Anekant Education Society's

Tuljaram Chaturchand College, Baramati.

(Autonomous)

Three Year B. Voc. Degree Program in Dairy Technology

(Faculty of Vocational Courses)

CBCS Syllabus

F. Y. B. Voc. Dairy Technology

Semester - I

For Department of

Dairy Technology

Tuljaram Chaturchand College, Baramati

Choice Based Credit System Syllabus (2023 Pattern)

(As Per NEP 2020)

To be implemented from Academic Year 2023-2024

Title of the Programme: F. Y. B. Voc. (Dairy Technology)

Preamble

AES's Tuljaram Chaturchand College has made the decision to change the syllabus of across various faculties from June, 2023 by incorporating the guidelines and provisions outlined in the National Education Policy (NEP), 2020. The NEP envisions making education more holistic and effective and to lay emphasis on the integration of general (academic) education, vocational education and experiential learning. The NEP introduces holistic and multidisciplinary education that would help to develop intellectual, scientific, social, physical, emotional, ethical and moral capacities of the students. The NEP 2020 envisages flexible curricular structures and learning based outcome approach for the development of the students. By establishing a nationally accepted and internationally comparable credit structure and courses framework, the NEP 2020 aims to promote educational excellence, facilitate seamless academic mobility, and enhance the global competitiveness of Indian students. It fosters a system where educational achievements can be recognized and valued not only within the country but also in the international arena, expanding opportunities and opening doors for students to pursue their aspirations on a global scale.

In response to the rapid advancements in science and technology and the evolving approaches in various domains of Dairy sector and related subjects, the Board of Studies in Dairy Technology at Tuljaram Chaturchand College, Baramati - Pune, has developed the curriculum for the first semester of F. Y. B. Voc. Dairy Technology, which goes beyond traditional academic boundaries. The syllabus is aligned with the NEP 2020 guidelines to ensure that students receive an education that prepares them for the challenges and opportunities of the 21st century. This syllabus has been designed under the framework of the Choice Based Credit System (CBCS), taking into consideration the guidelines set forth by the National Education Policy (NEP) 2020, LOCF (UGC), NCrF, NHEQF, Prof. R. D. Kulkarni's Report, Government of Maharashtra's General Resolution dated 20th April and 16th May 2023, and the Circular issued by SPPU, Pune on 31st May 2023.

The department of Dairy technology aims at imparting quality education in the realm of procurement, processing and packaging of milk and milk products with an objective to enhance and expand the knowledge and skill set of target students so that they can contribute in the betterment of society at large. The department of Dairy Technology was established with the objective of producing highly proficient technocrats who can meet the standards of the corporate. The department purports to have dexterous mentors adept at molding the student talent pool. A team of well qualified faculty navigates issuing priceless guidance and tapping the potential of students.

It is estimated that a huge number of Dairy Technology professionals will be required in India five years down the line in keeping with the global trend. Indian professionals are respected across the world

for their technology – related skills. Our focus in this department is not only on completing the curriculum to pass the examinations but we also try to keep up with the developments in the technology and expose the students to the latest to ensure that they are able to cope up with the fast changing industrial scenario.

The department is in purpose – built accommodation and is equipped with teaching and office space as well as well equipped laboratories for practical - based teaching. All faculties of the department are members of various professional societies and technical bodies like AFST (I), etc. the department has signed MoU's with various organizations for student exchange and projects.

Overall, revising the Dairy Technology syllabus in accordance with the NEP 2020 ensures that students receive an education that is relevant, comprehensive, and prepares them to navigate the dynamic and interconnected world of today. It equips them with the knowledge, skills, and competencies needed to contribute meaningfully to society and pursue their academic and professional goals in a rapidly changing global landscape.

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Programme Specific Outcomes (PSOs)

PSO1. Problem Analysis: Demonstrate the ability to analyze physical and cultural problems in both rural and urban environments and propose effective solutions.

PSO2.Socio-economic Survey Project: Possess the skills necessary to conduct socio-economic survey projects, enabling them to assess the development status of specific social groups or sections of society.

PSO3. Individual and Teamwork: Effectively collaborate as individuals and as members or leaders in diverse teams and multidisciplinary settings.

