



Department of Biology

College of Science

University of Salahaddin-Hawler

Subject: Phycology (Algae) Theory

Course Book – (Year 2) (First Semester)

Lecturer's name:

Assist. Prof. Yadi Omer Mustafa, Theory

Assistant Lecturer Lanja Omer Tahir, Practical

Academic Year: 2022/2023

Course Book

1. Course name	Phycology (Algae)
2. Lecturer in charge	Assistant Prof.: Yadi Omer Mustafa Assistant Lecturer: Lanja Tahir Omer
3. Department/ College	Department of Biology/College of Science
4. Contact	e-mail: yadi.mustafa@su.edu.krd lanja.tahir@su.edu.krd
5. Time (in hours) per week	2hr./ week
6. Office hours	To be Return to the schedule on the office door
7. Course code	
8. Teacher's academic profile	<ul style="list-style-type: none"> • I graduate from Salahaddin University, department of Biology in 1991(Ranked 1st in collage) worked as assistant biology for less than one year and assist in practical Sewage Microbiology lab., practical Ecology lab. In 1995 I finished my M.Sc. degree in Phycology and start as Assistant Lecturer teaching practical Ecophysiology lab, practical Plant anatomy practical plant physiology. • From 1997 to 2008 I teach practical Phycology and archeogonate plant lab for the 2nd class students in Biology department. • In "1998", I teach practical Phycology and archeogonate plant lab for the 2nd class students in Biology department, college of Education, Salahaddin University, Iraq. • In "2008", I moved to Environmental Sciences department, a new department which opened in college and started teaches Phycology and Plant communities Theory and supervising the Practical lab for the 2nd class students. • I worked as a member of scientific committee and department committee • Participate in training course about the ways of teaching and their methods (Ranked 2nd in group) • I made three scientific research so my title changed from Assistant Lecturer to Lecturer • I worked as a head of health and safety committee in environmental science before moved to Biology department. • From 2011 till 2016 I teach academic debate for 1st stage. • In 2020 my academic title has been changed to Assistant professor after I made three scientific researches.
9. Keywords	Phycology, algae, producers

10. Course overview:

Provide an overview of the biology, ecology and taxonomy of freshwater and marine algae based on some field collected material and preserved samples. Samples collected from lakes, fens, streams, and rivers will be identified mostly to genus level with some common species identifications within each algal group.

An ecological perspective is used to explore the diversity of photosynthetic microbes that form the energy base of freshwater ecosystems. Field collections will be used to identify the common phyla and genera of algae, to study their life histories, and to examine environmental factors that affect algal growth and distribution.

Understand the role of algae in freshwater and marine environments as primary producers, suppliers of nutrition and cover to animals and as resources for humans. Develop the knowledge and skills to identify various algae species.

11. Course objective:

- * Definition, similarity between algae and plants, differences between algae and plants, Occurrence and distribution of algae
- * Division Cyanophyta (blue green algae), General characters of Cyanophyta:
Order 1: Chroococcales: Genus: (*Chroococcus*), *Gloeocapsa*, *Microcystis*, *Merismopedia*
- * Order 2: Oscillatoriales, Genus: *Oscillatoria*, *Lyngbya*, *Spirulina*
- * Order 3: Nostocales, Genus: *Anabaena*, *Nostoc*, *Calothrix*, *Rivularia*, *Scytonema*
- * Order 4: Stigonematales (Genus: *Stigonema*)
- * Division: Chlorophyta (Green algae), General characters of Chlorophyta, Organization of body plant (form of green algae),
- * 1- Order: Chlorococcales, Family and Genus: Family 1: Chlorellaceae (*Chlorella*), Family 2: Scenedesmaceae (*Scenedesmus*), Family 3: Hydrodictyaceae *Pediastrum*
- * 2- Order: Volvocales, Family and Genus: 1- Family: Chlamydomonadaceae (*Chlamydomonas*), 2-Family: Volvocaceae (*Gonium*, *Pandorina*, *Eudorina*, *Volvox*)
- * 3- Order: Oedogoniales, Family and Genus: 1- Family: Oedogoniaceae (*Oedogonium*)
- * 4- Order: Ulotrichales, Family and Genus: 1-Family: Ulotrichaceae (*Ulothrix*)
- * 5- Order: Cladophorales, Family and Genus: Family: Cladophoraceae (*Cladophora*)
- * 6- Order: Zygnematales, Family and Genus: Family 1: Zygnemataceae (*Zygnema*, *Spirogyra*) Family2: Desmidaceae (*Cosmarium*, *Closterium*, *Micrasterias*)
- * Division: Chlorophyta, General characters of division, Vegetative structure, Structure of the cell, Reproduction, Common occurrence
- Class II: Charophyceae, Vegetative structure, Structure of the cell, Reproduction, Common occurrence
- 1- Order: Charales, Family and Genus: Family: Characeae, (*Chara*, *Nitella*)

