।। सा विद्या या विमुक्तये ।।
स्वामी रामानंद तीर्थ मराठवाडा विद्यापीठ, नांदेड
"ज्ञानतीर्थ" परिसर, विष्णुपूरी, नांदेड - ४३१६०६ (महाराष्ट्र)
SWAMI RAMANAND TEERTH MARATHWADA UNIVERSITY NANDED
"Dnyanteerth", Vishnupuri, Nanded - 431606 Maharashtra State (INDIA)
Established on 17th September 1994 – Recognized by the UGC U/s 2(f) and 12(B), NAAC Re-accredited with 'A' Grade
25 1994 - 2019 SILVER JUBILEE YEAR
ACADEMIC (1-BOARD OF STUDIES) SECTION
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संलग्नित महाविद्यालयांतील विज्ञान व तंत्रज्ञान विद्याशाखेतील पदव्युत्तर स्तरावरील प्रथम वर्षाचे CBCS Pattern नुसारचे अभ्यासक्रम शैक्षणिक वर्ष २०१९–२० पासून लागू करण्याबाबत.

प रि प त्र क

या परिपत्रकान्वये सर्व संबंधितांना कळविण्यात येते की, **दिनांक ०८ जून २०१९ रोजी संपन्न झालेल्या ४४व्या मा. विद्या परिषद बैठकीतील ऐनवेळचा विषय क्र.११/४४–२०१९** च्या ठरावानुसार प्रस्तुत विद्यापीठाच्या **संलग्नित महाविद्यालयांतील विज्ञान व तंत्रज्ञान विद्याशाखेतील पदव्युत्तर स्तरावरील प्रथम वर्षाचे** खालील विषयांचे **C.B.C.S. (Choice Based Credit System) Pattern** नुसारचे अभ्यासक्रम शैक्षणिक वर्ष २०१९–२० पासून लागू करण्यात येत आहेत.

1. Bioinformatics
2. Biotechnology
3. Boichemistry
4. Botany
5. Chemistry
6. Computer Management
7. Computer Science
8. Dairy Science
9. Environmental Science
10. Herbal Medicine
11. Information Technology
12. M.C.A.
13. Microbiology
14. Physics
15. Software Engineering
16. System Administration & Networking
17. Zoology

सदरील परिपत्रक व अभ्यासक्रम प्रस्तुत विद्यापीठाच्या **www.srtmun.ac.in** या संकेतस्थळावर उपलब्ध आहेत. तरी सदरील बाब ही सर्व संबंधितांच्या निदर्शनास आणून द्यावी.

'ज्ञानतीर्थ' परिसर,
विष्णुपुरी, नांदेड – ४३१ ६०६.
जा.क्र.: शैक्षणिक–१/परिपत्रक/पदव्युत्तर–सीबीसीएस अभ्यासक्रम/२०१९–२०/**४६४**
दिनांक : ११.०७.२०१९.

स्वाक्षरित/–
उपकुलसचिव
शैक्षणिक (१–अभ्यासमंडळ) विभाग

प्रत माहिती व पुढील कार्यवाहीस्तव :

१) मा. कुलसचिव यांचे कार्यालय, प्रस्तुत विद्यापीठ.
२) मा. संचालक, परीक्षा व मूल्यमापन मंडळ यांचे कार्यालय, प्रस्तुत विद्यापीठ.
३) प्राचार्य, सर्व संबंधित संलग्नित महाविद्यालये, प्रस्तुत विद्यापीठ.
४) साहाय्यक कुलसचिव, पदव्युत्तर विभाग, प्रस्तुत विद्यापीठ.
५) उपकुलसचिव, पात्रता विभाग, प्रस्तुत विद्यापीठ.
६) सिस्टम एक्सपर्ट, शैक्षणिक विभाग, प्रस्तुत विद्यापीठ.

