KRISHNA VISHWA VIDYAPEETH (DEEMED TO BE UNIVERSITY), KARAD

Revised Syllabus (CBCS)

For

PG DIPLOMAINFOOD PROCESSING AND PRESERVATION TECHNOLOGY

To implemented from the academic year 2021-2022

(In a Phase Manner)

DURATION : One Year

PATTERN OF EXAMINATION: Semester System

- **Theory Examination**– At the end of each semester as per the rules and regulations of KVV(DU), Karad
- **Practical Examination**– At the end of each semester as per the rules and regulations of KVV, Karad

MEDIUM OF INSTRUCTION : English

STRUCTURE OF COURSE : PG Diploma

Scheme of Examination

Theory/ paper	80 marks/ paper
Internal Assessment	20 marks/ paper
Total	100 marks

Practical Examination

Practicals	80 marks/ practical course
Internal Assessment	20 marks/ practical course
Total	100 marks

In case of Industrial training

Industrial training report	80 marks
Internal Assessment	20 marks
Total	100 marks

* Grand Total 600 marks (4 Theory Papers & 2 *Practicals courses) Per *semester
* In semester II there is either practical course III and IV or Industrial training of minimum 02 months

Eligibility:

i) Applicants must have passed B.Sc. with minimum 50% marks with Biotechnology/Microbiology/Industrial Microbiology/Zoology/Botany/Chemistry as principal subject.
ii) No person shall be admitted for the Post Graduate diploma program unless such a person is in a position to work as a full-time student for the period applicable in the case.

iii) The academic merit, for admission to degree courses shall be on the basis of merit as determined by the competitive test conducted by the University on all India basis.
Provided further that minimum percentage of marks for eligibility for admission to Post Graduate Course shall be 50% at the entrance test.

PG Diploma in Food Processing and Preservation Technology
(Programmed Code:5502)
Course Structure
Course 5502- 11 Semester I

		PG Diploma in Food Processing and Preservation Technology (CBCS) w. e. f. 2021-22									
	Sr. No	**Course Code**	**Course Title**	**Teaching Hours/ Week**			**Marks (Total 100)**				**Credits**
				T	**P**	**Total**	**Internal**		**External**		
							T	**P**	**T**	**P**	
CGPA		**Theory**									
	1		Fundamentals of food science	4	--	4	20	--	80	--	4
	2		Fundamentals of nutrition	4	**-**	4	20	--	80	--	4
	3		Chemistry and Microbiology of food	4	--	4	20	--	80	--	4
	4		Methods of food preservations	4	--	4	20	--	80	--	4
		Practicals									
	5		Practical Course I	---	4+4	8	-	20	--	80	4
	6		Practical Course II	---	4+4	8	--	20	--	80	4
	Total Credit for Semester I: 24 (T = Theory : 16, P = Practical : 8;) **CC: Core Course, CCS : Core course specialization DSE: Discipline Specific Elective** **Total Credits for Semester I CGPA course = 24 credits**										

PG Diploma in Food Processing and Preservation Technology
(Course Code:5502-21)
Course Structure
Semester II

		PG Diploma in Food Processing and Preservation Technology (CBCS) w. e. f. 2021-22										
	Sr. No.	**Course Code**	**Course Title**	**Teaching Hours/ Week**			**Marks (Total 100)**				**Credits**
				T	**P**	**Total**	**Internal**		**External**		
							T	**P**	**T**	**P**	
		Theory									
CGPA	**1**		Milk and Milk Products processing	4	--	4	20	--	80	--	4
	2		Processing and Preservation in bakery and confectionary industry	4	**--**	4	20	--	80	--	4
	3		Processing and Preservation of agro based foods	4	--	4	20	--	80	--	4
	4		Food quality control and waste management	4	--	4	20	--	80	--	4
		Practicals									
	5 A		Practical Course III & IV **OR** Industrial Training of 02 months	---	4+4	8	--	20	--	80	4
				---	4+4	8	--	20	--	80	4
	5 B			---	4+4	8	--	20	--	80	8
		Total Credit for Semester II: 24 (T = Theory : 16) P = Practical : 8; **CC: Core Course, CCS : Core course specialization DSE: Discipline Specific Elective** **Total Credits for Semester II CGPA course = 24 credits**										

