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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 notebook  3-Every lecture have a quiz. | | |
| **13. Forms of teaching**  1- Data show  2-Power point  3- White board  4-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 name  ex: (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. **…………………..** | | |
| **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.‌‌ | | |