SWAMI RAMANAND TEERTH MARATHWADA UNIVERSITY NANDED

SYLLABUS

of

M.Sc. First Year

DAIRY SCIENCE

CBCS Semester Pattern

Effective from June 2019

SWAMI RAMANAND TEERTH MARATHWADA UNIVERSITY, NANDED

CHOICE BASED CREDIT SYSTEM (CBCS)
SEMESTER PATTERN

Faculty of Science

Post Graduate (PG) Programmes

DAIRY SCIENCE – CURRICULUM

w.e.f. Academic year 2019-20
M.Sc. Dairy Science First year curriculum

SEMESTER – I

An Outline

Paper No	Title of Theory paper	Credits (Marks) External (ESE)	Credits (Marks) Internal (CA)	Total credits	Periods
I	Advances in LPM	Credits: 03 Marks: 75	Credits: 01 Marks: 25 2 tests: 15 Assignment: 10	04	60
II*	Market milk Industry	Credits: 03 Marks: 75	Credits: 01 Marks: 25 2 tests: 15 Assignment: 10	04	60
III	Dairy Chemistry – I	Credits: 03 Marks: 75	Credits: 01 Marks: 25 2 tests: 15 Assignment: 10	04	60
IV	Dairy Technology - I	Credits: 03 Marks: 75	Credits: 01 Marks: 25 2 tests: 15 Assignment: 10	04	60
V	Seminar Or **One SWAYAM MOOCSs Online Course of 2 Credits (instead of two seminars each of Semester I and Semester II)	-	Credit: 01 Marks: 25	01	-
	Total	Credits: 12 Marks: 300	Credits: 05 Marks: 125	17 Marks: 425	240

ESE: End of Semester Examination

CA: Continuous Assessment

* Elective paper

SWAMI RAMANAND TEERTH MARATHWADA UNIVERSITY, NANDED

CHOICE BASED CREDIT SYSTEM (CBCS)
SEMESTER PATTERN

Faculty of Science

Post Graduate (PG) Programmes

DAIRY SCIENCE – CURRICULUM

w.e.f. Academic year 2019-20
M.Sc. Dairy Science First year curriculum

SEMESTER – II

An Outline

Paper No	Title of Theory paper	Credits (Marks) External (ESE)	Credits (Marks) Internal (CA)	Total credits	Periods
VI	Advances in Animal Nutrition and Breeding	Credits: 03 Marks: 75	Credits: 01 Marks: 25 2 tests: 15 Assignment: 10	04	60
VII	Quality Assurance in Dairy Industry	Credits: 03 Marks: 75	Credits: 01 Marks: 25 2 tests: 15 Assignment: 10	04	60
VIII	Dairy Chemistry – II	Credits: 03 Marks: 75	Credits: 01 Marks: 25 2 tests: 15 Assignment: 10	04	60
IX	Dairy Technology – II	Credits: 03 Marks: 75	Credits: 01 Marks: 25 2 tests: 15 Assignment: 10	04	60
X	Seminar Or **One SWAYAM – MOOCSs Online Course of 2 Credits (instead of two seminars each of Semester I and Semester II)	-	Credit: 01 Marks: 25	01	-
	Total	Credits: 12 Marks: 300	Credits: 05 Marks: 125	17 Marks: 425	240

**If one SWAYAM- MOOCSs Online Course of 2 Credits is opted, then it will be covering both papers V of semester I and paper X of semester II

ESE: End of Semester Examination **CA:** Continuous Assessment

SWAMI RAMANAND TEERTH MARATHWADA UNIVERSITY, NANDED

CHOICE BASED CREDIT SYSTEM (CBCS)

SEMESTER PATTERN

Faculty of Science

Post Graduate (PG) Programmes

DAIRY SCIENCE – CURRICULUM

w.e.f. Academic year 2019-20

M.Sc. Dairy Science First year curriculum

Laboratory course work (Practical)

Annual Pattern

An Outline

Paper No	Title of Paper	Credits	Marks
LC - 01 P-I + P-VI	Advances in LPM + Advances in Animal Nutrition and Breeding	04	100
LC - 02 P-II + P-VII	Market Milk Industry + Quality Assurance in Dairy Industry	04	100
LC - 03 P-III + P-VIII	Dairy Chemistry I + Dairy Chemistry II	04	100
LC - 04 P-IV + P-IX	Dairy Technology I + Dairy Technology II	04	100

M. Sc First year Dairy Science: Total credits: 50, Marks: 1250

(1 credit = 25 marks)

SYLLABUS C.B.C.S. PATTERN
M.SC. DAIRY SCIENCE- 1ST YEAR
(Semester - I)

Theory Paper – I **Title : Advances in Livestock Production and Management** **Periods/Week-4**
Credits : 04

Objectives : To provide recent knowledge of dairy farming.

: To provide knowledge regarding animal management and production.

Unit - I : Perspectives of Dairy Farming in India.

^ Livestock production: Recent trends, future prospectus.

A.H. & D. development during five year plans, role of different agencies in the development of livestock industry.

Contribution of livestock sector to GDP and national income.

Socio-economic impact and role in manpower employment.

^ Sustainable animal production system.

^ Farm stead management.

