SHIVAJI UNIVERSITY, KOLHAPUR

STRUCTUCTURE AND SYLLABUS OF DIPLOMA IN FOOD PROCESSEING

DIPLOMA IN FOOD PROCESSING

TITLE : **Diploma in Food Processing**

Syllabus (Semester Pattern) Under Faculty of Science and Technology

YEAR OF IMPLEMENTATION : Syllabus will be implemented from 2020-21

DURATION : Diploma (One Year)

PATTERN OF EXAMINATION: Semester Pattern

- **Theory Examination** – At the end of semester as per Shivaji University Rules
- **Practical Examination** – i) In the 1st semester of Diploma there shall be internal assessment of practical record, related report submission and project reports at the end of semester.

  ii) In the second semester of Diploma, there shall be external practical examination at the end of semester.

MEDIUM OF INSTRUCTION : English / Marathi

STRUCTURE OF COURSE : Diploma

Two Semesters per Year

Two General Papers per year / semester

Three Vocational Papers per Year / Semester

One Industry Visit/ Study Tour and on job training

SCHEME OF EXAMINATION

A) THEORY

- The theory examination shall be at the end of the each semester.

All general theory papers shall carry 40 marks and all vocational theory papers shall carry 50 marks.

- All the general practical shall carry 10 marks and all vocational practical shall

carry 50 marks

- Evaluation of the performance of the students in theory shall be on the basis of semester examination as mentioned above.

- Question paper will be set in the view of entire syllabus preferably covering each unit of the syllabus

Nature of question paper for Theory examination (Excluding Business Communication Paper) –

Q.1 Multiple Choice question - 10 marks
Q.2 Long answer type questions (Any two out of three) - 20 marks
Q.3 Short notes (Ant four out of six) - 20 marks

B) PRACTICAL

Evaluation of the performance of the students in practical shall be on the basis of semester examination (Internal assessment at the end of Semester I and external examination at the end of Semester II) as mentioned separately in each paper.

Standard of Passing:

As per the guidelines and rules for Diploma under UGC – NSQF Skill Development Course

Structure of the Course

Semester – I

S. N.	Paper No.	Title	Credits		Marks	Distribution of marks	
			Theory	Practical		Theory	Practical
1	I –GC	Business Communication – I	3	3	50	40	10
2	II-GC	Fundamentals of Food Science	3	3	50	40	10
3	III-CC	Food Preservation – I	3	3	100	50	50
4	IV-CC	Fruit and Vegetable Processing	3	3	100	50	50
5	V-CC	Bakery and Confectionary	3	3	100	50	50
6		Project			50	--	50
		Total	18	12	450	230	220

Semester – II

S.N.	Paper No.	Title	Credits		Marks	Distribution of marks	
			Theory	Practical		Theory	Practical
1	VI	Business Communication – I	3	3	50	40	10
2	VII	Fundamentals of Food Science	3	3	50	40	10
3	VIII	Food Preservation – II	3	3	100	50	50
4	IX	Milk and Milk Product Processing	3	3	100	50	50
5	X	Food Quality Control and Waste Management	3	3	100	50	50
6		Project			50	--	50
		Total	15	15	450	230	220

Scheme of Teaching

Semester – I

S.N.	Paper No.	Title	Credits		Distribution of Workload	
			Theory	Practical	Theory	Practical
1	I	Business Communication – I	3	3	2	2
2	II	Fundamentals of Food Science	3	3	4	4
3	III	Food Preservation – I	3	3	4	4
4	IV	Fruit and Vegetable Processing	3	3	4	4
5	V	Bakery and Confectionary	3	3	4	4
6		Project				
		Total	15	15	18	18

Semester – II

S.N.	Paper No.	Title	Credits		Distribution of marks	
			Theory	Practical	Theory	Practical
1	VI	Business Communication – I	3	3	2	2
2	VII	Fundamentals of Food Science	3	3	4	4
3	VIII	Food Preservation – II	3	3	4	4
4	IX	Milk and Milk Product Processing	3	3	4	4
5	X	Food Quality Control and Waste Management	3	3	4	4
6		On Job Training				
		Total	15	15	18	18

Eligibility for Admission: 10 + 2 from any faculty or equivalent qualification in any related stream.

Eligibility for Faculty:
1) M. Sc./M.Tech. (Food Science and Technology/Food Science and Nutrition / Food
Processing/Food Technology/Home-Science/Food Science and Quality Control with NET / SET)
2) M. A (English) with NET/SET for Business Communication

Eligibility for Laboratory Assistant:
B. Sc. / B. Tech. (Food Science and Nutrition / Food Processing/ Food Technology/Home-Science/ Food Science and Quality Control) / B.A. Home Science.

