: Types of Data: 1- MORPHOLOGY:  Habit: Underground parts: Leaves: Flowers: Fruits | | Prof. Dr. Abdulla Sh. Sardar |
| **Week 2:** 2- ANATOMY: Wood anatomy: Trichomes: Epidermal features: | |  |
| **Week 3:** Leaf anatomy: Floral anatomy: 3- EMBRYOLOGY: Families marked out by distinct embryological features: Podostemaceae: Cyperaceae: Onagraceae: Specific examples of the role of embryological data: Trapa: Paeonia: Exocarpos: Loranthaceae | |  |
| **Week 4:** 4- PALYNOLOGY: Pollen aggregation: Pollen wall: Pollen wall sculpturing: Pollen aperture | |  |
| **Week 5:** 5- MICROMORPHOLOGY AND ULTRASTRUCTURE: Micromorphology: Primary Sculpture: Secondary Sculpture: Tertiary Sculpture | |  |
| **Week 6:** Ultrastructure: Sieve-tube plastids | |  |
| **Week 7:** Dilated Cisternae: Phloem (p-) proteins: Nuclear inclusions: Non-phloematic TEM Characters | |  |
| **Week 8:** 6- CHROMOSOMES: Chromosomal number | |  |
| **Week 9:** Chromosomal structure: Chromosomal behaviour | |  |
| **Week 10:** 7- CHEMOTAXONOMY: Micromolecules: Macromolecules | |  |
| **Week 11:** Primary metabolites: Secondary metabolites: Phenolics | |  |
| **Week 12:** Alkaloids | |  |
| **Week 13:** Glucosinolates | |  |
| **Week 14:** Serology: Double-diffusion serology: Immuno-electrophoresis | |  |
| **18. Grading procedure** | |  |
| **19. Examinations:**  **Q1**/  How flowers used in delimitation of taxa?  **Q2**/  What is the role of vascular cambium? **Q3**/ Write about the role of embryological data. **Q4**/ What are the five different types of pollens tetrads?  **Q5**/ What do you know about plant Ultrastructure? | |  |
| **20. Extra notes:** | | |
| **21. Peer review \***  I reviewed this course book and I approve its contents.  Signature:  Name: Asst. Prof. Dr. Abdul Husain M. A. Al-Khayat | | |

\* Must have permission of the Scientific and Higher Education Committee