PSO4. Application of Modern Instruments: Apply various modern instruments for data collection and field surveys.

PSO5. GIS and Geographical Map Making: Learn to utilize GIS and modern techniques for creating geographically-based maps.

PSO6. Critical Thinking: Demonstrate the ability to understand and address critical issues in physical and cultural environments.

PSO7. Development of Observation Skills: Through field experiences, students will develop strong observational skills and the ability to identify socio-environmental problems in localities.

PSO8. Human perception and behavior: Learning human perception and behavior to acquire the geographical knowledge overtime, is essential to improve decision making process.

PSO9. Effective Citizenship: Exhibit empathetic social concern, an equity-centered approach to national development, and actively engage in civic life through volunteering.

PSO10. Management Skills: Understand and apply management principles to their work, functioning effectively as individuals and as members or leaders in diverse, multidisciplinary teams.

PSO.11 Ethics: Recognize different value systems, including their own, understand the moral dimensions of their decisions, and take responsibility for the iteractions.

PSO12.Environmental Ethic and Sustainability: Comprehend the societal and environmental impact of their knowledge and exhibit an understanding of the need for sustainable development.

PSO13. Identification of critical problems and issues: Detection and identification of the critical problems and spatial issues a essential for sustainable development.

Anekant Education Society's

Tuljaram Chaturchand College, Baramati

(Autonomous)

Board of Studies (BOS) in Dairy Technology

From 2022-23 to 2024-25

Sr.No.	Name	Designation
1.	**Ms. Patwardhan Shubhada S.**	Chairman
2.	**Ms. More Nikita Baban**	Member
3.	**Ms. KhomaneVaishnavi B.**	Member
4.	**Ms. Pranoti Anagal**	Expert from University
5.	**Dr. Khojare Ajit S.**	Expert from other University
6.	**Dr. Sahoo A. K.**	Expert from other University
7.	**Mr. Chavan Ganesh**	Industry Expert
8.	**Mr. Vhorkate Karan Dayaram**	Meritorious Alumni
9.	**Ms. Taware Shravani Rajesh**	Student Representative
10.	**Mr. Gavali Saurabh Anil**	Student Representative

Credit Distribution Structure for F. Y. B. Voc. – 2023 – 2024 (Dairy Technology)

Level	Semester	Major		Minor	OE	VSC,SEC, (VSEC)	AEC,VEC,IKS	OJT, FP,CEP, CC,RP	Cum. Cr/Sem	Degree/Cum.Cr.
		Mandatory	Electives							
4.5										UG Certificate 44credits
	I	DRT-101-MJM: Dairy Farm Management (2credits)	--	--	DRT -116-OE: Food adulteration – I (2credits)	DRT -121-VSC: Waste management and effluent treatment – I (2 credits)	ENG-131-AEC Functional English-I(2credit)	CC1 (2credit)	22	
		DRT -102-MJM: Dairy Chemistry (2credits)			DRT -117-OE: Diet Management -I (2 credits)	DRT -126-SEC: Soft skill Development (2credits)	DRT -135-VEC: Environment and human interaction(2credits)			
		DRT -103-MJM: Practical Chemical analysis of milk (2credits)					DRT -137-IKS: Milk and ancient Indian therapy(2credits)			
	II	DRT -151-MJM:Market milk (2 credits)	--	DRT -161-MN: Food Preservation Technology	DRT -116-OE: Food adulteration - II(2credits)	DRT -171-VSC: Waste management and effluent treatment – II (2 credits)	ENG-181-AEC Functional English-II(2credit)	CC2 (2 credit)	22	
		DRT -152-				DRT -176-SEC	DRT -185-VEC:			

		MJM: Dairy Microbiology (2 credits)		(2credits)	DRT -117- OE: Diet Management -II(2 credits)	Computer skills (2credits)	Organic India (2credits)			
		DRT -152- MJM: Practical Microbial analysis of milk (2 credits)								
	Cum Cr.	**12**	--	2	8	8	10	4	44	

Course Structure for F. Y. B. Voc. Dairy Technology (2023 Pattern)