Staffing Pattern:

Teaching: 1 Full Time and 1 Part Time Lecturer for Food processing

1 CHB Lecturer for Business Communication

Lab Assistant: 1 Full time

Evaluation system:

1. Standard of passing

The maximum credits for Diploma in Food Processing semester course (of two semesters) will be 30 X 2 = 60 credits. To pass in each paper students are required to obtain 4 grade points in each paper, it means 18 marks out of 50 Marks Theory / Practical papers, 14.08 marks out of 40 marks for theory papers and 04 marks out of 10 Marks for Practical papers.

2. Assessment of Project / Industrial visit /study tour /Internship Report

i) The Industrial visit/study tour/on-job training report must be submitted by the prescribed date usually two weeks before the end of academic session of the semester.

ii) It is desirable that the topics for Industrial visit/study tour/ on-job training report shall be assigned by the end of previous semester.

iii) The Industrial visit/study tour/ on-job training report and its presentation shall be evaluated by the coordinator of the course and concerned faculty**.**

3. Grade point for Theory/Practical/ Industrial visit /study tour / on-job training Report

- **Table –I: for 50 Marks Theory or Practical**

Grade Point	Marks out of	Marks obtained	Grade	Description of performance
0	50	0.0 to 2.5	D	Unsatisfactory
1	50	2.6 to 5.0		
1.5	50	5.1 to 7.5		
2	50	7.6 to 10.0		
2.5	50	10.1 to 12.5		
3	50	12.6 to 15.0		
3.5	50	15.1 to 17.5		
4	50	17.6 to 20.0	C	Fair
4.5	50	20.1 to 22.5		
5	50	22.6 to 25.0	B	Satisfactory
5.5	50	25.1 to 27.5		
6	50	27.6 to 30.0	B^+	Good
6.5	50	30.1 to 32.5		
7	50	32.6 to 35.0	A	Very Good
7.5	50	35.1 to 37.5		
8	50	37.6 to 40.0	A^+	Excellent
8.5	50	40.1 to 42.5		
9	50	42.6 to 45.0	O	Outstanding
9.5	50	45.1 to 47.5		
10	50	47.6 to 50.0		

- **Table No-II: for 40 Marks Theory**

Grade Point	Marks out of	Marks obtained	Grade	Description of performance
0.00	40	0.0 to 2.0	D	Unsatisfactory
1	40	2.08 to 4.0		
1.5	40	4.08 to 6.0		
2	40	6.08 to 8.0		
2.5	40	8.08 to 10.0		
3	40	10.08 to 12.0		
3.5	40	12.08 to 14.0		
4	40	14.08 to 16.0	C	Fair
4.5	40	16.08 to 18.0		
5	40	18.08 to 20.0	B	Satisfactory
5.5	40	20.08 to 22.0		
6	40	22.08 to 24.0	B^+	Good
6.5	40	24.08 to 26.0		
7	40	26.08 to 28.0	A	Very Good
7.5	40	28.08 to 30.0		
8	40	30.08 to 32.0	A^+	Excellent
8.5	40	32.08 to 34.0		
9	40	34.08 to 36.0	O	Outstanding
9.5	40	36.08 to 38.0		
10	40	38.08 to 40.0		

Table No- III: for 10 Marks Practical

Grade Point	Marks out of	Marks obtained	Grade	Description of performance
0.00	10	0.0 to 0.5	D	Unsatisfactory
1	10	0.52 to 1.0		
1.5	10	1.02 to 1.5		
2	10	1.52 to 2.0		
2.5	10	2.02 to 2.5		
3	10	2.52 to 3.0		
3.5	10	3.02 to 3.5		
4	10	3.52 to 4.0	C	Fair
4.5	10	4.02 to 4.5		
5	10	4.52 to 5.0	B	Satisfactory
5.5	10	5.02 to 5.5		
6	10	5.52 to 6.0	B^+	Good
6.5	10	6.02 to 6.5		
7	10	6.52 to 7.0	A	Very Good
7.5	10	7.02 to 7.5		
8	10	7.52 to 8.0	A^+	Excellent
8.5	10	8.02 to 8.5		
9	10	8.52 to 9.0	O	Outstanding
9.5	10	9.02 to 9.5		
10	10	9.52 to 10.0		