Eligibility:

ii) Applicants must have passed B.Sc. with minimum 50% marks with Biotechnology/Microbiology/Industrial Microbiology/ Zoology/ Botany/ Chemistry as principal subject.
ii) No person shall be admitted for the Post Graduate diploma program unless such a person is in a position to work as a full time student for the period applicable in the case.
iii) The academic merit, for admission to degree courses shall be on the basis of merit as determined by the competitive test conducted by the University on all India basis.
Provided further that minimum percentage of marks for eligibility for admission to Post Graduate Course shall be 50% at the entrance test.

Mode of Admission: On the basis of merit in the all-India level competitive entrance test Krishna All India Entrance Test (KAIET) **to be conducted by the university.**

PG Diploma in Food Processing and Preservation Technology

Semester I -
Paper – I Fundamentals of Food Science

Course Objectives:

1) Students will understand the basic concept, functions, and classification of food.
2) Students will understand cooking, methods of cooking and processes of Gelatinization, Dextrinization etc.

Course Outcomes: students will gain the knowledge of methods of food classification and food processing

Unit No.	Content	Justification	Hours allotted
Unit I	**Introduction to food science** Concep to food, food science Objectives of food science Classification and Functions of food New emerging trends in food science	**Inclusion of emerging trends provides updated knowledge**	**15**
Unit II	**Cereals** Structure, composition and Importance of cereal grains Types of cereals used in cooking Cereal cookery-Gelatinization, Dextrinization and Identity of grain Processed cereals, millets and Ready-To-Eat cereals used in cooking Nutritional advancements in cereals	**Addition of nutritional advancements provides current data**	**15**
Unit III	**Pulses and Legumes** Definition, composition and structure of pulses Cooking of Legumes and Factors Affecting cooking time of pulses and legumes Uses of legumes in cookery Functional properties of cereals	**Functional properties focus on new scientific insights**	**15**
Unit IV	**Fruits and Vegetables Cookery** Classification of Fruits and vegetables Colour pigments in Fruits and vegetables Effect of heat, acids and alkali on Fruits and vegetables Changes during cooking and storage Sustainability in cereal production	**Emphasis on sustainability aligns with modern food systems**	**15**

Reference Books:

1) B.Shreelaksmi:FoodScience''(secondedition), NewAgeInternational,NewDelhi.
2) Swaminathan:`Textbook of FoodScience'',Vol-1,BAPPCO,Banglore
3) Devendra kumar Bhatt &Priyanka Tomar: An Introduction to Food Science, Technology & Quality Management, Kalyani Publishers.
4) SumatiR.Mudambi:FundamentalsofFood&NutritionwileyEasternLtd.,NewDelhi.
5) PhilipsTE,ModernCookingforteachingand trade,Volit orient longman,Bombay
6)A text book of Microbiology"' by Satish Gupte, 1st edition, 2003, Jaypee Brothers Medical publishers (P) Ltd., New Delhi.
7) "Food science", 5th edition, Norman N. Potter 1996. CBS publishers and Distributors.

Paper II Fundamentals of Nutrition

Course Objective:

1) To make the students understand the concept of nutrients.
2) To give the students knowledge of the role of various nutrients in foods.

Course Outcomes: 1) Students will able to know the fundamentals of nutrition.
2) Students will know the role of various nutrients present in the food.

