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**Department of Food Technology**

**College of Agricultural Engineering sciences**

**University of Salahaddin**

**Subject: Dairy microbiology**

**Course Book – Third Stage-1st semester**

**Lecturer's name PhD Khanzad Khudhur Jarjees and Dr. Payman Ali Kareem**

**Academic Year: 2021/2022**

**Course Book**

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| **1. Course name** | **Dairy microbiology** |
| **2. Lecturer in charge** | **Khanzad Khudhur Jarjees ,** Dr. Payman Ali Kareem |
| **3. Department/ College** |  |
| **4. Contact** | **e-mail: Khanzadft@gmail.com** **payman.kareem@su.edu.krd** |
| **5. Time (in hours) per week**  | **For example Theory: 2** **Practical: 3**  |
| **6. Office hours** | **Availability of the lecturer to the student during the week** |
| **7. Course code** |  |
| **8. Teacher's academic profile**  | Lecturer in food technology dept.**General microbiology****Dairy Microbiology** |
| **9. Keywords** |  |
| **10. Course overview:** **Study microorganisms that spoil and contaminate milk and fluid milk products and learn about harmful microorganisms.**   |
| **11. Course objective:****Discuss various types of microorganisms that have been associated with raw milk and fluid milk products.****Study microorganisms that spoil milk and fluid milk products and problems posed by heat-stable enzymes secreted by contaminating bacteria.****Study desirable microorganisms which uses as starter culture in ripen cheeses and fermented dairy products.** |
| **12. Student's obligation**1 - Attendance at lectures and labs is required.2-The student will write notes on their notebook3-Every lecture have a quiz.  |
| **13. Forms of teaching**1- Data show2-Power point3- White board4-Words(مه‌لزه‌مه‌) |
| **14. Assessment scheme**‌1- Two Examination each examination have 90 marks 2- Quiz have 10 marks‌ |
| **15. Student learning outcome:**This course is new for students so they will learn new information about dairy microbiology.  |
| **16. Course Reading List and References‌:**▪ Key references:**Applied Dairy Microbiology Handbook****Spoilage of Dairy Product**▪ Useful references:**Microbiology Handbook Dairy Products****Online Journal Articles**▪ Magazines and review (internet): **1-**[**www.google.com**](http://www.google.com) |
| **17. The Topics:** | **Lecturer's name** |
| **1- Repeat information about general microbiology****2- Microorganisms of raw milk and fluid milk products****3- Spoilage microorganisms & desirable microorganisms presence in raw milk****4- How to reduce or minimize changes in milk****5- The influence of storage and transport on the microflora of raw milk****6- Microbiology of market milks****7- Microbiology of concentrated and dried milk products****8- Dairy starter culture****9- Microbiology of cream****10- Microbiology of butter****11- Microbiology of soft & hard cheeses****12- Probiotics and prebiotics****13- Control of microorganisms in dairy processing**  | Lecturer's name**PhD Khanzad Khudhur Jarjees and** ex: (2 hrs) |
| **18. Practical Topics (If there is any)** |  |
| In this section The lecturer shall write titles of all practical topics he/she is going to give during the term. This also includes a brief description of the objectives of each topic, date and time of the lecture  | Lecturer's nameex: (3-4 hrs)ex: 14/10/2015 |
| **19. Examinations:*****1. Compositional:*** **Pattern of questions** **Q1- Answer the flowing: - (30 marks)**1. **Functions of starter culture? (7 Degree)**
2. **What are the differences between Homofermentative and Heterofermentative? (4 Degree)**
3. **Enumerate the potential benefits of probiotics? (5 Degree)**
4. **Desirable Properties of Lactic Cultures? (6 Degree)**
5. **Five genera of mold commonly involved in batter spoilage?(5 Degree)**
6. **What are the main Autothermal Thermophilic Aerobic Digester (ATAD) (3 Degree)**

 **-----------------------------------------------------****Q2- Completes the following: - (20 Degree)**1. **Condensed milk may be manufactured using either ………. or. ………….**
2. **Homogenization after heat treatment helps to reduce problems with rancidity caused by …………………….**
3. **Cultures most often mentioned as probiotics for humans include*……………*, ………………**
4. **The two principal types of butter produced are …………… and ……………………**
5. **There are three Types of starter culture :**
6. **…………**
7. **…………….**
8. **…………………..**
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| **20. Extra notes:**Here the lecturer shall write any note or comment that is not covered in this template and he/she wishes to enrich the course book with his/her valuable remarks. |
| **21. Peer review پێداچوونه‌وه‌ی هاوه‌ڵ** 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).*ئه‌م کۆرسبووکه‌ ده‌بێت له‌لایه‌ن هاوه‌ڵێکی ئه‌کادیمیه‌وه‌ سه‌یر بکرێت و ناوه‌ڕۆکی بابه‌ته‌کانی کۆرسه‌که‌ په‌سه‌ند بکات و جه‌ند ووشه‌یه‌ک بنووسێت له‌سه‌ر شیاوی ناوه‌ڕۆکی کۆرسه‌که و واژووی له‌سه‌ر بکات.هاوه‌ڵ ئه‌و که‌سه‌یه‌ که‌ زانیاری هه‌بێت له‌سه‌ر کۆرسه‌که‌ و ده‌بیت پله‌ی زانستی له‌ مامۆستا که‌متر نه‌بێت.‌‌  |