



Salahaddin University-Erbil

Quality Assurance and Curriculum Development

Course Book

2024 - 2025

College: Agricultural Engineering Sciences

**Departments: Plant protection, Field Crops and Medicinal Plants,
Horticulture and Forestry**

Academic year: 2023 - 2024

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Course Description

| | |
|----------------------|----------------------|
| Module | Language |
| Plant Taxonomy | English |
| Academic Year | Semester: |
| 2023-2024 | Fall (3) |
| ECTS | Prerequisite: |
| 6 | General Botany |

Course Content:

A brief overview of the basic components of botany. Understanding the relationship of botany to other sciences such as (agriculture, environment, plant distribution, mathematics, computer sciences, and remote sensing). The history of the development of botany by getting to know the previous scientists who contributed to the establishment of plant classification science across different historical times to the nowadays. Understanding the basic vegetative and reproductive organs of the plants (roots, stems, leaves, bracts, inflorescence and their components, flowers and their parts, and finally fruits and seeds). Identifying some monocotyledonous and dicotyledonous plant families, especially cultivated plant and weed families, etc.

Course Objective

After completing the course, students should be able to:

1. State, define, and give examples of the components of taxonomy: description, identification, nomenclature, and classification.
 2. Describe a plant, using the descriptive terminology of plant morphology, anatomy, embryology, palynology, and reproductive biology.
 3. Name, classify, and diagnose several of the major families of flowering plants.
 4. Collect (including properly recording field data), identify, and process a plant for an herbarium specimen.
 5. State the principles and rules of plant nomenclature, including how to apply botanical names.
- Students will be assessed for the above skills with quizzes, exercises, lecture exams, lab practical.

Learning Outcomes

After completing the course, students should be able to:

1. **State, define,** and give examples of the components of taxonomy: description, identification, nomenclature, and classification.
2. **Describe a plant,** using the descriptive terminology of plant morphology, anatomy, embryology, palynology, and reproductive biology.
3. **Name, classify,** and diagnose several of the major families of flowering plants.
4. **Collect (including properly recording field data),** identify, and process a plant for a herbarium specimen.
5. **State the principles and rules of plant nomenclature,** including how to apply botanical names.
6. **Classification of plants according to daily uses,** by identifying the plants and their uses according to the natural and agricultural variations, using what is required and ignoring what is not required.

7. **Managing the plant species of harmful and beneficial plants in agronomical fields**, and combating plants that harm field plants, thus increasing plant production and economic returns.
8. **Students will be assessed for the above skills with quizzes**, exercises, lecture exams, lab practical.

References: *

1. Al-Rawi, A. (1964). Wild plants of Iraq with their distribution. Ministry of Agriculture & Irrigation, state board for agricultural & water resources research, National Herbarium of Iraq, Baghdad.
2. Al-Rawi, A. and H. L. Chakravarty (1988). Medicinal plants of Iraq. Second edition. Ministry of Agriculture & Irrigation, state board for agricultural & water resources research, National Herbarium of Iraq, Baghdad.
3. Al-Rawi, A. (1988). Poisonous plants of Iraq with. Third edition. Ministry of Agriculture & Irrigation, state board for agricultural & water resources research, National Herbarium of Iraq, Baghdad.
4. Glimn-Lacy, J & Peter B. Kaufman. (2006). Botany Illustrated. 2nd edition, Printed in the United States of America, University of Michigan, USA.
5. Guest, E. (1966). Flora of Iraq. Vol. 1. Ministry of Agriculture of Iraq.
6. Lawrence, G. H. M. (1951). Taxonomy of Vascular Plants. The Macmillan Publishing Co., INC. New York.
7. Pandey, S. A. and S. P. Misra (2008). Taxonomy of Angiosperms. New Delhi, India.
8. Radford, A. E., Dickson, W. C., Massey, J. R. and Bell, C. R. (1974). Vascular Plant systematic. Harper and Row, New York.
9. Simpson M. G. (2006), Plant systematics, Elsevier academic press, Oxford, UK.

