

Department of Food Technology
Vikram University, Ujjain (MP)

SYLLABUS
CERTIFICATE COURSE
IN
MILK ADULTERATION
(SIX MONTHS)

(Regulation No. 15)

(FOR UTD)

COURSE STRUCTURE AND SCHEME

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2021-2022

**CERTIFICATE COURSE IN MILK ADULTERATION
SIX MONTHS, CBCS SCHEME**

SIX MONTHS PROGRAMS

(Regulation No. 16)

COURSE CONTENT: SYLLABUS/PROGRAMME 2021-2022

SCHEME OF EXAMINATION

| S.N. | Paper Code | Title of Paper | Theory Marks | | Internal Marks | | Total |
|--------------|------------|---------------------------------------------------------|----------------|-----------------|----------------|-----------------|------------|
| | | | External Marks | Min. Pass Marks | Marks | Min. Pass Marks | |
| 1 | CMA 101 | Milk And Milk Products | 75 | 27 | 25 | 09 | 100 |
| 2 | CMA 102 | Adulteration And Contaminants In Milk And Milk Products | 75 | 27 | 25 | 09 | 100 |
| 3 | CMA 103 | Internship/ Industrial Training/ Project Work | 150 | 54 | 50 | 28 | 200 |
| Total | | | | | | | 400 |

Minimum Pass Marks in each Paper (Theory) -36%
Minimum Pass Marks in each Paper (Internal Assessment) -36%
Minimum Pass Marks in Practical -36%

The Division shall be awarded as follows:

First Division : 60% or above of the aggregate marks
Second Division : 48% or above but less than 60% of the aggregate marks.
Pass : Less than 48% but 36% and above in aggregate.

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**SYLLABUS OF
CERTIFICATE COURSE IN MILK ADULTERATION
COURSE CODE NO: CMA 101: INTRODUCTION TO MILK AND MILK PRODUCTS**

Course Objective:

1. To understand the Introduction and composition of Milk.
2. To provide hands on training about milk and milk detection methods..

Course Learning Outcomes:

After successful completion of the course, students will be able to:

1. This course provides knowledge on various types of milk and milk products.
2. It provides knowledge to students on various tests to detect quality of milk and milk products.

Unit I:- DAIRY CHEMISTRY: Milk Composition – Physico Chemical properties of milk – Animal, Feed and Environmental factors influencing the composition of milk – Milk lipids, Proteins, Sugar and their biosynthesis, classes and significance – Minerals and Vitamins in Milk – Thermal stability of Milk – Freezing Point depression of Milk.

Unit II:- DAIRY PROCESSING AND TECHNOLOGY: Dairy processing – Milk collection, transportation & Grading of milk – Standardization – Pasteurization – Homogenisation of milk - packaging of milk – cleaning and sanitation – Cleaning in Place (CIP) System of cleaning Cleaning agents- Dairy technology – Manufacture of Fat rich dairy products cream – butter – ghee – Ice cream – concentrated and dried milk products- cheese and other fermented products – manufacture of Dahi – Yoghurt – Shrikand – Indigenous milk products – Effective utilization of dairy by - products.

Unit III:- QUALITY ANALYSIS OF MILK: Sensory analysis of Milk – Determination of Specific gravity, fat, SNF, TS, Acidity & pH in milk and their significance and interpretation – Determination and significance of MBR Test – SPC – Phosphatase activity in milk – Common adulterants in milk and their detection techniques – Advanced analytical techniques in milk and milk products.

Unit IV:- STANDARDS FOR MILK AND MILK PRODUCTS: Definition of Milk and Milk Products under the PFA Rules, 1955/Food Safety Act 2006 – Classes of Milk – Legal / Statutory standards of milk and milk products – bacteriological standards for milk and milk products – BIS, PFA standards – Maximum Permissible limits of Aflatoxin, Pesticides, Antibiotic residues and Heavy metals in Milk and Milk Products – Storage of Milk and Milk Products – Labeling of Milk and Milk Products.

REFERENCE BOOKS:

1. Dairy Science: Petersen (W.E.) Publisher – Lippincott & Company
2. Outlines of Dairy Technology – Sukumar (De) – Oxford University press
3. Indian Dairy Products – Rangappa (K.S.) & Acharya (KT) – Asia Publishing House.
4. The technology of milk Processing – Ananthkrishnan, C.P., Khan, A.Q. and Padmanabhan, P.N. – Shri Lakshmi Publications.
5. Dairy India 2007, Sixth edition 6. Economics of Milk Production – Bharati Pratima Acharya Publishers.

