



Departments: Field Crops

College of Agricultural Engineering Sciences

Salahaddin University - Erbil

Subject: Theoretical General Botany

Course Book – Year 1 (All groups)

Lecturer's name: Serwan Taha Saleh Al-dabbagh

Academic Year: 2020/2021

Course Book

1. Course name	Theoretical G. Botany
2. Lecturer in charge	Serwan Taha Al-dabbagh
3. Department/ College	Field Crops / Agricultural Engineering Sciences
4. Contact	e-mail: serwan.saleh@su.edu.krd Tel: (0750 4523016)
5. Time (in hours) per week	Theoretical: (2) hours (2*3)
6. Office hours	(6) hours (3*6)
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, therefore; 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	Anatomy, Botany, Cytology, Morphology.
10. Course overview:	<p>Plant Science 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. 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. Plant collecting and documentation emphasizes both correct techniques for collecting plants and thorough data acquisition, the latter of which has become increasingly important today in biodiversity studies and conservation biology. Information on herbaria and data information systems reviews the basics of herbarium management, emphasizing the role of computerized database systems in plant collections for analyzing and synthesizing morphological, ecological, and biogeographic data. A list of characters used for detailed plant descriptions may give, this list is useful in training students to write descriptions suitable for publication. Students need to learn to draw, in order to develop their observational skills. Finally, 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</p>

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:

After completing the course, students should be able to:

1. State, define, and give examples of the components of Plant group identification.
2. Describe a plant, using the descriptive terminology of plant groups, plant morphology, plant anatomy, embryology, and reproductive biology.
3. Fundamental of plant comprising organs.
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.

Students will be assessed for the above skills with quizzes, exercises, lecture exams, lab practical's.

12. Student's obligation

The role of students and their obligations throughout the academic year involve their attendance in the lectures, drawing all the plates and plant specimens concerning to the lecture, and completion of all daily (quizzes) and monthly tests, exams, and preparing some herbarial plant specimens.

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

Every the daily (quizzes) tests given 10 marks and finally calculated as a monthly test (100 marks) in addition to the monthly tests (1-2 tests), all these marks calculated as the course attempt mark, as well as additional marks will be given to the students whom bringing fresh plant specimens.

15. Student learning outcome:

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.

16. Course Reading List and References:

1. Ajithadoss K., Renu edwin, T. Sekar, Thiru. P. Sankar and Thiru. S. Munusamy (2006). BIOLOGY BOTANY Higher Secondary Second Year. Government of Tamil Nadu, Tamil Nadu.
2. 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.
3. 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.
4. 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.
5. Barrett, S. C. H. (Ed.) 2008. Major evolutionary transitions in flowering plant reproduction. Chicago, IL: University of Chicago Press.
6. Glimn-Lacy, J & Peter B. Kaufman. (2006). Botany Illustrated. 2nd edition, Printed in the United States of America, University of Michigan, USA.
7. Guest, E. (1966). Flora of Iraq. Vol. 1. Ministry of Agriculture of Iraq.
8. Harder, L. D., and S. C. H. Barrett. 2007. The ecology and evolution of flowers. New York: Oxford University Press.
9. Lawrence, G. H. M. (1951). Taxonomy of Vascular Plants. The Macmillan Publishing Co., INC. New York.
10. McDonald, M. B., and F. Y. Kwong (Eds.). 2005. Flower seeds: Biology and Technology. Cambridge, MA: CABI Publishing.
11. Overview Some Learning Goals (Botany Chapter 3 The Cell) Plant Sciences Inquiry: Microscapes Higher Plant Cells versus Animal Cells Summary Review Questions Discussion Questions Additional Reading. <http://www.mhhe.com/stern12e> Learning Online.
12. Pandey, S. A. and S. P. Misra (2008). Taxonomy of Angiosperms. New Delhi, India.
13. Radford, A. E., Dickson, W. C., Massey, J. R. and Bell, C. R. (1974). Vascular Plant systematic. Harper and Row, New York.
14. Rudall J. P. (2007). Anatomy of Flowering Plants an Introduction to Structure and Development Cambridge University Press. The Edinburgh Building, Cambridge CB2 8RU, UK Published in the United States of America by Cambridge University Press, New York.
1. Simpson M. G. (2006), Plant systematics, Elsevier academic press, Oxford, UK.

17. The Topics:

Lecturer's name

18. Theoretical Topics (If there is any)

Lecturer's name

Week 1: Course Book Illustration and Glossary
 Week 2: Introduction to G. Botany

- Botany definition
- History of botany
 1. Morphology
 2. Anatomy

Dr. SerwanTaha
 Al-dabbagh
 The theoretical lecture
 takes 2 hrs. And
 Every practical lecture
 takes 3 hrs.