Unit No.	Content	Justification	Hours allotted
Unit I	**Introduction to Nutrition** Definition of nutrition, nutrients, Recommended Dietery Allowances (RDAs) Classification of nutrients (Macro, Micro), Nutrigenomics Functional foods	**Addition of nutrigenomics introduces advanced topics Functional foods are a growing area of interest**	**15**
Unit II	**Macronutrients (Carbohydrates, Proteins, Fats) and** Classification, Sources Functions, Recommended Dietary Allowances (RDAs) Deficiency, excess **Phytochemicals**	**Inclusion of phytochemicals covers plant-based nutrition**	**15**
Unit III	**Micronutrients (Vitamins, Minerals)** Classification, Sources Functions, Recommended Dietary Allowances (RDAs) Deficiency, excess **Personalized nutrition**	**Personalized nutrition reflects current trends**	**15**
Unit IV	**Water** Composition, Sources, Classification Functions, RDA, Deficiency, excess	**Functional foods are a growing area of interest**	**15**

Reference Books:

1) ShubhanginiJoshi,Textbookoffoodandnutrition,TataMacgrohillPublishingCo.,NewDelhi.
2) B.Shrilakshmi,NutritionScience,NewAgeInternationalPublishers
3) Muddambi S.R. and Rajgopal M. V., Fundamentals of Food and Nutrition, Wiley Eastern Ltd.,NewDelhi.
4) NutritiveValueofIndianFoods,NIN,Hyderabad.

Paper III Chemistry and Microbiology of Food

Course Objective:

1. To understand techniques in Food Microbiology
2. To study the procedures for isolation of microorganism commonly found & Food adulterations and their detection methods.

Course Outcomes:1) Students will gain the knowledge regarding the techniques in food Microbiology.
2) Students will able to know the instigation methods of food adulterants.

Unit No.	Content	Justification	Hours allotted
Unit– I	**Food microbiology:** Food as substrate for micro-organisms, General principles underlying spoilage of foods, spoilage of bread, spoilage of pickles **Recent advances in food microbiology**	Adding advances keeps content current	15
	Microbial growth in food: Microbial food, food poisoning and infections investigation of food borne out breaks, prevention control. **Noval food components-** artificial meat, plant based meat	Novel components reflect new research	
	Fermented food products: Types, production and defect in Jilebi, Punjabi Warri, Dhokla, pickles, cheese, Kimchi	Adding new products keeps the course relevant current trends	
Unit–II	**Foods microbiology and public health**: food poisoning, types of food poisonings, important features etc; bacterial agents of foodborne illness, food poisoning by *Clostridium, Salmonella, E. coli, Bacillus, staphylococcus* etc.; non-bacterial agents of food borne illness: poisonous algae, and fungi-a brief account.		15
	Food spoilage and microbes of milk, meats, fish and various plant products, spoilage of canned foods; Indicators microorganisms, methods of isolation and detection of microorganisms or their Products in food; conventional methods;		
Unit– III	**Introduction to Food chemistry**-definition, scope and importance; Composition and nutritive value of common foods, chemical properties of food constituents viz. (Overview) water, carbohydrates, lipids, proteins, enzymes, vitamins, minerals, characteristics of food quality.	Adding an overview provides a comprehensive understanding	15
Unit– IV	**Food Additives, Food Adulteration and Detection method:** Food additives: definition, types, applications, and safety for food additives. Adulteration of food: Definition, types, common adulterants in food, and tests for their detection.	Adding a detection method provides a comprehensive understanding of the top	15

Reference Books:

1. TheTechnologyofFoodPreservation:4thEdi.NormanN.Potter(1987)CBSPubli.
2. MilkandMilkProducts:4thEdi.ClasenceHanry.TMHPublications.
3. FoodProcessing:BiotechnologicalApplications(2000).S.S.MarwahaandArora.Asiatechpublications,NewDelhi.
4. FoodMicrobiology:Frazier.
5. FoodMicrobiology:James DeandDe.
6. DairyTechnology:SukumarDe.
7. FoodScience:5thEdi,NormanN.Potter(1996).CBS
8. Aurand,L.W.andWoods,A.E.1973.FoodChemistry.AVI,Westport.
9. Birch, G.G., Cameron, A.G. and Spencer, M. 1986. Food Science, 3rd Ed. PergamonPress, New York.Fennema,O.R.Ed.1976.PrinciplesofFoodScience: Part-I FoodChemistry.MarcelDekker,NewYork

