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| **Department of** | **Fish Resources** |
| **College of** | **Agriculture** |
| **University** | **Salahaddin– Erbil** |
| **Subject** | **General Microbiology** **(Theory Part)** |
| **Course Book** | **Second year Students** |
| **Lecturer's name** | **Khalid E. Aziz****Ph.D. Degree** |
| **Academic Year** | **2022 – 2023** |

**Course Book**

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| 1. Course name | General Microbiology |
| 2. Lecturer in charge |  **Dr. Khalid E. Aziz**  |
| 3. Department/ College | **Fish Resources**  |
| 4. Contact | **e-mail: Khalid\_esmahel@yahoo.com****Tel: (07504720153)** |
| 5. Time (in hours) per week  | **Theory: 2 hours****Practical: 6 hours**  |
| 6. Office hours | **10 hours per week** |
| 7. Course code |  |
| 8. Teacher's academic profilePersonal InformationName: Aziz, Khalid |E.Title(Positions): Ph.D. degree in Food MicrobiologyPrimary Department: Food TechnologyCurrent Academic Rank: LecturerPeriod in Current Academic Rank: 4 yearsGender: MalePrevious Academic Position: Department of Food Technology, College of Agriculture, Salahaddin University – Erbil, Demonstrator, 18 years.Primary Academic/Practice Discipline: Department of Food Technology, College of Agriculture, Salahaddin University – Erbil, Lecturer, 5 years.Degrees and Other CredentialsDegrees Awarded

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| **No** | **Degree** | **Institution** | **Year** |
| **1** | B.Sc in Biology Science | Department of Biology, College of Science, Salahaddin University, in Erbil, Iraq | 1998 |
| **2** | Master in Food Microbiology | Department of Biology, College of Science, University of Al-Mustansryaih, in Baghdad, Iraq | 2006 |
| **3** | Doctorate in Food Microbiology | Department of Biology, College of Science, University of Al-Mustansryaih, in Baghdad, Iraq | 2015 |
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Employment History

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| **No.** | **Employments** | **Year – Year** |
| **1** | Date of first employment: Demonstrator. Animal Resources Dept., Agriculture College, Salahaddin University – Erbil, Iraq. | 1998 |
| **2** | Became a Lecturer | 2012 |
| **3** | Member in the Examination Committee of the College of Agriculture. | 2010-2015 |
| **4** | Member in Quality insurance committee of Biology Dept. | 2015-2016 |
| **5** | In charge of higher education and scientific research programme  | 2015-2016 |
| **6** | Member of law at the college of Agriculture  | 2015-2016 |

Prior Academic Experience

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| **No** | **Institution** | **City, Country** | **Position/Title** | **Year - Year** |
| **1** | College of Agriculture/ Salahaddin University | Erbil, Iraq | Lecturer | 2005-2016 |