Type of Teaching: *

2 hours /Theoretical
2 hours /practical

Requirements For Credit Points: *

1. Students Attendance in class is important.
2. Report
3. Midterm exam
4. Presenting a seminar
5. Collecting specimens
6. quiz
7. Field trip conducting
8. Preparation for the Exam

Grade Distribution: *

40% Student Efforts
60% Final Exam

Weekly Plan

| Detail | |
|--------|--|
| Week | Detail |
| 1 | Fundamental Components of Taxonomy, International Code of Botanical Nomenclature. (I.C.B.N.): |
| 2 | Historical Retrospect <ol style="list-style-type: none"> 1. Early History of Plant Taxonomy 2. Later Progress in Plant Taxonomy 3. Recent Systems of Classification |
| 3 | Modern Trends or Scope of Plant Taxonomy <ol style="list-style-type: none"> 1. Anatomy 2. Palynology 3. Embryology 4. Cytology 5. Chemotaxonomy 6. Numerical Taxonomy Week4: Plant Morphology |
| 4 | Plant Morphology <ol style="list-style-type: none"> 1. Roots: Origin of roots. Root system. Modified Roots 2. Stems: Origin of stem. Parts of the stem. |
| 5 | Leaves: <ol style="list-style-type: none"> 1. Origin of leaf 2. Phyllotaxy. 3. Leaf incision (simple & compound leaves). Bract and Bracteols: 1. Types of bracts 2. Specialized bracts |
| 6 | Flowers: <ol style="list-style-type: none"> 1. Flower parts, Type of perianth cycles, Flower symmetry, Appendages 2. Androecium; Stamen Arrangement, Cycly, and Position. Stamen Attachment. 3. Nectaries, Stamen fusion, Anthers parts, Type, and Attachment 4. Anthers dehiscence. Pollen grain, Pollen unite, Pollen polarity |
| 7 | Mid-Term Exam |
| 8 | Outdoor visiting, (Field trip to the mountain and different ecological areas, to understand the plant biodiversity, herbaria sample collection) |
| 9 | Gynoecium, (Carpels, and Pistil): <ol style="list-style-type: none"> 1. Carpel number 2. Ovary position 3. Placentation |
| 10 | Inflorescences: <ol style="list-style-type: none"> 1. Inflorescence parts, 2. Inflorescence type, Inflorescence development 3. Specialized inflorescences |
| 11 | Fruits: <ol style="list-style-type: none"> 1. Fruit types 2. Simple fruit types, Fleshy (succulent) Fruits, 3. Simple dry at maturity, Aggregate fruit types, Multiple fruit types. |
| 12 | Seeds: <ol style="list-style-type: none"> 1. Seed endosperm type, 2. Seed germination type 3. General terminology, 4. Seed color 5. Seed size 6. Seed shape |

| | |
|-----------|---|
| 13 | 1. Environment and Geographical Distribution 2. Vegetation Structure in Iraq 3. Plant Identification: |
| 14 | Some an important (Angiosperms) families: A. Some important Dicot families; Aster Family (Asteraceae), Mustard Family (Brassicaceae), Nightshade Family (Solanaceae) - Carrot Family (Apiaceae): B. Some important Monocot families; Grass Family (Poaceae), Lily Family (Liliaceae), Iris Family (Iridaceae): |

Workload

| Module* | | | |
|--------------------------------|--------|-------------|-----------------|
| Prerequisite: General Botany | | | |
| Detail | | | |
| Type | Number | Time Factor | Workload (hrs.) |
| Attendance | 14 | 4hrs. | 14 *4 = 56 |
| Report | 2 | 12hr | 2*12 = 24 |
| Mid Term Exam | 2 | 7hr | 2*7 = 14 |
| Presenting a seminar | 2 | 6hr | 2*6 = 12 |
| Collecting specimens | 10 | 1hr | 1*10 = 10 |
| Quiz | 12 | 1hr | 1*12 = 12 |
| Field trip conducting | 1 | 10hr | 1*10 = 10 |
| Preparation for the Final Exam | 2 | 12hr | 2*12 = 24 |
| Total SWL (hr/semester) | | | 162 hrs. |