Sem	Course Type	Course Code	Course Name	Theory /Practical	Credits
I	Major Mandatory	DRT-101-MJM	Dairy Farm Management	Theory	02
	Major Mandatory	DRT-102-MJM	Dairy Chemistry	Theory	02
	Major Mandatory	DRT-103-MJM	Chemical analysis of milk	Practical	02
	Open Elective(OE)	DRT-116-OE	Food adulteration – I	Theory	02
	Open Elective(OE)	DRT-117-OE	Diet management - I	Theory	02
	Vocational Skill Course(VSC)	DRT-121-VSC	Waste management and Effluent treatment - I	Theory	02
	Skill Enhancement Course(SEC)	DRT-126-SEC	Soft skill development	Theory	02
	Ability Enhancement Course(AEC)	ENG-131-AEC	Functional English-I	Theory	02
	Value Education Course(VEC)	DRT-135-VEC	Environment and human interaction	Theory	02
	Indian Knowledge System(IKS)	DRT-137-IKS	Milk and Ancient Indian therapy	Theory	02
	Co-curricular Course(CC)	--	To be selected from the Basket	Theory	02
				Total Credits Semester- I	**22**
II	Major Mandatory	DRT-151-MJM	Market milk	Theory	02
	Major Mandatory	DRT-152-MJM	Dairy Microbiology	Theory	02
	Major Mandatory	DRT-153-MJM	Microbial analysis of milk	Practical	02
	Minor	DRT-161-MN	Food Preservation Technology	Theory	02
	Open Elective(OE)	DRT-166-OE	Food adulteration - II	Theory	02
	Open Elective(OE)	DRT-167-OE	Diet management - II	Theory	02
	Vocational Skill Course(VSC)	DRT-171-VSC	Waste management and Effluent treatment - II	Theory	02
	Skill Enhancement Course(SEC)	DRT-176-SEC	Computer skills	Theory	02
	Ability Enhancement Course(AEC)	ENG-181-AEC	Functional English-II	Theory	02
	Value Education Course(VEC)	DRT-185-VEC	Organic India	Theory	02
	Co-curricular Course(CC)	--	To be selected from the Basket	Theory	02
				Total Credits Semester II	22
				Cumulative Credits Semester I and II	**44**

CBCS Syllabus as per NEP 2020 for F. Y. B. Voc. Dairy Technology (2023 Pattern)

Name of the Programme : B. Voc. Dairy Technology

Programme Code : UVDRT

Class : F. Y. B. Voc.

Semester : I

Course Type : Major Mandatory

Course Code : DRT-101-MJM

Course Title : Dairy Farm Management

No. of Credits : 02

No. of Teaching Hours : 30

Course Objectives:

- To know the need and importance of dairy farm.
- To study the milking techniques, feed management and farm waste management.
- To know the importance of Clean milk production
- To understand a link between clean milk production and quality of milk.
- To study the milking techniques, feed management and farm waste management
- To acquaint with the causes and preventions of different diseases in Dairy animals.

Course Outcomes:

By the end of the course, students will be able to:

CO1. Identify and describe the characteristics and functions of a Dairy Farm.

CO2. Explain the processes and features associated with the management of Dairy Farms and Dairy Animals.

CO3. Identify and classify major feed and fodder used as cattle feed.

CO4. Explain the stages and factors involved in Clean milk production.

CO5. Understand the role of the different milking techniques.

CO6. Analyze the difference between Indian and exotic breeds of dairy animal

CO7. Observe and analyze different diseases associated with dairy animals.

Topic sand Learning Points

Unit-1: Introduction to dairy farm management:

Dairy farm management - Introduction, Definition, Principles.
Skills in Dairy farming.
Future scope of dairy management.
Constraints in dairy farming.

06 P

Unit-2:Introduction to Milking Techniques:
Types of milking techniques - Hand and Machine.
Steps of milking, milking management.
Testing of machines.
Maintenances of machines.
Cleaning routine of machine in parlour.

06 P

Unit-3:Feed Management:
Basic principles of feed and fodder management.
Important feed ingredients, feed mixing.
Feeding management.
Cultivation of fodder and nutrition of different fodder.
Shelter requirement and housing of dairy animals.