10 Meyer,L.H.1973.FoodChemistry.East-WestPressPvt.Ltd.,NewDelhi

11 Potter,N.N.1978.FoodScience.3rdEd.AVI,Westport.

12 BamjiMS,RaoNA&Reddy V.2003.*TextbookofHumanNutrition*.Oxford&IBH.

13 BelitzHD.1999.*FoodChemistry*.SpringerVerlag.

14 DeManJM.1976.*PrinciplesofFoodChemistry*.AVI.

15 FennemaOR.1996*.FoodChemistry*.MarcelDekker.

16 MeyerLH.1987.*FoodChemistry*.CBS.

17 Swaminathan M.1974.*EssentialsofFoodsandNutrition*.Vol.II.Ganesh&Co.

18 Joslyn,M.A.Ed.1970.MethodsinFoodAnalysis.AcademicPress, New York.

Paper IV Methods of Food preservations

Course Objective:

1) To acquire knowledge of food preservation and preservation technique.
2) To know the importance and basic principles of food preservation.

Course Outcomes: Students will gain knowledge about food preservation technique.

Course content:

Unit	Content	Justification	Hours Allotted
Unit I	**Introduction to Food Preservation:** Concept, importance of food preservation. Principles of preservation, Preservation techniques. Recent advances in food preservation	Adding recent advances keeps content current and relevant	**15**
Unit II	**Preservation by Drying**: Concept, history, types of drying and dryers. Treatments prior to drying. **Modern drying techniques and equipment**	Including modern techniques ensures students are aware of the latest industry practices	**15**
Unit III	**Preservation by Use of High Temperature:** Concept and importance, various methods used – Pasteurization, Boiling, Canning. **Effect of high temperature on food. Advanced thermal processing methods**	Introducing advanced methods provides a comprehensive understanding of current technologies	**15**
Unit IV	**Preservation by Low Temperature:** Concept, history, types of preservation methods by low temperature, different equipment used for preservation by low temperature. **Treatments prior to freezing. Innovations in low-temperature preservation**	Highlighting innovations ensures students are knowledgeable about cutting-edge techniques	**15**

Reference Books:

1) Prakash Triveni: Food Preservation, Aadi Publication,Delhi.
2) M.ShafiurRahman:HandBookofFoodPreservation,MarcelDekkerInc,Newyork.
3) McWillimsandPaine:Modern FoodPreservation,SurjeetPublication.
4) Fellows,P.andEillsH.1990FoodProcessingTechnology:PrinciplesandPracticals,NewYork
5) NPCSBoard,Modern Technology on FoodPreservation
6) B.Sivasankar: Food Processing and Preservation
7) “Food processing Biotechnological application (2000)”, by S.S. Marwaha and K.Arora Asiatech Publishers INC., New Delhi.
8) “Food Microbiology”, edited by Rose A.H. 1983 Academic press London.
9) “Modern food Microbiology”, by Jay, JM 1991 4th edition Van Nostrand Reinhold Co., New York.

Practical course I

Sr No.	Practical	Hours Allotted
1.	Proximate analysis of food samples i) Total protein ii) Total carbohydrate iii) Total lipid iv) Moisture content v) Ash Content vi) Total solids vii) Crude fiber	**19**
2.	Determination of chemical constituents of food i) Titrable acidity ii) Total dissolved solids iii) Ascorbic acid iv) Reducing sugar v) Non-reducing sugar vi) Total sugar	**20**
3.	Estimation of mineral contents of food	**5**
4.	Estimation of Phenolic compounds	**3**
5.	Calculation of Nutritive values of foods	**2**
6.	Preparation of High carbohydrate product from cereals with calculation of Nutritive value	**2**
7.	Preparation of High protein product from plant source with calculation of Nutritive value	**2**
8.	Preparation of High protein product from animal source with calculation of Nutritive value	**5**
9.	Weights and Measures of raw and cooked food	**2**