<p>3. Taxonomy (Cryptogams (Non-Flowering Plants): 2. Spermatophyta (Seed Plants) 3. Gymnosperms (Naked Seed Plants) 4. Angiosperms (Flowering Plants); Monocots and Dicots.</p> <p>4. Cytology</p> <p>5. Embryology</p> <p>6. Genetics</p> <p>7. Evolution</p> <p>8. . Paleontology</p> <p>9. . Physiology</p> <p>10. Ecology</p> <ul style="list-style-type: none">• Scopes of botany1-Economic botany, Forestry , Horticulture Plant Pathology, Plant breeding, Pharmacognosy.• Importance of plants to life <p>Week 3: Plant cell</p> <ul style="list-style-type: none">• cell wall layers ,structure and its function• The protoplast-Living component• Plasma membrane• Nucleus• Ribosome• Plastids• Mitochondria• Peroxisome• Endoplasmic Reticulum• Golgi apparatus• The protoplast-Non -Living component• Vacuole , Ergastic substances (carbohydrate, Protein and fats) <p>Week 4: Cell Division</p> <ul style="list-style-type: none">• Chromosome structure• cell cycle• G_0, G_1, S and G_2 phases• Mitosis (mitotic) phase• Meiosis <p>Week 5: First Exam</p> <p>Week 6: Plant tissue</p> <ul style="list-style-type: none">• Meristematic tissues<ul style="list-style-type: none">a) Primary meristematic tissuesb) Secondary meristematic tissues	
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<ul style="list-style-type: none">• Permanent tissues <ol style="list-style-type: none">1) Ground or fundamental tissue systems.2) The vascular tissue system.3) The dermal tissue system. <p>Week 7: Root system</p> <ul style="list-style-type: none">• -Function of the roots• -Types of roots <p>*Primary roots</p> <p>*Adventitious roots</p> <ul style="list-style-type: none">• Root anatomy• The vascular cylinder• The cortex• The epidermis• Differences between Monocot and Dicot roots <p>Week 8: Shoot system (Stems and Leaves)</p> <p>*The Stem</p> <ul style="list-style-type: none">-The function of the stems-Type of stems-The buds-Stem secondary growth-Differences between Monocot and Dicot Stems <p>Week 9: Leaves</p> <p>(origin - composition - function - leaf arrangement system on the stem - leaf modifications - types of leaves found in the plant and</p> <p>Leaf anatomy</p> <p>Week 10: Second Exam</p> <p>Week 11: The Flower</p> <p>Flower and inflorescence definition - origin - function - structure - types of flowers and inflorescences</p> <p>Week 12: The fruit</p> <ul style="list-style-type: none">- Fruit development, Parthenocarpic fruits, Fruit classification	
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Week 13: **The seeds**

Seed types, Seed forming, Seed structure

The Different between seed monocot and dicot

Week 14: **Environmental Factors Affecting Plant Growth;**

Light - Quality, Quantity and Duration; Short day length plants; Long day plants; Day neutral plants flower; Temperature; Thermoperiod; Breaking dormancy - cold period; Plants in Communities

19. Examinations: (Theoretical Type Questions):

Q1/Fill the blanks with missing words; (choose 10 phrases from the box and write the appropriate one in the blank): (---- Marks)

Monocots, Phoenix, rhizomes, cotyledons, Globform, Cabbage, Quercus, bulbs Euphorbia, heartwood, Conical (Coniform), head lettuce, Gamopetalous, tubers, Fabaceae, sapwood, Monadelphous, xylem, Shrubs, Fusiform, Dicots, Lateral root,

1. Potato-----, *Iris*-----, and tulip----- are underground stems that store food for the plant.
2. ----- and ----- are unusually large terminal buds.
3. Seed leaves-(- - - - -) on embryonic plants. They store food for the developing seedling.
4. ----- have Parallel veined-mostly grasses while ----- have pinnate veins-veins extend laterally from the mid-rib to the edge
5. The xylem forms the inner ring and is often called the----- and -----.

6. Q2/ Read the following statements carefully and identify whether each statement is true (T) or false (F) and correct the false statements: (--- Marks)

1. Crowns are compressed stems with leaves and flowers on short internodes.
2. Roots have nodes; stems do not.
3. Rhizomes, which are shortened, compressed underground stems surrounded by fleshy scales (leaves) that envelop a central bud at the tip of the stem.