Calculation of SGPA and CGPA-

1. Semester Grade Point Average (SGPA) = $\frac{\Sigma \text{ (course credits in passed courses X earned grade points)}}{\Sigma \text{ (Course credits in registered courses)}}$

2. Cumulative Grade Point Average = $\frac{\Sigma \text{ (course credits in passed courses X earned grade points) of all Semesters}}{\Sigma \text{ (Course credits in registered courses) of all Semesters}}$ (CGPA)

3. At the end of each year of B. Voc. Program, student will be placed in any one of the divisions as detailed below:

SGPA and CGPA Table

Grade Point	Grade	Description of performance
0.00 to 3.49	D	Unsatisfactory
3.5to 4.49	C	Fair
4.5 to 5.49	B	Satisfactory
5.5 to 5.99	B^+	Good
6.0 to 6.99	A	Very Good
7.o to 8.49	A^+	Excellent
8.5 to10.00	O	Outstanding

- Ist Class with distinction: CGPA > 7.0 and above
- Ist Class: CGPA > 6.0 and < 7.0
- IInd Class: CGPA > 5.0 and < 6.0
- Pass Class: CGPA > 4.0 and < 5.0
- Fail: CGPA < 4.0

Diploma in Food Processing
Semester I
Paper I – Business Communication

Work Load – 4	Total Credits – 6	Total Marks – 50
Theory – 2 Lecture / Week	Theory – 3	Theory – 40
Practical - 2 Lecture / Week/Batch	Practical – 3	Practical – 10

Course Outcomes:

On completion of the course, students will be able to –

1. Strengthen their ability to use appropriate, context-based vocabulary.
2. Use grammatical structure meaningfully in a specific context.
3. Know how to present their credentials precisely and effectively in a résumé and CV.
4. Deliver a well-practiced and effective graphical presentation.
5. Develop the skills needed for approaching different types of interview.
6. Use formal and informal communication effectively in personal and professional life.

Course content: **45 lectures**

Module 1: Use of English in Business Environment

1.1 : Business Vocabulary: Vocabulary for banking, marketing and for maintaining public relations
1.2 What is sentence?
1.3 Elements of sentence
1.4 Types of sentence- Simple, Compound, Complex

Module 2: Writing a letter of application and CV/Resume

2.1 Structure of a letter of application for various posts

2.2 CV/Resume and its essentials

Module 3: Presenting information / Data

3.1 Presenting information / Data using graphics like table, pie charts, tree diagrams, bar diagrams, graphs, flow charts

Module 4: Interview Technique

4.1 Dos and don’ts of an interview

4.2 Preparing for an interview

4.3 Presenting documents

4.4 Language used in interview

Reference Books:

Block, Jay A. and Michael Betrus. *101 Best Resumes: Endorsed by the Professional Association of Resume Writers* . New York: Mcgraw-Hill., 1997.

Cairo, Alberto. *The Functional Art: n Introduction to Information Graphics and Visualisation*. USA: New Riders. 2016.

Hornby, A.S. *Oxford Advanced Learner's Dictionary of Current English.* Oxford: Oxford University press.

Leech, Geoffrey, Margaret Deuchar, Robert Hoogenraad. *English Grammar for Today: A New Introduction.* London: Macmillan Education Ltd. 1987. Print.

Quirk, Randolph and Sidney Greenbaum. A University Grammar of English. Hong Kong: Longman Group Ltd. 1990.

Reynolds Garr. *presentationzen: Simple Idea on Presentation Ideas and Design*. Berkeley CA: New Riders, 2008.

Vedder, Scott. *Signs of a Great Résumé: How to Write a Resume that Speaks for Itself*. Veterans Edition. 2014.

Yate, Martin. *Knock 'em Dead Job Interview: How to turn Job Interviews Into Job Offers*. USA: Adam's Media. 2013.

Sethi,Anjanee&Bhavana Adhikari.*Business Communication*. New Delhi: Tata McGraw Hill

Tickoo, Champa& Jaya Sasikumar. *Writing with a Purpose*. New York: OUP, 1979.

Sonie, Subhash C. *Mastering the Art of Effective Business Communication*. New Delhi: Student Aid Publication, 2008.

Herekar, Praksh. *Business Communication*. Pune: Mehta Publications, 2007.

Herekar, Praksh. *Principles of Business Communication*. Pune: Mehta Publications, 2003.

Rai, Urmila& S. M. Rai.*Business Communication*. Himalaya Publishing House, 2007.

Pradhan, N. S. *Business Communication.* Mumbai: Himalaya Publishing House, 2005.