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**COURSE CODE NO: CMA 102: ADULTERATION AND CONTAMINANTS
IN MILK AND MILK PRODUCTS**

Course Objective:

3. To understand the fundamentals of food quality and control procedures.
4. To provide hands on training about adulteration and detection methods..

Course Learning Outcomes:

After successful completion of the course, students will be able to:

3. This course provides knowledge on various adulterants that added to milk and milk products.
4. It provides knowledge to students on various tests to detect adulterants..

Unit I:

Adulteration and contaminants: Definition, classification of adulterants, List of foods commonly adulterated, harmful effects of adulterants and contaminants. Food laws – adulteration acts.

Unit II:

Quality testing of market milk: use of bio protective factors for preservation of raw milk: effects on physiochemical, microbial and nutritional properties of organic milk. Status of preservation of raw milk

Adulteration of carbohydrates in milk: starch, sugar, glucose and Dextrin/Maltodextrin – detecting methods - health effects. Adulteration of Fertilizers and salts in milk: urea, pond water, ammonium compound and common salt – detecting methods - health effects. Detergents in milk

Unit III:

Adulteration of neutralizer and preservative in milk: sodium hydroxide, sodium carbonate - sodium bicarbonate - formaldehyde - hydrogen peroxide – MRL- Detecting methods - health effects. Permitted preservatives and its limits

Unit IV:

Adulteration of milk Products: Vanaspati – animal body fats – vegetable oils in fat rich products– detecting methods - health effects, Effects and health impacts of artificial/synthetic colour and flavours in milk and milk products

References: Text books:

1. Early, R. (1995). Guide to Quality Management Systems for the Food Industry, Blackie, Academic and Professional, London
2. Farrington and Woll. 2010. Testing milk and its products, Axis Books Publ, Jodhpur.
3. Gould, W.A. and Gould, R.W. 1988. Total Quality Assurance for the Food Industries, CTI Publications Inc, Baltimore
4. Ramakant Sharma 2006, Production, processing and quality of milk products International book distributing Co, Lucknow.
5. Sandeep Tomar. 2013, Dairy products research and analysis, Oxford book company, Jaipur.
6. Srilakshmi, B. 2005. Food Science, New Age International (P) Ltd., Publishers, New Delhi.

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COURSE CODE NO: CFA 103: INTERNSHIP/ INDUSTRIAL TRAINING/ PROJECT WORK

Course Objective:

1. Field project/Internships/Community engagements are designed to expand the depth and breadth of academic learning for you in your particular areas of study.
2. It is an opportunity for you to receive experience in applying theories learned in the classroom to specific experiences in the community and work world.
3. An internship can also heighten your awareness of community issues, motivate you to create opportunities, embrace new ideas, and give direction to positive change.
4. A successful internship can give you valuable information in making decisions about the direction of future studies or employment.
5. An internship is an opportunity to not only use and develop industry-related knowledge and skills, but also to enhance some of the skills that are transferable to any professional work setting.
6. This internship may be your first introduction to the world of work, or maybe you have been exposed to professionalism many times before.
7. No matter where your skills and understanding of professionalism lie, your internship is a chance to develop them even further.

Course Outcome:

By the end of the internship, our hope is that you will have:

- 1- Linked academic theory to practice in your discipline;
- 2- Applied your knowledge, skills, experience to a work environment;
- 3- Acquired new learning through challenging and meaningful activities;
- 4- Reflected on the content and process of the learning experience;
- 5- Advocated for your own learning in alignment with internship goals;
- 6- Demonstrated professional skills in the workplace;
- 7- Built and maintained positive professional relationships;
- 8- Demonstrated awareness of community and/or organizational issues;
- 9- Identified, clarified and/or confirmed professional direction as it relates to your academic studies and future career path;
- 10- Developed self-understanding, self-discipline, maturity and confidence;
- 11- Developed strong networking/mentoring relationships.

Review of the state of research in a particular problem involving food, and development of hypothesis, Planning and conducting the experiment, Periodic analysis of data and preparation of report, Final preparation of project report as dissertation to be submitted in partial fulfillment of Six Months Certificate Programme.

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