Unit - II : Livestock production.

^ Resources and infrastructure.

^ Introduction to livestock products technology.

^ Environment synchronization for better productivity.

^ Types of livestock farming, dairy farming systems.

^ Study of different animal farm enterprises and characteristics of an ideal dairy farm.

^ Sustainable livestock production.

Unit - III : Animal management.

^ Farm animal behavior and management.

^ General management practices for cattle/buffalo for better productivity.

^ Requisites for successful dairy farm management.

^ Material management and inventory control on a dairy farm.

^ Features of mechanized and manual farm management shelter management.

^ Milking management, mechanized and manual organic dairy production.

^ Economics of calf, heifer and cow raising, breeding bull management.

^ Preparation of project report for finance.

^ Role of computers in animal production.

Reference Books :

1) Text books of animal husbandry by G. C. Banerjee.
2) Live-stock management S.K. Ranjhan.
3) Animal housing milk hygiene by – WHO
4) Feeds and feeding by – F.B. Morrison.
5) Modern dairy cattle management by – Davis.
6) Bovine production by V. D. Mudgal.
7) Dairy cattle science by – Ensminger.
8) Farm animal management practices by Jagdish Prasad.

MARKET MILK INDUSTRY

Theory Paper-II

Periods/week-4

Unit – I **Credits : 04**

- Introduction to MMI
- Market milk Industry. Organized, Unorganized marketing system.
- Study of major aided projects such as NDDB, OF, Technology mission in dairy development and National dairy plans.
- Milk Production, Utilization and consumption pattern, seasonal and regional variation.
- Dairy development policy in India.

Unit – II

- Straining, filtration, clarification of market milk.
- Reception and preliminary testing of incoming milk
- Methods of milk preservation – methods of cooling and chilling of milk, farm cooling, refrigeration, LP system.
- Bio-protective factors for raw milk preservation. Bio-Preservation of Milk-bactofugation.
- Homogenization of Milk.

Unit – III

- Processing of Milk-pasteurization of milk principle, methods, LTLT, HTST, in bottle pasteurization, UHT, Uperization, stassanization, vacration.
- Sterilization of milk.
- Manufacturing of special milks-Soya milk, Groundnut milk, irrediated milk, fortified milk.
- Milk distribution systems.
- Problems of return and unsold milk.

DAIRY CHEMISTRY-I

Theory Paper-III

Unit - I : General Milk Chemistry : **Credits : 04**

- Constituents of milk, Composition, Physical and Chemical Nature of Milk of Cow, Buffalo, Goat and Sheep.
- Physico-chemical properties of milk
- Nutritive value of milk
- Coagulation of Milk with Heat, acid, enzymes and alcohol.
- Newtonian and Non-Newtonian liquids, stocks law.

Unit - II : Chemistry of Milk proteins :

- Nomenclature.
- Classification.
- Significance
- Chemistry of casein micelle, it's structure, casein composition, fractions, properties and utility.
- Albumins, globulins and NPN compounds.
- Colloidal system – Types, properties.
- Milk as a colloidal system and it's stability.

Unit - III : Chemistry of Milk Lipids :

- Composition and classification of milk lipids.
- Significance.
- Properties.
- Structure of FG.
- Chemistry of FGM.
- Fatty acids and Factors affecting fatty acid composition.
- Phospholipids and their significance in dairy products.
- Fat contents.
- Rancidity and it's control.

DAIRY TECHNOLOGY - I
Theory Paper-IV

Periods/week-4

Unit – I Technology of indigenous dairy products **Credits : 04**

- An introduction to indigenous dairy products.
- Heritage of Indian dairy products.
- Classification of indigenous dairy products.
- Study of different indigenous milk products :

  Khoa and Khoa based; Channa and Channa based Chakka and Chakka based, Pysam, Padusha, Ghever, Milkcake, Kunda, Rajbhog, Khirmohan.
- Ghee : History, definition, composition, methods of manufacturing, grading, Renovation, quality parameters of ghee, like (P. value, R.M. Value, B.R. Reading, lodine Value), defects and storage

Unit – II Technology of western dairy products.

- Classification of western dairy products
- Cream-Definition, Composition, methods of cream separation, types of cream, factors affecting cream skimming efficiency and defects in cream
- Butter-History, definition, composition, types, churning theories, methods of manufacturing, overrun, defects and storage.
- Cheese : History, definition, Composition, types, methods of manufacturing. Butter oil, Kefir, Kumiss, Yoghurt.