06 P

Unit-4: Cattle Breed:
Distinguishing characteristics of India and exotic breeds of dairy animals and their performance.
Systems of breeding and methods of selection of dairy animals.
General dairy farm practices - Identification, dehorning, castration, exercising, grooming, weighing.
Common disease problem in dairy animals, their prevention and controls.

06 P

Unit-5: Dairy Management and Entrepreneurship:
Concept of entrepreneurship; entrepreneurial and managerial characteristics.
Managing an enterprise; motivation and entrepreneurship development.
Importance of planning, monitoring, evaluation and follow up.
Managing competition; entrepreneurship development programs.
SWOT analysis of Dairy.

06 P

References:

- Livestock and Poultry Production, (1982) Singh Harbans and Moore Earl N.
- Livestock Production Management, (1999)Sastry N.S.R Kalyani Publishers
  ICAR , Handbook of animal Husbandary (200)

CBCS Syllabus as per NEP 2020 for F. Y. B. Voc. Dairy Technology (2023 Pattern)

Name of the Programme : B. Voc. Dairy Technology
Programme Code : UVDRT
Class : F .Y. B. Voc.
Semester : I
Course Type : Major Mandatory
Course Code : DRT -102-MJM
Course Title : Dairy Chemistry
No. of Credits : 02
No. of Teaching Hours : 30

Course Objectives:

- To understand the milk and its composition
- To know the milk components and their properties.
- To study the factors affecting milk coagulation.
- To study the enzymes present in milk
- To understand the structure of Milk fat globule
- To study the nutritional benefits of milk

Course Outcomes:

By the end of the course, students will be able to:

CO1. Understand the chemical make-up of milk.

CO2. Explain the features of fat globule membrane

CO3. Identify and classify major milk components

CO4. Explain the stages and factors involved in Maillard reaction

CO5. Understand the role of the fortification with vitamin D

Topics and Learning Points

Unit-1: Introduction to dairy chemistry:
Definition and structure of milk.
Factors affecting composition of milk.
Physico-chemical properties of milk.
Nutritive value of milk.
Colostrum, Coagulation of Milk with Heat, acid, enzymes and alcohol.

06 P

Unit-2: Proteins:
Nomenclature and classification of milk proteins.
Casein, α-Lactalbumin and β lactoglobulin, Immunoglobulin and other minor milk proteins and non-proteins nitrogen constituents of milk.
Hydrolysis and denaturation of milk proteins under different physical and chemical environments.
Milk enzymes with special reference to lipases, Xanthine, Oxidase, phosphates, proteases and lactoperoxidase.

06 P

Unit-3: Carbohydrates:
Carbohydrates and its classification.
Milk carbohydrates their status and importance.
Physical and chemical properties of lactose, processing related degradation of lactose.

06 P

Unit-4: Lipds:
Definition, general composition and classification of milk lipids.
Nomenclature and general structure of glycerides.
Structure of FG, Chemistry of FGM.
Factors affecting the fatty acid composition.
Milk phospholipids and their role in milk products.
Rancidity and its control.

06 P

Unit 5:Vitamins and Minerals:
Unsaponifiable matter and fat soluble vitamins.
Milk Salts: Mineral in milk.
(a) major mineral.
(b) Trace elements.
Physical equilibrium among the milk salts and Milk contact surfaces and metallic contamination.

06 P

References:

- Principles of dairy chemistry (1959) Jenness R and Patton S. John Wiley's, USA
- Fundamentals of Dairy chemistry, (1979) Webb B.H.
- Test book of Dairy Chemistry (1999) ICAR

CBCS Syllabus as per NEP 2020 for F. Y. B. Voc. Dairy Technology (2023 Pattern)

Name of the Programme : B. Voc. Dairy Technology

Programme Code : UVDRT

Class : F .Y. B. Voc.

Semester : I

Course Type : Major Mandatory

Course Code : DRT-103-MJM

Course Title : Chemical Analysis of Milk

No. of Credits : 02

No. of Teaching Hours : 60

Course Objectives:

- To learn basic analysis methods used in dairy industry.
- To understand role of different chemicals in milk analysis
- To know the protocols of estimation of milk components
- To understand the routine analysis of milk quality
- To identify common adulterants.