Diploma in Food Processing
Semester I
Paper II – Fundamentals of Food Science

Work Load – 8	Total Credits – 6	Total Marks – 100
Theory – 4 Lecture / Week	Theory – 3	Theory – 50
Practical - 4 Lecture / Week/Batch	Practical – 3	Practical – 50

Course Outcomes:

On completion of the course, students will be able to –

1. Obtain knowledge of different food groups and nutrient content.
2. Understand food groups and their functions.
3. Acquire knowledge on different methods of cooking.
4. Choose appropriate cooking method to conserve nutrients.
5. Acquire skills on different methods of cooking.
6. Understand experimental cookery.
7. Develop recipes by applying knowledge on cooking methods and properties of food.

Course content: **45 lectures**

Module 1: Introduction to Food Science

1.1 Concept of Food and Food Science,
1.2 Objectives of Food Science
1.3 Classification and functions of food
1.4 Methods of cooking- Objectives, methods, its advantages and disadvantages

Module 2: Cereals

2.1 Structure and composition of cereal grains

2.2 Types of cereals used in cooking

2.3 Cereal cookery- Gelatinization, Dextrinization and Identity of grain

2.4 Processed cereals, millets and Ready-To- Eat cereals used in cooking

Module 3: Legumes and Pulses

3.1 Structure, composition of legumes and pulses

3.2 Cooking of Legumes and Factors Affecting cooking time of legumes and pulses

3.3 Uses of legumes and pulses in cookery

Module 4: Fruits and Vegetables Cookery

4.1 Classification and composition of Fruits and vegetables

4.2 Colour pigments in Fruits and vegetables

4.3 Effect of heat, acids and alkali on Fruits and vegetables

4.4 Changes during cooking and storage

Practical:

1) Weights and Measures of raw and cooked food.
2) Preparation of product by Gelatinization.
3) Preparation of product by Dextrinization / Identity of grains
4) Preparation of product by Germinated legumes
5) Preparation of product by milled pulses
6) Preparation of product by green leafy vegetable/other vegetables
7) Preparation of product by roots and tuber
8) Preparation of product by fruits

References:

1) B. Shreelaksmi : ``Food Science'' (second edition), New Age International, New Delhi.
2) Swaminathan : ``Text book of Food Science'', Vol-1, BAPPCO, Banglore
3) Devendrakumar Bhatt & Priyanka Tomar : An Introduction to Food Science, Technology & Quality Management, Kalyani Publishers.
4) Sumati R. Mudambi : Fundamentals of Food & Nutrition wiley Eastern Ltd., New Delhi.
5) Philips T E, Modern Cooking for teaching and trade, Volit orient longman, Bombay

Scheme of Internal Practical Examination **10 marks**

1) Submission of Record book 5 Marks

2) Viva-voce 5 Marks

Diploma in Food Processing
Semester I
Paper III – Food Preservation – I

Work Load – 8	Total Credits – 6	Total Marks – 100
Theory – 4 Lecture / Week	Theory – 3	Theory – 50
Practical - 4 Lecture / Week.Batch	Practical – 3	Practical – 50

Course Outcomes:

On completion of the course, students will be able to –

1. Know the importance and basic principles of food preservation.
2. Understand the role of micro-organisms in food.
3. Know the causes of food spoilage.
4. Acquire knowledge of food preservation and preservation techniques.
5. Apply the methods of preservation of various methods.

Course content: **45 lectures**

Module 1: Introduction to food preservation

1.1Concept and importance of food preservation

1.2 Principles of preservation

1.3 Techniques of Preservation

Module 2: Micro-organisms in food

2.1 Introduction

2.2 Types of micro organisms

2.3 Factors affecting growth of micro organisms

2.4 Food spoilage- causes and its prevention

Module 3: Preservation by use of High temperature

2.1 Concept and importance

2.2 Various methods used – Pasteurization, Boiling, Canning

2.3 Effect of high temperature on food

Module 4: Preservation by Drying

3.1 Concept and history

3.2 Methods of drying

3.3 Types of dryers – Principles and uses

3.4 Treatments prior to drying

Practical:

1) Introduction to lab equipments
2) Identification of spoiled food
3) Microscopic observation of micro organisms
4) Preparation of food product by drying
   i) Onion flakes
   ii) Raw mango powder / Leafy vegetable powder
   iii) Papad and chips
5) Blanching of fruits and vegetables
6) Pasteurisation / Retorting of packaged food product
7) Visit to Food preservation unit
8) Visit to Drying unit