Research, Scholarly, Professional and Scientific Activity1. Khalid Ismael,Zeerak F.Ahmed,Hero M.Ismael. Hamad. (2008).Assessment of Antifungal Bioactivity of calendula officinalis plant extract.Zanco, journal of pure and applied sciences/Salahaddin university-Hawler…..Vol.20 No.4
2. Khalid Ismael. (2012).Study the effect of local honey on the growth of pathogenic bacteria. *International Journal of Enhanced Research in Science Technology and Engineering, 3 (7):392-399, Impact Factor: 1.252*
3. Khalid E.Aziz, Zirak F.A. Abdulraman and Rajwa Hassen Essa. (2015).Microbiological and Molecular study of Lactococcus lactis subsp,Lactis Isolated from Cow milk. *Zanko Journal of Pure and Applied Science,* 3 (2): 89-99.
4. Khalid E.Aziz, Zirak F.A.AbdulramanandRajwa Hassen Essa. (2015).Antibiotic resistance pattern and effect of some growth condition on Lactococcus Lactis subsp,Lactis Isolated from cow milk.International journal of current microbiology and applied sciences Issn:2319-7706 volume 4number 6 (2015)pp.388-405.
 |
| 9. Keywords |  |
| 10. Course overviewGeneral characteristics and functions of Microbes, Physical and Chemical Structures of different Microbes, Importance of Cell shape cell size in rods and cocci, septum formation, cell elongation, brief outline of Microbial cell wall synthesis and cell separation. Kinetics of Bacterial growth: Definition and brief description. Growth Phases, Growth Kinetcs, Calculation of duration of Phases and generation time. Environmental factors affecting growth - temperature, pH, osmotic pressure and nutrient concentration per cell.  |
| 11. Course objective* What is Microbiology and Bacteriology
* What are microorganisms
* Prokaryotic and eukaryotic cells
* Shape and structure of bacterial cell
* Human microbial flora
* Antimicrobial agents
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| 12. Student's obligation:The role of students and their obligations throughout the academic year include:1. Quizzes and daily activities
2. 1st Theory Exam
3. 2nd Theory Exam
4. Final Theory Exam
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| 13. Forms of teachingTeaching method used in lectures1. Data show and power point
2. White board
3. Black Board
4. Paper of lectures
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| 14. Assessment schemeExamination and Marking1. Average of the course: 20% marks Theory.
2. Final exam marks: 40%
3. Total: 60%‌
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| 15. Student learning outcome1. Review of historical development of microbiology
2. Recognize types of microorganisms that cause infectious diseases.
3. Interpret diagnostic methods and laboratory findings to make the ultimate diagnosis.
4. Understanding principles and methods of sterilization relative to health care.
5. Using microscope perfectly and demonstrate slide preparation processes.
6. The principles of chemotherapy through the use of appropriate antimicrobial agents and lab techniques.
7. Collecting clinical specimens and disposal of contaminated materials.
8. Introducing to the principles of body defence against infections
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| 16-Key references* Microbiology Text book by Prescott, Harley and Klein
* Medical Microbiology Text book by Jawetz, Melnick and Adelberg’s
* Online Journal Articles
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| 17. The Topics |  |
| Week 1.  | **Introduction to and history of Microbiology** |
| Week 2. . | **The dMicrobial Worl** |
| Week 3. | **General characteristics of prokaryotic cell** |
| Week 4-6 | **Structure of bacterial cell** |
| Week 7 | **Shape and Size of Bacterial cell** |
| Week 8 | **Bacterial growth** |
| Week 9 | **Normal Microbial Flora** |
| Week 10-13. . | **Antimicrobial Agents** |
| Week 14 | **Antibiotic Resistance** |
| Week 15 | Exam |
| 18. Practical Topics (If there is any) |  |
| 19. ExaminationsCompositional: Explain the following briefly 1. Insertion of Durham tube in MPN test.
2. If you have unknown bacterium, how you can identify this bacterium?

2. True or false type of exams: Put (T) in front of true sentences and (F) in front of false sentences1. The first step in the identification procedure is to accumulate information that relates to the organisms’ morphological, cultural, and physiological characteristics. True

3. Multiple choices: From the options, chose the correct one to complete the meaning of sentences1. Remove of microorganisms can be performed by…………:

A. Pasteurization. B. Thermal sterilization. C. Cooling. D. Centrifuge.4. Write the differences between the following1. Removes and Destruction of microorganisms in sterilization

5. Count only1. Classification of culture media Based on consistency.

6. Correct the following false sentences1. Endospore usually consists of polysaccharides, but can be composed of other materials.

7. Calculate ifA – Find the bacterial cells number in a 1 ml of distilled water, when you add 0.1 ml from the tubes into plates and the number of colonies in tubes number 1, 2, 3 and 4 from serial dilution were 300, 137, 39 and 25 respectively. 1. B – How you prepare 10 ml of a stock solution containing 1,000 μg/ml of 2 mg ampicillin antibiotic with a potency of 1000 μg/mg?
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| 21. Peer review پێداچوونه‌وه‌ی هاوه‌ڵ  |