Course Outcomes:

By the end of the course, students will be able to:

CO1. Knowledge of chemicals used for milk analysis.

CO2. Explain standard values of quality parameters.

CO3. Examine the quality of the milk

CO4. Explain the common milk adulterants

CO5. Explain various instruments of analysis

CO6. Understand the functions of all the chemicals used for the analysis.

Topics and Learning Points

1.	Preparation of Standard 0.1N Sodium Hydroxide Solution	**4P**
2.	Preparation of Standard 0.1N Hydrochloric Acid	**4P**
3.	Sampling of Milk	**4P**
4.	Platform Test	**4P**
5.	Determination of Titrable Acidity of milk.	**4P**
6.	Determination of pH of Milk	**4P**
7.	Determination of Protein content of Milk	**4P**
8.	Preparation of Gerber Acid for Determination of Fat in Milk	**4P**

9. Determination of Fat in Milk **4P**
10. Determination of Solid – not – Fat (SNF) of milk **4P**
11. Determination of Total Solid (TS) in Milk **4P**
12. Specific Gravity of Milk **4P**
13. Detection of Starch and cane sugar in milk **4P**
14. Detection Glucose and urea in milk **4P**
15. Detection Ammonium sulphate and Sodium carbonate in milk **4P**

CBCS Syllabus as per NEP 2020 for F. Y. B. Voc. Dairy Technology (2023 Pattern)

Name of the Programme : F. Y. B Voc. Dairy Technology

Programme Code : UVDRT

Class : F. Y. B Voc.

Semester : I

Course Type : Open Elective (OE)

Course Code : DRT-116-OE (T)

Course Title : Diet Management

No. of Credits : 02

No. of Teaching Hours : 30

Course Objectives:

- To learn about the concept of Food, Nutrition, Nutrients.
- To know about the importance of Balanced diet.
- To understand different food commodities and foods belonging to them.
- To know the food groups and their intake.

Course Outcomes:

By the end of the course, students will be able to:

- Define Food, Nutrition, Nutrients and Balanced diet.
- Identify the sources of different nutrients.
- Identify and calculate BMI.
- Identify the difference between positive and negative energy balance.
- Evaluate and Interpret individual's BMI.
- Create methods of diet management.

Topics and Learning Points

Unit 1: **10 Periods**

Introduction.
Concept of Food, Nutrition, Nutrients.
Balanced diet.
Classification of nutrients, their sources, Function, deficiency, toxicity.
Concept of RDA.

Unit 2: **10 Periods**

Energy balance.
Negative and positive energy balance.
Concept of BMI, its calculation and interpretation.

Unit 3: **10 Periods**

Weight management.
Therapeutic diet.
Diet in different diseases.

References:

1. Krause's food & the nutrition care process / [edited by] L. Kathleen Mahan.
2. Bowes & Church's food values of portions commonly used / Jean A.T. Pennington & Judith Spungen Douglass .
3. Dietary Reference Intakes by Jennifer J.
4. Handbook of Nutrition and Food, Third Edition by Carolyn D.
5. Manual of Nutritional Therapeutics by David H.

CBCS Syllabus as per NEP 2020 for F. Y. B. Voc. Dairy Technology (2023 Pattern)

Name of the Programme : F. Y. B Voc. Dairy Technology

Programme Code : UVDRT

Class : F. Y. B Voc.

Semester : I

Course Type : Open Elective (OE)

Course Code : DRT-117-OE (P)

Course Title : Diet Planning

No. of Credits : 02

No. of Teaching Hours : 30

Course Objectives:

- To learn about the concept of Food, Nutrition, Nutrients.
- To know about the importance of Balanced diet.
- To understand different food commodities and foods belonging to them.
- To know the food groups and their intake.
- To understand bodily nutritional needs.

Course Outcomes:

By the end of the course, students will be able to:

- Define Food, Nutrition, Nutrients and Balanced diet.
- Identify the sources of different nutrients.
- Identify and calculate BMI.
- Identify the difference between positive and negative energy balance.
- Evaluate and Interpret individual's BMI.
- Create methods of diet management.