Unit – III Frozen dairy products

- Ice-cream – History, development and status of ice-cream industry.
- Definition, Composition methods of manufacturing and nutritive value.
- Types and standards of Ice-cream.
- Role of milk constituents in manufacturing of Ice-cream.
- Study and role of dairy and non-dairy ingredients in Ice-cream.
- Types of freezer
- O.R. in Ice-cream and their control.
- Packaging, Hardening storage and defects.
- Kulfi, Chocoboar, Milk Ices and lollies, Softy ice creams.

(Semester - II)

THEORY PAPER-VI

Title : 1 Advances in Animal Nutrition and Breeding. **Periods/Week-4**
Credits : 04

Unit - I : Animal feeds and feeding.

- ^ Animal feed technology : scope and constraints.
- ^ Nutrition of Lactating cows.
- ^ Feedings strategies to enhance animal productivity, New trends in feeding dairy animals- Hydrophonix, Azola etc.
- ^ Nutrition of Dry Cows.
- ^ Nutrition of replacement heifers.
- ^ Nutrition of bulls.
- - Calving operations.
- - Milking and Housing facilities for dairy cows.
- - Feeding and Managing Dairy Cattle.
- - Feeding standards for different categories of livestock.

Unit - II : Feed Technology

- ^ Legal standards and quality control in feed industry.
- ^ Feed formulations – feed processes : dry, wet processes, feed mixing. Roughage processing methods. Effects of feed and fodder processing on digestibility.
- ^ Biotechnological approaches in manipulation of rumen ecosystem.
- ^ Linear programming, formulation of least cost ration.

Unit - III : Animal breeding.

- ^ Breeding strategies and programs for cattle & buffaloes.
- ^ Study of bio-techniques in animal reproduction.
- ^ Semen collection and A.I.
- ^ Synchronization of oestrus, super ovulation, ETT.
- ^ Synchronization of lactation and induced lactation.
- ^ Cloning.
- ^ Improvement of breeding efficiency.
- ^ Heredity and environment interaction.
- ^ Sustainable animal breeding.

Reference Book :

- ^ Text book of animal husbandry by – G.C. Banerjee.
- ^ Animal nutrition by - S.K. Ranjhan
- ^ Livestock management by - N.R.S. Sastry, Thomas and Singh.

^ Feeds and feeding by – F.B. Morrison.
^ Modern dairy cattle management by – Davis.
^ Dairy cattle feeding and management by – William N. Etages and Paul M. Revis.
^ Livestock feeds and feeding Church O and B books Oregon (USA)

THEORY PAPER-VII

Title : Quality assurance in dairy industry. **Credits : 04**
Four periods per week

Objectives :

- To impart the knowledge regarding importance of quality of milk.
- To inculcate the knowledge regarding recent trends in quality management and quality assurance.
- Principle and technical aspects of quality control for various dairy equipments.
- To study various test procedures related to maintenance of quality of milk.
- To make awareness about statutory regulations.

Topics

Unit - I

- Introduction to concept of quality.
- History, definition and importance of quality assurance (QA) in dairy industry.
- Milk sampling-procedures for chemical and microbiological analysis.

Unit - II

- Preparation of laboratory for quality control in dairy industry.
- Precautions while working in the laboratory.
- Methods of analysis of milk and milk products.
- Study of equipments-principles, operation and maintenance of various equipments.
- Quality requirements for raw milk and quality influences.
- Quality evolution of raw milk.
- Export potential in the global context.
- Quality assurance and hygiene in dairy plants.

Unit - III

- Quality and safety management systems in dairy industry.
- Concept of total quality management and quality assurance.
- Statutory regulations –
- Dairy processing and quality assurance.
- Quality assurance strategies.
- PFA specifications for milk and milk products.
- BIS standards for milk and milk products.
- AGMARK standards for milk and milk products.
- HACCP with advanced version.
- ISO-14000 (ISO 9000-2000)
- USFDA regulations.
- IDF regulations.

THEORY PAPER-VIII DAIRY CHEMISTRY- II

Periods/week-4
Credits : 04

Objectives of the Course :

^ To study the chemistry of milk carbohydrates and minor milk constituents.

^ To study the significance of lactose in various milk products.

^ To Study the chemical nature of minor milk constituents and their significance in product preparation.

Course content:

Unit – I Chemistry of milk carbohydrates:

^ Classification of carbohydrates

^ Chemical nature of lactose

^ Properties of lactose

^ Significance of lactose in fermented milk and infant food.

^ Lactose intolerance.

