



**Department of Environmental Science and Health**

**College of Science**

**University of Salahaddin-Hawler**

**Subject: *Phycology***

**Course Book – (Year 2 )**

**Lecturer's name: Chiayi Maaroof Shareef**

**Academic Year: 2022/2023**

## **Course Book**

<b>1. Course name</b>	Phycology
<b>2. Lecturer in charge</b>	Chiayi Maroof Sharif
<b>3. Department/ College</b>	Environmental Sciences-Science
<b>4. Contact</b>	e-mail: <a href="mailto:chiai.shareef@su.edu.krd">chiai.shareef@su.edu.krd</a>
<b>5. Time (in hours) per week</b>	4hr./ week
<b>6. Office hours</b>	To be Return to the schedule on the office door
<b>7. Course code</b>	
<b>8. Teacher's academic profile</b>	<ul style="list-style-type: none"><li>• I graduate from Salahaddin University, department of Environment in 2012. In 2016 I finished my M.Sc. degree in Phyco-limnology.</li></ul>
<b>9. Keywords</b>	Phycology, algae, producers
<b>10. Course overview:</b>	<ol style="list-style-type: none"><li>1. To provide an overview of the algae.</li><li>2. Use the study of algae to provide a basis for understanding the evolutionary pathways to higher plants.</li><li>3. Much of the reproductive biology, ecology can be best understood by studying the simpler systems in algae.</li><li>4. 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.</li><li>5. Develop the knowledge and skills to identify various algae species.</li></ol>

## 11. Course objective:

Collection, Storage, And Preservation of algal sample

- \* 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	--/4/2023	30 %
Quiz		5%
Total		35%

### 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, 2<sup>nd</sup> 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, 3<sup>rd</sup> 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:

### 18. Practical Topics (If there is any)

Date	Topic
Week1	Collection, storage, and preservation of algae
Week2	Division: Cyanophyta (blue green algae), Order 1: Chroococcales, <i>Chroococcus</i> sp., <i>Gloeocapsa</i> sp., <i>Microcystis</i> sp., <i>Merismopedia</i> sp.
Week3	Order 2: Oscillatoriales, <i>Oscillatoria</i> sp., <i>Lyngbya</i> sp., <i>Spirulina</i> sp., <i>Phormidium</i> sp.
Week4	Order 3: Nostocales, <i>Anabaena</i> sp., <i>Nostoc</i> sp., <i>Calothrix</i> sp., : <i>Rivularia</i> sp., <i>Scytonema</i> sp.,
Week5	Order 4: Stigonematales, <i>Stigonema</i> sp., Division: Chlorophyta

	(Green algae), 1- Order: Chlorococcales: <i>Chlorella</i> sp., <i>Scenedesmus</i> sp., <i>Pediastrum</i> sp., <i>Hydrodictyon</i> sp.,
Week6	2-Order: Volvocales, <i>Chlamydomonas</i> sp., <i>Gonium</i> sp., <i>Pandorina</i> sp., <i>Eudorina</i> sp., <i>Volvox</i> sp.,
	First Examination
Week7	3- Order: Oedogoniales, <i>Oedogonium</i> sp., 4- Order: Ulotrichales, <i>Ulothrix</i> sp., 5- Order: Cladophorales, <i>Cladophora</i> sp.
Week8	Order 6: Zygnematales, <i>Zygnema</i> sp., <i>Spirogyra</i> sp., <i>Cosmarium</i> sp., <i>Closterium</i> sp., <i>Micrasterias</i> sp.
Week9	Division: Charophyta, 1- Order: Charales, <i>Chara</i> sp., <i>Nitella</i> sp.
Week10	Division: Chrysophyta, class: Chrysophyceae, Genus: <i>Dinobryon</i> sp.
Week11	Division: Chrysophyta, class: Xanthophyceae, Genus: <i>Vaucheria</i> sp.
Week12	Class: Bacillariophyceae, Order: Pennales, Order: Centrales
Week13	Division: Rhodophyta (red algae), Order1: Nemonianales, <i>Batrachospermum</i> sp., External features, life cycle
Week14	2- Order: Ceramiales, <i>Polysiphonia</i> sp., External features, life cycle, Gametophyte, Carposporophyte, Tetrasporophyte
Week15	Division: Phaeophyta (Brown algae), General character, Class 1: Phaeophyceae, 1- Order: Ectocarpales, <i>Ectocarpus</i> sp., External features, Reproductive structures
Week16	Class: Phaeophyceae, 2- Order: Laminariales, <i>Laminaria</i> sp. External features, Reproductive structures, 3- Order: Fucales, <i>Fucus</i> sp., External features, Reproductive structures
	Second Examination

## 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

## 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).

**I have read this course book and I see that it is contains the most necessary subjects**

**Asisst. Prof Dr. Janan J. Toma**