Topics and Learning Points

Practical:

1. Identification of food sources for various nutrients **2P**
2. Introduction to five food groups. **2P**
3. Introduction to diet planning using food exchange list **2P**
4. Diet Planning of adult male / female **2P**
5. Assessment of weight and height of self and calculation of BMI **2P**
6. Planning of Protein and Energy rich Product. **2P**
7. Planning of Vitamin A rich Product. **2P**

8. Planning of Vitamin B1 rich Product. **2P**
9. Planning of Vitamin B2 rich Product. **2P**
10. Planning of Vitamin B3 rich Product. **2P**
11. Planning of Vitamin C rich Product. **2P**
12. Planning of Calcium rich Product**.** **2P**
13. Planning of Iron rich Product. **2P**
14. Record diet of self-using 24 hour dietary recall **2P**
15. Evaluation of own diet and weight status **2P**

References:

1. The atlas of food : who eats what, where, and why by Millstone, Erik.
2. A dictionary of food and nutrition by Bender, David A Author The Atlas of Food by Erik Millstone; Tim Lang; Marion Nestle (Foreword by) .
3. Dietary Reference Intakes by Jennifer J.
4. Handbook of Nutrition and Food, Third Edition by Carolyn D.
5. Manual of Nutritional Therapeutics by David H.

CBCS Syllabus as per NEP 2020 for F. Y. B. Voc. Dairy Technology (2023 Pattern)

Name of the Programme : F. Y. B Voc. Dairy Technology

Programme Code : UVDRT

Class : F. Y. B Voc.

Semester : I

Course Type : Vocational Skill Course (VSC)

Course Code : DRT-121-VSC

Course Title : Waste management and effluent treatment

No. of Credits : 02

No. of Teaching Hours : 30

Course Objectives:

- To identify the hardness of the water.
- To learn properties & requirement of processing water .
- To identify the impurities in water .
- Physical, Chemical & Biological properties of Waste Water.
- To learn waste water treatments.

Course Outcomes:

By the end of the course, students will be able to:

CO1. Understand concept of Hardness of Water.

CO2. Ientify the hardness of water.

CO3. Understand the properties of water.

CO4. Identify impurities in water.

CO5. Understand and Identify Physical, Chemical, Biological Properties of waste water.

Topics and Learning Points

Unit 1: Processing water: **10P**

Properties and requirements of processing water
Water hardness, other impurities,
Chlorination, Water waste treatments
Primary and Secondary treatments.

Unit 2: Waste Management in dairy industry **10P**

Introduction, Definition of Waste Management
Properties of waste water Physical, Chemical
Biological nature of impurities, BOD.
Types of Wastes in a Food Processing Plants
Waste Minimisation, Process Control

Unit 3: SOLID WASTE MANAGEMENT **10P**

Introduction, Solid waste
Sources of Solid Waste in Dairy Processing Plants,
Solid waste management
Biomanagement of sludge

References:

1. Quality Control for Food and Agriculture Products
2. Food safety and standards act- 2006 Ministry of food processing industries.
3. Sensory Evaluation Practices- Stone H, and Sidel J. (1993)
4. Modern Food packaging (1998)- Indian institute of packaging

CBCS Syllabus as per NEP 2020 for F. Y. B. Voc. Dairy Technology (2023 Pattern)

Name of the Programme : F. Y. B Voc. Dairy Technology

Programme Code : UVDRT

Class : F. Y. B Voc.

Semester : I

Course Type : Skill Enhancement Course (SEC)

Course Code : DRT-126-SEC

Course Title : Soft skill Development

No. of Credits : 02

No. of Teaching Hours : 30

Course Objectives:

- To achieve stage daring.
- To be able to communicate fluently.
- To get acquainted with the professional format of conversation.
- To be able to create an impact with the verbal communication.

Course Outcomes:

They will understand the difference between formal and informal communication.

By the end of the course, students will be able to:

CO1. Understand and Define personality.

CO2. Establish effective and meaningful communication.

CO3. Actively participate in debates and group discussion.

CO4. Umderstand features and characteristic of a good personality.