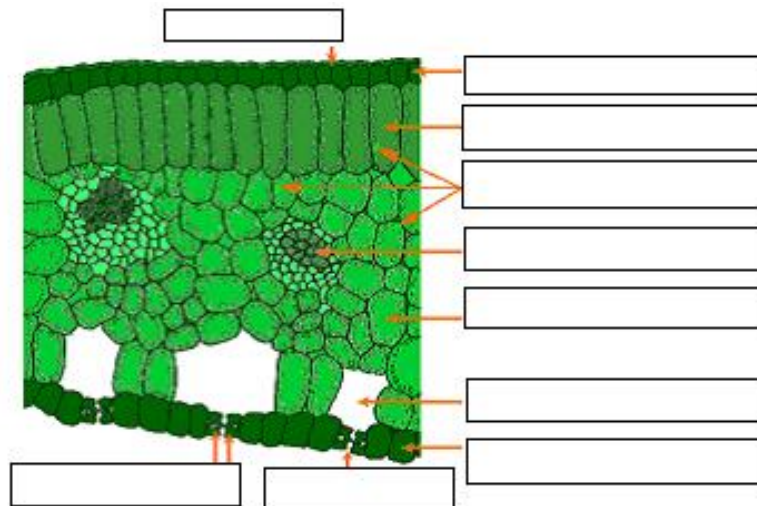
4. Rhizomes can be divided into pieces, bulblets or cormels can be removed from the parent, and tubers can be cut into pieces containing eyes.
5. Trees have one main trunk and are usually taller than 12 feet while shrubs have many main stems and are usually less than 12 feet tall.
6. Herbaceous or succulent stems contain less amounts of sapwood.
7. Vines-have long trailing stems. Some vines grow along the ground while others need a structure to grow on.
8. The edible parts of broccoli are composed of stem tissue, flower buds, and a few small leaves.
9. Lateral (axillary) buds are located on the sides of a stem and usually arise where a leaf meets a stem (an axil).
10. The pith is part of the epidermis and produces from a waxy layer called cutin which protects the leaf from diseases and dehydration.

Q3/ Define only two of the following:

(----- Marks)

1. Stem.
2. Buds.
3. Tunicate bulbs

Q4/ Write appropriate phrases in the following square blanks: (30 Marks)



Answer Key

Q1/ Fill the blanks with missing words; (choose 10 phrases from the box and write the appropriate one in the blank): (---- Marks)

1. Tubers, rhizomes, bulbs.
2. head lettuce, Cabbage, .
3. cotyledons.
4. Monocots, Dicots.
5. heartwood, sapwood.

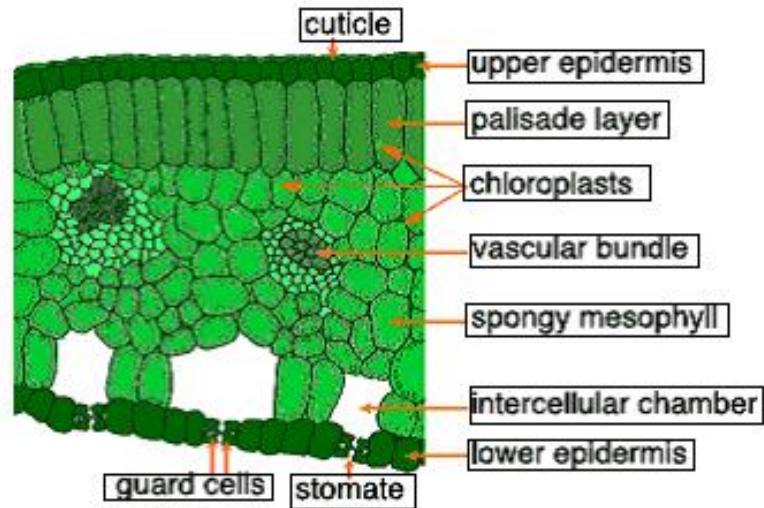
Q2/ Read the following statements carefully and identify whether each statement is true (T) or false (F) and correct the false statements: (--- Marks)

1. True.
2. F. stems have nodes; Roots s do not.
3. True.
4. True.
5. True.
6. True.
7. True.
8. True.
9. True.
10. F. The cuticle is part of the epidermis and produces from a waxy layer called cutin which protects the leaf from diseases and dehydration.

Q3/ Define only two of the following: (----- Marks)

1. Stem.
2. Buds.
3. Tunicate bulbs

Q4/ Write appropriate phrases in the following square blanks: (30 Marks)



20. Extra notes:

21. Peer review

I reviewed this course book and I approve its contents.

Signature:

Name: Asst. Prof. Dr. Abdullah Sh. Sardar