

Department of Soil &Water College of Agriculture University of Salahaddin Subject: Fundamental of Soil science Course Book - (class 2)

Lecturer's name:Dr. khunaw Abdulla Rahman

Mc. **Academic Year: 2023/2024**

Course Book

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| 1. Course name | principle of Soil science |
| 2. Lecturer in charge | Khunaw Abdulla Rahaman |
| 3. Department/ College | Soil and water Dept./ college of Agriculture |
| 4. Contact | e-mail: [khunaw.rahman@su.edu.krd](mailto:khunaw.rahman@su.edu.krd)  Tel: 07504635810 |
| 5. Time (in hours) per week | For example practical: 2\* 2 |
| 6. Office hours | Sat. 9:00-1:00 off  Su. 8.5.-2.5 . General Microbiology  Mo. 9:00-1:00 Office hours  Tu. 10.30-12.30 student seminar  We. 8:30 - 3:00 Office hours |
| 7. Course code |  |
| 8. Teacher's | High School:1998 |
| acadqaq.m,,eemic profile | BSc at 2002  Master degree at 2007, PhD 2017 |
| 9. Keywords | General Microbiology , Principle of soil science |
| 10. Course overview: |  |
| Generally microbes can be divided into two categories: the cellular microbes (or organisms) and the acellular microbes (or agents). In the cellular camp we have the bacteria, the archaea, the fungi, and the protists (a bit of a grab bag composed of algae, protozoa, slime molds, and water molds). Cellular microbes can be either **unicellular**, where one cell is the entire organism, or **multicellular**, where hundreds, thousands or even billions of cells can make up the entire organism. In the acellular camp we have the viruses and other infectious agents, such as prions and viroids. | |
| 11. Course objective:  To learn how to conserve and utilize microbes . | |

1. Obviously microbes are small. The traditional definition describes microbes as organisms or agents that are invisible to the naked eye, indicating that one needs assistance in order to see them. That assistance is typically in the form of a microscope of some type. The only problem with that definition is that there are microbes that you can see without a microscope. Not well, but you can see them. It would be easy to dismiss these organisms as non-microbes, but in all other respects they look/act/perform like other well-studied microbes (who follow the size restriction).
2. Student's obligation

Lack of attendance and tardiness to class are unacceptable in lecture courses. Obviously unforeseen events can lead to absenteeism and/or tardiness, but those instances are expected to be rare. So, please report to class on time! Due to limitations in support personnel, opportunities to make up missed lecture will not be feasible. If a student is absent for any reason, he/she should email or contacted to departments and the teaching assistant as soon. On as possible. Late assignments will only be accepted at the discretion of the instructor. Typically prompt written documentation will be required to justify the acceptance of late assignments as a result of absenteeism

1. Forms of teaching

We use data show and white board

1. Assessment scheme

The overall grading is 35% and distribute as in this scheme for this course is as follows:

5% Reports, Homework and quiz

10% 1st exam

20% Final Examinations

1. Student learning outcome:

Students should understand the basic concepts and the principle of General microbiology and the general information . what is solution and how to prepare the media and what is complex , In General microbiology what is Bacteria and fungi .

and many other simple information in general microbiology like where is bacteria living . A successful

student will learn how to prepare reports in the style of microbial journal, and have some lectures in microbial techniques that would be expected of a student applying to quantities and qualitative experiments in lab.

1. Course Reading List and References:

* Havlin, J. L., J. D. Beaton; Tisdale S. L., and W. L. Nelson. 2005. Soil fertility and fertilizers.7thED. Pearson Education Inc., New Jersey.
* Nyle C. Brady and Ray R. Weil. 2002. The Nature and Properties of Soils, 14th Edition. Prentice Hall, Publisher.
* Mark S. Coyne and James A. Thompson. 2006. Fundamental Soil Science, 1st Edition, Thomson

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| Delmar Learning  - [http: //steenbock.library .wisc.edu/subj ectguide/soilsci .htm](http://steenbock.library.wisc.edu/subjectguide/soilsci.htm) |  |
| [-http://www.rdg.ac.uk/library/colls/policies/soilscience.html](http://www.rdg.ac.uk/library/colls/policies/soilscience.html) |  |
| 17. The Topics: | Lecturer's name |
| In this section the lecturer shall write titles of all topics he/she is | Lecturer's name |
| Going to give during the term. This also includes a brief description of the objectives of each topic, date and time of the | ex: (2 hrs) |
| lecture  Each term should include not less than 16 weeks | ex: 14/10/2015 |

1. **Theory topics )**

1. Introduction to Microbiology

2. Microscopes

3. Cell Structure

4. Bacteria: Cell Walls

5. Bacteria: Internal Components

6. Bacteria: Surface Structures

7. Archaea

8. Introduction to Viruses

9. Microbial Growth

10. Environmental Factors

11. Microbial Nutrition

12. Energetics & Redox Reactions

13. Chemoorganotrophy

14. Chemolithotrophy & Nitrogen Metabolism

15. Phototrophy

16. Taxonomy & Evolution

17. Microbial Genetics

18. Genetic Engineering

19. Genomics

20. Microbial Symbioses

21. Bacterial Pathogenicity

22. The Viruses

19. Examinations:

1. Q1/ what are differences between prokaryotes and eukaryotes? Then draw one of them.
2. Q2/ Fill in flowing sentences
3. The most common types of microorganisms are …………., ………..&………….
4. Bacteria is ……………………………………..
5. The bacteria diagram are ……………, ……………..&…………
6. Functions of Flagella …………………and ……………………
7. Sex pili are ………………………………………………….
8. Q3/ Explain briefly the following below .
9. Capsule
10. Cell Wall
11. Cytoplasm
12. Q4/ A- Explain and draw Endospore of a bacteria.
13. B-Enumerate Extremophiles types depend on environments.
14. C- What are deference's between G+ & G- bacteria.
15. D- Functions of Cell membrane/Plasma membrane.
16. Q1/ Define only (5) the following below. (25M)
17. microbiology. 2- Saprophytic bacteria. 3- Anaerobic bacteria. 4- Monotrichous bacteria 5- Cell wall. 6- Binary fission 7- Flagella.
18. Q2/A-What is bacteria? Then explain three parts of bacteria diagram? (15M)
19. B- How do bacteria reproduce? (5M)
20. C- Draw diagram of bacteria depend on type of food and enrage?(5M)
21. Q3/A- There are some bacteria which are beneficial in different ways, Mention some of them. (15M)
22. B- Mention Functions of Capsule. (10M)
23. Q4/ what are differences between the following below? (18M)
24. Sheath and Prosthecae.
25. Gram positive and Gram negative bacteria.
26. Flagella and pili.
27. Q5/ A- Enumerate the ways that we can manage Bacterial streak on wheat.(6M)
28. B- Draw the Bacteria depend on shapes. (3M)
29. C- Draw the gram positive cell wall structure of bacteria. (4M)