CO5. Create and demonstrate effective formal communication.

CO6. Apply appropriate conjunction and articles.

Topics and Learning Points

Unit 1 Fluency in Grammar Usage **5P**

1) Tenses
2) Verbs
3) Active & Passive Voice
4) Reported Speech
5) Prepositions
6) Conjunctions
7) Effective Sentence-Construction
8) Vocabulary

Unit 2 Fundamentals **5P**

1) Greeting and taking leave
2) Introducing yourself
3) Introducing people to one another
4) Making requests and asking for directions
5) Congratulating, expressing sympathy and offering condolence
6) Making suggestions and offering advice
7) Making and accepting an apology

Unit 3 Situational dialogues **5P**

Unit 4 Personality development **5P**

Unit 5 Interview and Group discussion **5P**

Unit 6 Writing and comprehension skills **5P**

1) Letter (Formal) and Email
2) Report
3) Summarizing reports, articles, editorials
4) Making an abstract
5) Review writing
6) Writing resume

Activity – (Square talks, back and back conversations, listening and writing)

CBCS Syllabus as per NEP 2020 for F. Y. B. Voc. Dairy Technology (2023 Pattern)

Name of the Programme : F. Y. B Voc. Dairy Technology

Programme Code : UVDRT

Class : F .Y .B Voc.

Semester : I

Course Type : Value Education Course (VEC)

Course Code : ENV-135-VEC

Course Title : Environment And Human Interaction

No. of Credits : 02

No. of Teaching Hours : 30

Course Objectives:

- To learn how the natural world works, to understand how humans interact with the environment, and to find ways to deal with environmental problems and live more sustainably.
- Analyze the interrelationship between living organism and environment.
- Awareness and sensitivity to the environment and environmental challenges.
- To prevent pollution, meet compliance obligations and enhance conditions of the environment.
- Students understand biodiversity in the context of ecosystem dynamics, ecosystem functioning and provision of ecosystem services.
- To maintain life-supporting systems and essential ecological processes.
- To provide protection to the ecosystem from degradation and therefore the consumption of resources must be reduced.

Course Outcomes:

By the end of the course, students will be able to:

CO1. Students will realize that people are dependent on intact habitats that sustain the various organisms we need to produce food, medicines, clothing, and other materials.

CO2. Demonstrate a comprehensive understanding of the world's biodiversity and the importance of its conservation.

CO3. Discover knowledge in ecological perspective and value of environment.

CO4. To develop the attitude to take steps for environmental protection. There should be a sense of responsibility among the population to protect the environment.

CO5. Environmental Science student are able to acquire knowledge, competent professionals with a strong foundation of Environmental Science and application to be suitable for vital

positions in the academia, industry and government and non-government institutions as skilled manpower.

CO6. Develop critical-thinking skills, analyze real-world problems, and understand the power of narrative to create sustainable solutions for local and global communities.

CO7. Demonstrate an integrative approach to environmental issues with a focus on sustainability.

Topics and Learning Points

UNIT 1: Introduction to environmental studies **10**

1.1 Multidisciplinary nature of environmental studies
1.2 Scope and importance
1.3 Concept of sustainability and sustainable development
1.4 Interrelationship of ecology with other disciplines
1.5 Ecology and its types

UNIT 2: Ecosystems and Biodiversity Conservation **10**

2.1 Definition, Types, Structure and function of ecosystem
2.2 Energy flow in an ecosystem: food chains, food webs and ecological succession.
2.3 Biogeographic zones of India; biodiversity hot spots
2.4 Endangered and endemic species of India
2.5 Threats to biodiversity

UNIT 3: Environmental pollution **10**

3.1 Environmental pollution- types, causes, effects and controls; Air, Water, Soil and Noise pollution
3.2 Nuclear hazards and human health risks
3.3 Solid Waste management- control measures of urban and industrial waste
3.4 Pollution case studies

References:

1. Dr. P. D Sharma, “Ecology and Environment”, Rastogi Publications, New Delhi, 12th Edition, 2015.
2. Erach Bharucha, “Textbook of Environmental Studies for Under Graduate Courses”, Orient Black Swan, 2nd Edition, 2013.
3. Benny Joseph, “Environmental Studies”, Tata Mc Graw Hill Publishing Co. Ltd, New Delhi, 1 st Edition, 2006.