Scheme of practical examination

Internal practical examination		**50 marks**
i)	Preparation of one of the product from above	20 marks
ii)	Identification of equipment and its principle	10 marks
iii)	Submission of practical record book	10 marks
iv)	Viva – Voce	10 marks

Reference Books:

1) Prakash Triveni : Food Preservation, Aadi Publication, Delhi.
2) M. Shafiur Rahman : Hand Book of Food Preservation, Marcel Dekker Inc, New york.
3) McWillims and Paine : Modern Food Preservation, Surjeet Publication.
4) Fellows ,P. and Eills H. 1990 Food Processing Technology: Principles and Practicals, New York
5) NPCS Board, Modern Technology on Food Preservation
6) B. Sivasankar: Food Processing and Preservation

Diploma in Food Processing
Semester I
Paper IV – Fruit and Vegetable Processing

Work Load – 8	Total Credits – 6	Total Marks – 100
Theory – 4 Lecture / Week	Theory – 3	Theory – 50
Practical - 4 Lecture / Week.Batch	Practical – 3	Practical – 50

Course Outcomes:

On completion of the course, students will be able to –

1. Understand principles in fruit and vegetable processing.
2. Acquire knowledge about processing of fruits and vegetables.
3. Choose appropriate method for fruit and vegetable processing.
4. Acquire skills in fruit and vegetable preserves.
5. Understand equipment used in food industry.
6. Apply skill based knowledge in food industry.
7. Acquire entrepreneurial skills in the field of dairy.

Course content: **45 lectures**

Module 1: Introduction to Fruit Beverages

1.1 Importance of fruit and vegetables

1.2 Processing of fruit juices, RTS, Squash, Cordial, Fruit syrup

1.3 Classification of fruit beverages- alcoholic and non-alcoholic

1.4 Wine processing

Module 2: Fruit Preserves

2.1 Processing of jam, Jelly and Marmalade

2.2 Processing of fruit candy

2.3 Indian traditional fruit preserves – Muramba, Chhunda, Moravala

Module 3: Fruit-Vegetable Processing

3.1 Processing of soup, sauce and ketchup

3.2 Processing of pickles

3.3 Processing of chutneys

3.4 Dehydrated fruits and vegetables

Module 4: Equipment used in Food Processing Industry

4.1 Sorter and grader

4.2 Cleaning and washing equipment

4.3 Juice extractor and pulper

4.4 Bottling and packaging machine

Practical:

1. Preparation of fruit juice
2. Preparation of RTS beverage
3. Preparation of squash
4. Preparation of synthetic syrup
5. Preparation of Jam/Jelly/Muramba
6. Preparation of Amla candy
7. Preparation of Mango pickle
8. Preparation of Mix vegetable pickle
9. Preparation of Tomato Sauce/Ketchup
10. Preparation of Chutneys-Dry/moist
11. Visit to Fruit/vegetable processing unit.

Scheme of practical examination

Internal practical examination		**50 marks**
i)	Preparation of one of the product from above	20 marks
ii)	Submission of visit	10 marks
iii)	Submission of practical record book	10 marks
iv)	Viva – Voce	10 marks

Reference Books:

1. Salunkhe, D.K. and Kadam, S.S. Ed. 1995. Handbook of Fruit Science and Technology: Production, Composition and Processing.
2. Marcel Dekker, New York. Salunkhe, D.K. and Kadam, S.S. Ed. 1995. Handbook of Vegetable Science and Technology. Production, Composition, Storage and processing Marcel Dekker, New York.
3. Srivastava, R.P. and Kumar, S. 1998. Fruit and Vegetable Preservation: Principles and Practices. 2nd Ed. International Book Distributing Co. Lucknow.
4. L. R. Verma and Dr. V. K. Joshi. 2000. Postharvest Technology of Fruits and Vegetables: General concepts and principles. Vol I and II. Indus Publishing Company, New Delhi. W.
5. V. Crusee. 2009. Commercial Fruit and Vegetable Products. Agrobios, India.