Practical course II

Sr No.	Practical	Hours Allotted
1.	Isolation of microbes from food samples	**3**
2.	Effect of physiochemical factors on growth of microorganisms	
3.	Introduction to drying equipment's	
4.	Preparation of food product by drying a. Onion flakes b. Raw mango powder /Leafy vegetable powder c. Papad and chips	**20**
5.	Blanching of vegetables	**2**
6.	Preservation by using chemical preservatives a. Tomato ketchup b. Fruit squash	**10**
7.	Preparation of product by using salt as preservative	**2**
8.	Preparation of product by using sugar as preservative	**5**
9.	Preparation of product by using oil as preservative	**2**

Semester II

Paper I Milk and Milk Product Processing

Course Objective:

1) To understand techniques in Milk and Milk Product processing
2) To give the students knowledge of study the working of equipment used in Milk and Milk Product Processing

Course Outcomes:

1) Students will have knowledge of the fermented milk products.
2) Students will gain the knowledge about techniques in the milk and milk products

Unit No.	Content	Justification	Hours allotted
Unit– I	**Introduction to Milk and milk products** Definition, production, and processing status of milk, Physio-chemical properties, Composition and Nutritive value. Emerging trends in milk production	Inclusion of emerging trends provides updated knowledge and reflects current industry practices	**15**
Unit–II	**Processing and preservation of Milk** Pasteurization, Dehydration, Sterilization, Advanced preservation techniques	Addition of advanced preservation techniques introduces students to the latest methods in the field	**15**
Unit– III	**Special Milks** Condensed milk, Toned milk and Flavored milk, Re-constituted or Re-hydrated milk, UHTMilk, Fortified and lactose-free milk	Inclusion of fortified and lactose-free milk addresses current consumer demands and nutritional trends	**15**
Unit– IV	**Milk Products** Dahi, Chakka, Shrikhand, Butter, Butter Milk, Butter Oil, Lassi , Channa, Paneer, Rasogolla, Khoaand, Basundi, Ice-cream and Cheese, Preservation of Milk and Milk Products. Novel dairy products and probiotics	Adding novel dairy products and probiotics reflects innovation and health trends in dairy product development	**15**

Reference Books:

1) DeyS.,1994,OutlinesofDairyTechnology,OxfordUniv.Press,NewDelhi.
2) RosenthalI.,1991,MilkandMilkProducts,VCH,NewYork.
3) RobinsonR.K.,(2vol.set),1986,ModernDairyTechnology,ElsevierAppliedScience,UK.
4) WarnarJ.M.,1976,PrinciplesofDairyProcessing,WileyEasternLtd,NewDelhi
5) “Manual of Industrial Microbiology and Biotechnology”, by Demain, AL and NA Solomon, 1986, American Soc. for Microbiology, Washigton, D.C.
6) “Microbiology of fermented foods”, edited by wood, B.J.B., 1998, Vol.1 and Vol. 2, Blackie Academic and Professional, London.

Paper II Processing and Preservation in Bakery & Confectionary Industry

Course Objectives:

1. To understand techniques in Food Microbiology
2. To study the procedures for isolation of microorganism & Food adulteration

Course Outcomes: Students will able to understand the techniques in food microbiology

Course content:

Unit	Content	Justification	Hours allotted
Unit– I	**Introduction to bakery and confectionery industry:** Importance of bakery and confectionery in food industry, Primary processing equipment used in Bakery and Confectionery - Flour Mill, mixer, oven moulding machine, balance, packing machines, measuring glass, moulds, knives, extruder, **Automation and modern equipment in bakery and confectionery**	Inclusion of automation and modern equipment ensures students are aware of the latest advancements in the industry	**15**
Unit–II	**Bakery Products:** Ingredients used in Bakery products, Types and quality of flour, Principle involved in bakery products, Procedures of Different types of bakery products, **Gluten-free and vegan bakery products**	Adding gluten-free and vegan bakery products addresses current consumer demands and dietary trends	**15**
Unit– III	**Introduction to confectionery products:** Characteristics of confectionery products, Types of confectionery products, Ingredients used in confectionery products, **Natural and artificial sweeteners in confectionery**	Inclusion of natural and artificial sweeteners reflects current trends in health and nutrition	**15**
Unit– IV	**Confectionery Products:** Chocolate Processing, Gelatine Sweets, Crystallized confectionery, Boiled Sweets, Preservation of bakery products, **Sugar-free and low-calorie confectionery**	Addition of sugar-free and low-calorie confectionery aligns with health-conscious consumer trends	**15**

Reference Books:

1) JohnKingslee:AprofessionaltexttobakeryandconfectionaryNewAgeInternationalPublication
2) NIIRBoard:Thecompletetechnologybookonbakeryproducts
3) W.P.Edwards:ScienceofBakeryProducts.
4) EmmanuealObene:ChocolatescienceandTechnology
5) “Biotechnology: Food fermentations”, edited by Joshi, V.K. and Pandey, A., 1999, Educational Publishers and Distributors New Delhi.
6) “Milk and milk products”, by Sukumar Day.

Paper III Processing and Preservation of Agro based foods

Course Objective:

1) To understand the processing techniques of agro products.
2) To know the use of agro processing equipment.

Course Outcomes: Students will gain the knowledge of processing techniques of agro products

Unit No.	Content	Justification	Hours allotted
Unit– I	**Agro processing industry:** Introduction to Agro processing industry. Scope and importance of Agro processed products. Processing equipments – Floor mill, mini grain mill pulverizers, Hammer mill, Floor separator, Dal mill, Packing and Sealing machine, Balance, **Advanced processing technologies and automation in agro processing**	Inclusion of advanced processing technologies and automation ensures students are aware of the latest advancements in the industry	**15**
Unit–II	**Cereal grain Processing:** Different grains suitable for agro processing, Primary, secondary and conventional processing of major cereals, Milling of cereals - Dry and Wet milling, **Innovations in cereal grain processing**	Adding innovations in cereal grain processing addresses current advancements and research in the field	**15**
Unit– III	**Pulses and Legumes processing** Principles of pulse milling, Different methods of Dhal milling, Milling of major legumes, Thermal treatment, **Emerging trends in pulse and legume processing**	Inclusion of emerging trends in pulse and legume processing provides updated knowledge and reflects current industry practices	**15**
Unit– IV	**Oil seeds Processing** Properties and suitability of oil seeds for processing, Methods of oilseed processing, Terminologies in oil processing industry, Preservation of Agro based foods, **Sustainable practices in oilseed processing**	Adding sustainable practices in oilseed processing aligns with global efforts towards environmental sustainability	**15**

ReferenceBooks:

1)KaderAA:Postharvesttechnologyofhorticulturalcrops.2nd edition,UniversityofCalifornia

2)SalunkheDKandKadamSS:handbookofworldfoodlegumes,CRCPress,Florida

3)NiirBoard:ModernTechnologyofAgroprocessingandAgriculturalwaste,NationalInstituteof India Re 2000.