Unit – II Chemistry of Minor Milk Constituents:

^ Minerals in milk-major, minor and trace minerals in milk.

^ Salt balance and heat stability-theory, factors affecting and control measures.

^ Milk enzymes-classification, significance.

^ Vitamins – Definition, classification, chemical nature, functions, deficiency symptoms and RDA.

Unit – III :

^ Flavours in milk and milk products.

^ Chemistry of important by products : whey, lactose, casein.

^ Milk and metal relationship.

^ Qualities of dairy metal.

Semester-II

DAIRY TECHNOLOGY - II

Paper-IX (Theory)

Periods/week-4

Unit – I Condensed and evaporated milks : Credits : 04

- History, status and scope
- Physico chemical changes taking place during. manufacturing of condensed milk.
- Heat stability of milk and condensed milk.
- Methods of manufacturing of condensed Milk, sweetened condensed milk and evaporated milk.
- Seeding crystallization and stability of evaporated milk.
- Defects in condensed milk, their causes and precaution.
- Packaging and storage.

Unit – II Dried milk products :

- History, status and scope.
- Types, composition, PFA/BIS and international standards.
- Manufacturing of SMP and WMP
- UF/RO techniques.
- Physico-chemical properties of dried milk.
- Packaging, marketing and defects.

Unit – III Study of dairy byproducts :

- History, status and scope.
- Casein – Types, methods of manufacturing and uses.
- Lactose – Methods of manufacturing and Uses.
- Whey – Composition and importance, whey beverages, whey concentrates and whey powder.
- Butter milk – composition and importance and uses.

Laboratory Course Work

LC – 01 (Based on theory paper – I and VI)
Credits : 04

(Annual Pattern)

1. Conventional and loose housing synchronized with environment.
2. Maintenance of sanitary and hygienic conditions at farms.
3. Mechanical disposal of waste and waste recycling.
4. Preparation of heat expectancy chart.
5. Ultra structure of mammary gland.
6. Machine milking-principle, operation, care and maintenance.
7. Clean milk production.
8. Detection and control of mastitis.
9. Collection of feeds and fodders, sampling techniques,
10. Feed processing.
11. Preparation of feed mixtures- study of feed processing mills.
12. Computation of ration and types of rations.
13. Use of agro- industrial byproducts in feeds: UROMOL.
14. Automation in animal feeding
15. Detection of aflatoxins in animal feeds.
16. Storage of feeds and fodders
17. Semen collection and evolution.
18. Pregnancy diagnosis.
19. Measuring breeding efficiency.
20. Cleaning, disinfection, cattle dips, foot, dips on farms.
21. Study of feedings and breeding records.
    - Visit to established dairy
    - Visit to agriculture collage.
    - Visit to A.I. centre.
    - Visit to feed factory.
    - Visit to ETT laboratory.

Laboratory Course Work

LC – 02 (Practical based on theory paper II & VII)
Credits : 04

1. Layout for milk collection centre.
2. Receiving of milk and platform tests.
3. Sampling techniques.
4. Study of straining, filtration and clarification.
5. Chilling of milk.
6. Working of plate pasteurizer synchronized to homogenizer.
7. Study of milk separator.
8. Q.C. tests at collection centre.
9. Tests for detection of adulterants and preservatives.
10. Fluid milk packaging.
11. Study of CIP.
12. Study of can washing and crate washers.
13. Prepa.ration of toned. Double toned and reconstituted milk.
14. Visit to milk collection centre.
15. Visit to village dairy co- operative society.
16. Prerequisites of quality control section.
17. Study of different instruments / equipments used QAL, like- Autoclave hot air oven, Incubator, Colorimeter, Centrifuges, Colony counter, TS apparatus, Analytical balances, pH meters, Moisture analyzer, Ele.
    Operated instruments like Milko- testers, Scanners etc.
18. Instrumental methods of analysis of milk and milk products
19. Visit to the dairy plants with ISO certification.

Laboratory Course Work

LC – 03 (Based on theory papers III & VIII)

Credits : 04

1. Chemical tests of milk - Cob, alcohol test, pH, Acidity, sp. gravity
2. Determination of boiling point and freezing point of milks.
3. Determination of T.S. and SNF by lactometer and gravity metric method.
4. Determination of fat in milk and from selected dairy products.
5. Determination of viscosity.
6. Determination of electrical conductivity.
7. Determination of refractive index.
8. Determination of milk protein by Kjeldhal method.
9. Determination of casein by PAGE.
10. Preparation of acid casein.
11. Detection of adulterants and preservatives in milk.
12. Manufacture of lactose.
13. Manufacture of whey proteins by U.F.
14. Chemical analysis of whey.
15. Chemical analysis of butter milk.
16. Preparation of formula foods.
17. Study of dairy metals.
18. Visit to M.F. unit.
19. Visit to beverage industry.