4. Dr. P. D Sharma, “Ecology and Environment”, Rastogi Publications, New Delhi, 12th Edition, 2015.
5. Erach Bharucha, “Textbook of Environmental Studies for Under Graduate Courses”, Orient Black Swan, 2nd Edition, 2013.

6. Benny Joseph, “Environmental Studies”, Tata Mc Graw Hill Publishing Co. Ltd, New Delhi, 1 st Edition, 2006.

7. Dr. P. D Sharma, “Ecology and Environment”, Rastogi Publications, New Delhi, 12th Edition, 2015.
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16. Elements of Ecology :Brijgopal, N. Bharadwaj (Vikas Publishing house, New Delhi)
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CBCS Syllabus as per NEP 2020 for F. Y. B. Voc. Dairy Technology (2023 Pattern)

Name of the Programme : F. Y. B Voc. Dairy Technology

Programme Code : UVDRT

Class : F. Y. B Voc.

Semester : I

Course Type : Indian Knowledge System

Course Code : DRT-137-IKS

Course Title : Ancient Indian Dairy Technology0

No. of Credits : 02

No. of Teaching Hours : 30

Course Objectives:

- To introduce students to the ancient Indian knowledge and practices related to dairy technology.
- To provide a historical perspective on dairy animal management and milk processing techniques.
- To understand the scientific principles behind ancient Indian dairy practices.
- To explore the diverse range of dairy products produced in ancient India.
- To examine the cultural and socio-economic significance of dairy technology in ancient Indian society.

Course Outcomes:

By the end of the course, students will be able to:

CO1. Understand ancient Indian Knowledge related to Dairy Technology.

CO2. Know historical development of Milk Processing.

CO3. Understand the specific principles behind Indian Dairy practices.

CO4. Understand and identify wide range of dairy products in ancient time.

CO5. Analise the cultural & socio-economic significance of dairy technology in ancient Indian society.

Topics and Learning Points

UNIT 1: Bhāratīya Civilization and Development of Bhartiya Knowledge System **10P**
Genesis of the land,
Antiquity of civilization,
On the Trail of the Lost River,
Discovery of the Saraswatī River,the Saraswatī-Sindhu Civilization,
Traditional Knowledge System,
The Vedas, Main Schools of Philosophy ,
Ancient Education System,the Takṣaśilā University, the Nālandā University, Alumni, Knowledge Export from Bhārata.

Unit 2: Introduction to Ancient Indian Dairy Technology 10P
Overview of ancient Indian dairy practices and their relevance in today.
Vedic References of using Milk.
Various Milk Products used in Yadnya.
Historical evolution and significance of Milk & Milk Products in ancient India.
References from Ramayana, Mahabharat, Kautiliya Arthasastra, Ayurveda, Manasollas, Agnipurana etc.
Role of Dairy officer in Kautiliya Arthashastra.

Unit 3: Dairy Animal Management. 10P
Breeds of dairy animals in ancient India and their characteristics.
Types & Characteristics of Buffaloes.
Types & Characteristics of Cows.
Role of Dairy officer in Kautiliya Arthashastra.
Use of Milk & Milk Products in Ayurveda.
Without Therapeutic Processing.
As an adjunct .

References:

1. Milk -The Most Perfect Food, by N.N.Godbole.
2. Mrugpakshishastra by Maruti Chitmapalli, P.N. Bhatkhande.

Best Five representative MOOC courses from the SWAYAM platform.

Sr. No.	Title of the MOOC	National Coordinator	Course Coordinator
1.	Dairy and Food Process and Product Technology	NPTEL	Prof. Tridip Kumar Goswami
2.	Food Safety and Quality Control	CEC	Dr. V. Vijaya Lakshmi
3.	Food Laws and Standards	IGNOU	Dr. Mita Sinhamahapatra
4.	Food Preservation Technology	CEC	Dr. Girish K.
5.	Food Microbiology and Food Safety	CEC	Dr. Tejpal Dhewa