* Division: Rhodophyta (red algae), Class: Rhodophyceae, Order1: Nemonlianales
 Family and Genus: Family: Batrachospermaceae (*Batrachospermum*)
 2- Order: Ceramiales, Family and Genus: Family: Rhodoiflaleaceae (*Polysiphonia*)

* Division: Phaeophyta (Brown algae), General character
 Class 1: Phaeophyceae (Isogenerate), Order: Ectocarpales, Family:
 Ectocarpaceae (*Ectocarpus*)

12. Student's obligation

Exam policy: Student Should take 2 exams during the course There will be no make-up exams for absences students without medical report.

Classroom polices:

- 1- **Attendance:** You are strongly encouraged to attend class on a regular basis, as participation is important to your understanding of the material. This is your opportunity to ask questions. You are responsible for obtaining any information you miss due to absence.
- 2- **Lateness:** Lateness to class is disruptive.
- 3- **Electronic devices:** All cell phones are to be turned off at the beginning of class and put away during the entire class.
- 4- **Talking:** During class please refrain from side conversations. These can be disruptive to your fellow students and your professor
- 5- **No Disrespectful** to both the professor and to your fellow students.

13. Forms of teaching

Data show (PowerPoint), course book, White board

14. Assessment scheme

Component	Date	Percent
Exam1	--/--/2022	40 %
Exam 2	--/--/2022	40 %
Seminar		5%
Quiz		15%
Total		100%

15. Student learning outcome:

After completion of this course, you will be able to:

- Define common terms used in Algae.
- Collection and preservation of algae in different habitat.
- Identification of algae by using key.
- Know all problems that caused by Algae.
- Knowledge about seasonal variation of algae during visiting different algal body for algal collection.
- Explanation the mode reproduction in different types of algae.
- Classification of algae and knowledge about algal flora of different water bodies.
- Principle of identification of algae which changes from one division to another, even between different orders in the same division.
- Importance of algae (ecologically)
- Demonstrate the life cycle of common algae.

16. Course Reading List and References:

- 1- Cryptogamic Botany (Algae and fungi) Vol. 1, 1955, by G. M. Smith, 2nd edition, the McGraw - Hill companies
- 2- Algae (An introduction to phycology), 1995, by C. Van Den Hoek, D. G. Mann and H. M. Jahns, Cambridge University Press.
- 3- Phycology, 3rd edition, 2005, by Robert E. Lee, Cambridge University Press.
- 4- Algae, (2000), by Linda E. Graham and Lee W. Wilcox, Prentice-Hall, Inc.
- 5- The freshwater algal flora of the British isles. (2003). D. M. John, B. A. Whitton and A. J. Brook, Cambridge university.

17. The Topics:

Date	Topic
Week1	Introduction of phycology- Importance of Algae to Human
Week2	Classification of Algae
Week3	Diversity in Algal form
Week4	Flagella in Algae
Week5	Algae Reproduction
Week6	The principal characteristics of the Cyanophyta
Week7	Classification of Cyanophyta
Week8	Chlorophyta (Green Algae)
	First Examination
Week9	Chlorophyte Diversity (part1)
Week10	Chlorophyte Diversity (part2)
Week11	Classification of Chlorophyte
Week12	Heterokontophyta (Part1)
Week13	Heterokontophyta (Part2)
Week14	Rhodophyta (Red Algae)
Week15	Dinophyta
Week16	Golden Algae
	Second Examination

18. Practical Topics**19. Examinations:*****1. Identification of samples with writing their systematic position:***

In this type of exam there will be a number of slides, then students will identify it with

mention other information requested.

- * Identify the slide and write their systematic position.
- * Identify the slide and give the common name.
- * Identify the slide and mention the type of reproduction.

2. Compositional: In this type of exam the questions usually starts with Explain how, What are the reasons for...?, Why...?, How....? With their typical answers

- * Define the followings: Hormogonia, Cenobium
- * What are the differences between macrophyllous and microphyllous leaf?
- * Write function of the following: 1- Elaters 2- Gemma

Practical:

1. I identify: samples.

2. Compositional: In this type of exam the questions usually start with Explain how, what are the reasons for...? Why...? How....?

3. 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 sentence.

4. Multiple choices:

In this type of exam there will be several phrases next or below a statement, students will match the correct phrase

20. Extra notes:

21. Peer review

This course book has to be reviewed and signed by a peer. The peer approves the contents of your course book by writing few sentences in this section.

(A peer is person who has enough knowledge about the subject you are teaching; he/she has to be a professor, assistant professor, a lecturer or an expert in the field of your subject).