4)SalunkheDK,ChavanJK,AdsuleRNandKadamSS:Worldoilseedschemistry,technologyandutilization. VNR, New York

Paper IV Food Quality Control and Waste Management

Course Objective:

1. To make students understand the various aspects of food quality control.
2. To study the working of equipment's for quality control of food products.
3. To make students understand the various aspects of waste management system

Course Outcomes:1) students will have the knowledge of methods of food sampling and food testing

2)Students will have the knowledge of methods of waste management system

3) Students will have the knowledge of food Laws and food standards

Unit	Content	Justification	Hours allotted
Unit– I	**Introduction to Quality Control in the food industry:** General concepts of quality and quality control, Major quality control functions, Sampling of Food, Sample Selection and Sampling Plans, Preparation and storage of Laboratory Samples, Sampling Methods, **Advanced sampling techniques and automation**	Inclusion of advanced sampling techniques and automation ensures students are aware of the latest advancements in quality control methods	**15**
Unit–II	Standard tests for Food quality assessment: Physical Tests, Chemical tests, Microbiological tests, Sensory evaluation methods, **Rapid testing methods and modern analytical techniques**	Adding rapid testing methods and modern analytical techniques provides updated knowledge and reflects current industry practices	**15**
Unit– III	**Waste Management in Food Industry:** Types of waste generated: non-degradable & biodegradable wastes, Methods of utilizing wastes to make value-added products, Waste storage and disposal methods, Storage and disposal of liquid and gaseous waste- land-filling, burial, incineration, recycling, biological treatment of food industry wastes, Storage and disposal of liquid and gaseous waste, **Sustainable waste management practices and innovations in waste utilization**	Inclusion of sustainable waste management practices and innovations in waste utilization addresses environmental concerns and provides updated industry knowledge	**15**
Unit– IV	Food Laws and Standards: Existing food laws and standards in India, Food safety and standards – food products and food additives, contaminants, toxins and residues, packing and labelling, Concept and application of ISO and HACCP, **Global food safety standards and emerging regulatory trends**	Adding global food safety standards and emerging regulatory trends ensures students are aware of international standards and the latest regulatory changes	**15**

Reference Books:

1. Philip,A.C.Reconceptualizingquality.NewAgeInternationalPublishers,Banglore.2001.

2. Bhatia,R.andIchhpujan,R.L.QualityassuranceinMicrobiology.CBSPublishersandDistributors, NewDelhi.2004.
3. Kher,C.P.Qualitycontrolforthefoodindustry.ITCPublishers,Geneva.2000.
4. “Food processing Biotechnological application (2000)”, by S.S. Marwaha and K.Arora Asiatech Publishers INC., New Delhi.
5. “Food Microbiology”, edited by Rose A.H. 1983 Academic press London.

Practical Course III

Sr No.	Practical	Hours Allotted
1.	Physical analysis of grains	4
2.	Flour Analysis	4
3.	Starch Estimation of wheat flour	4
4.	Preparation of Cereal flour of different granule size	4
5.	Preparation of Cereal flakes	3
6.	Preparation of Puffed cereals	3
7.	Preparation of Dal	3
8.	Preparation of Pulse flour of different granule size	4
9.	Preparation of soy milk	3
10.	Preparation of Peanut butter	3
11.	Introduction to Bakery and Confectionery Equipment's	3
12.	Determination of Gluten content	3
13.	Preparation of Bread	4
14.	Preparation of Cake	4
15.	Preparation of Biscuits	3
16.	Preparation of Cookies	3
17.	Preparation of Chocolate	3
18.	Preparation of Boiled candy	3
19.	Visit to Bakery industries	4

Practical Course IV

Sr No.	Practical	Hours Allotted
1.	Physical examination of milk	4
2.	Platform tests of milk	4
3.	Determination of Fat content of milk	4
4.	Preparation of Flavoured milk	3
5.	Preparation of Condensed milk	4
6.	Preparation of Curds and Shrikhand	4
7.	Preparation of Khoa	4
8.	Preparation of Gulabjamun	3
9.	Preparation of Paneer	4
10.	Preparation of Ice-cream and Kulfi	4
11.	Sensory analysis of food products	4
12.	Visit to Quality Control Lab/ Waste disposal unit	6
13.	Determination of efficiency of waste treatment plant - Determination of BOD and COD	6