Laboratory Course Work
LC – 04 (Based on IV & IX)
Credits : 04

1. Quality of milk for milk product preparation.
2. Khoa making - Manual and mechanized.
3. Preparation of different sweet meats from Khoa.
4. Preparation of Dahi, Chakka, Shrikhand – Lassi.
5. Preparation of Rabri, Basundi, Khir, Pysam, Rasmalai , Yoghurt.
6. Preparation of Deshi butter.
7. Preparation of Channa, Paneer, Kalakand, Chhana podo, Rosogolla.
8. Economics of indigenous milk product preparation.
9. Quality parameters for indigenous milk products – sensory evaluation.
10. Packaging materials and packaging of indigenous milk products.
11. Technological innovations for traditional dairy products.
12. Preparation of special milks- toned, double toned milk, reconstituted and recombined milk.
13. Study of cream separator and types of cream - grading of cream.
14. Butter preparation- Creamery method, OR in butter.
15. Butter analysis for fat and moisture.
16. Ghee making- methods - quality- adulterants- detection.
17. Preparation of dairy by products- skim milk- casein, butter milk, Lassi, Limsi, use of Ghee residues.
18. Whey, whey beverages, WPC and WPI.
19. Determination of TS and moisture % in milk powders.
20. Quality determination of milk powder by solubility index.
21. Ice- cream making- calculation of mix, preparation of mix ageing, freezing- packaging of ice cream OR in ice - cream.
22. Preparation of casein.
23. Visits- Halwai shop.

- Khoa making units.
- Ice- cream plant, Kulfi unit.
- Condensed milk plant.
- Milk parlour.

Reference Books :

1. Outlines of Dairy Technology - S.K. De
2. Milk & Milk Products - Eckless, Combs & Macacy
3. Modern Dairy Products - Lampert
4. Dairy Chemistry - M.M. Rai.
5. Principals of Dairy Chemistry - Jeneess & Patton
6. A Text book of Dairy Chemistry - N.C. Ganguly
7. Fundamentals of Dairy Chemistry - Web & Jonson
8. Dairy Chemistry - Fox
9. Dairy Processing - James Warner
10. Indigenous milk products - ICAR pub
11. Hand book of Dairy Science - K.C. Mahanta
12. Dictionary of Dairying - Davis & Leonard Hill
13. Engineering for Food & Dairy Processing - E.M. Farrell
14. Dairy Plant-Management & Engineering - Tufail Ahemad
15. Text book of Practical Dairy Chemistry - N.K. Roy & D.C. Sen
16. Milk Testing - J.G. Davis
17. Dairy Microbiology - K.C. Mahanta
18. Dairy Bacteriology - Hammer
19. Fundamentals of Dairy Microbiology - J.B. Prajapati
20. Standard Methods for Examination of Products - Gary H. Richardson Dairy
21. Milk and Milk Products Technology -Mohd.Raziuddin and Ashok S.Hembade
22. Market Milk Industry - C.L. Rhodhouse & J.L. Henderson
23. Comprehensive Dairy Microbiology - Yadav, Batish and Grover
24. A Text Book of Animal Husbandry - G.C.Banerjee
25. The Fluid Milk Industry - Henderson
26. ISI Specifications - BIS Publication
27. Technology of Dairy plant operations - K. P. S. Sangwan.
28. Technology of milk processing - C.P. Anantakrishnan, A. khan and
29. Milk and It's properties - S.M. Srivastava
30. Chemical & Microbiological Analysis of & milk projects. - Ramakant Sharma. milk

Dr. A. S. Hembade
Chairman (BOS in Dairy Science)

DAIRY SCIENCE

List of Refereed, Peer reviewed and Indexed Journals with ISSN No

01	Journal of Food Science of Technology	:	ISSN 0022-115
02	Asian Journal of Dairy & Food Research	:	ISSN 09760563
03	The biosphere	:	ISSN 22517677
04	Journal of Animal production Advances	:	ISSN 2251-7219
05	Journal of Animal Science Advance	:	ISSN 1811-9751
06	International Journal of Dairy Science	:	ISSN 1557-4571
07	American Journal of food Technology	:	ISSN 2141-2448
08	International Journal of Livestock production	:	ISSN 1996-0794
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