6. S. Rajarathnam and R. S. Ramteke. 2011. Advances in Preservation and Processing Technologies of Fruits and Vegetables. NIPA, New Delhi.
7. Lal G., Siddappa G. and Tondon G. L. 1986. Preservation of Fruits and Vegetables, Indian Council of Agril. Research, New Delhi. CC-204: Fermentation Technolog

Diploma in Food Processing
Semester I
Paper V – Bakery and Confectionary

Work Load – 8	Total Credits –6	Total Marks – 100
Theory – 4 Lecture / Week	Theory – 3	Theory – 50
Practical - 4 Lecture / Week/Batch	Practical – 3	Practical – 50

Course Outcomes:

On completion of the course, students will be able to –

1. Understand the principles involved in bakery and confectionary
2. Acquire knowledge about equipments used in bakery and confectionary and how to operate these equipments.
3. Demonstrate the skills in determining the qualities of flour.
4. Acquire knowledge on role of various ingredients used in baking and confectionary.
5. Acquire skills in preparation of bakery and confectionary products.
6. Use combination of food in the development of bakey and confectionary products.
7. Identify and control faults in baking.
8. Evaluate different methods of baking.
9. Design different bakery and confectionary recipes.

Course content: **45 lectures**

Module 1: Introduction to Bakery and Confectionary industry

1.1 Importance of bakery and confectionary sector in food industry

1.2 Equipment used in bakery and confectionary – Weighing machine, sieving machine, dough maker, molds and pans, baking oven, Steam Jacketed kettle, double boiler, packaging machine, cake and pastry making equipment

Module 2: Bakery Products

2.1 Ingredients used in bakery products

2.2 Types and quality of flour

2.3 Principles involved in bakery products and methods used in manufacturing different types of bakery products

2.4 Different types of bakery products

Module 3: Introduction to Confectionary products

3.1 Ingredients used in confectionary products

3.2 Types of confectionary products

3.3 Characteristics of confectionary products

Module 4: Confectionary Products

4.1 Chocolate Processing

4.2 Boiled Sweets

4.3 Gelatine Sweets

4.4 Crystallized confectionery

Practical:

1) Introduction to Bakery and Confectionery Equipments
2) Preparation of Bread
3) Preparation of Cake
4) Preparation of Biscuits
5) Preparation of Cookies
6) Preparation of Cake / Pastries
7) Preparation of cake icing
8) Preparation of Chikki
9) Preparation of Chocolate
10) Preparation of Boiled candy
11) Visit to Bakery and Confectionary unit

Scheme of practical examination

Internal practical examination	**50 marks**
i) Preparation of one of the product from above	20 marks
ii) Identification of bakery and confectionery equipment and its uses	10 marks
iii) Submission of practical record book	10 marks
iv) Viva – Voce	10 marks

References:

1) John Kingslee: A professional text to bakery and confectionary, New Age International Publication.
2) NIIR Board: The complete technology book on bakery products
3) W.P. Edwards : Science of Bakery Products.
4) Emmanueal Obene : Chocolate science and Technology

Diploma in Food Processing
Semester II
Paper VI – Business Communication

Work Load – 4	Total Credits – 6	Total Marks – 50
Theory – 2 Lecture / Week	Theory – 3	Theory – 40
Practical - 2 Lecture / Week / Batch	Practical – 3	Practical – 10

Course Outcomes:

On completion of the course, students will be able to –

i) Understand the key skills, possible strategies and behaviour required to facilitate effective group discussion.

ii) Draft various types of business correspondence.

iii) Formulate communication strategies based on various situations.

iv) Identify optimal win-win solutions in negotiations and make profitable deals.

v) Understand fundamental marketing concepts, theories, and principles in areas of marketing.

vi) Develop creative strategies to market their product.

Course content: **45 lectures**

Module 1: : Group Discussion

1.1 Preparing for a Group Discussion: Initiating a Discussion Eliciting Opinions, Views, etc.

1.2 Expressing Agreement/ Disagreement

1.3 Making Suggestions: Accepting and declining Suggestions

1.4 Summing up

Module 2: Business Correspondence

2.1 Writing Memos, e-mails, complaints, inquiries, etc.

2.2 Inviting Quotations Placing Orders, Tenders, etc.

Module 3: English for Negotiation

3.1 Business Negotiations Agenda for Negotiation

3.2 Stages of Negotiation

Module 4: English for Marketing

4.1 Describing/ Explaining a Product/ Service

4.2 Promotion of a Product Dealing/ bargaining with Customers

4.3 Marketing a Product/ Service: Using Pamphlets, Hoardings, Advertisement, Public Function/

Festival

Practical: Based on the theory units

Reference Books:

1. Carnegie, Dale. *How to Win People and Influence People*. New York: Pocket Books. 1998.
2. Comfort, Jeremy and York Associates Staff. *Effective Negotiating*. USA: OUP. 1999.
3. Driver, Janine. et al. *You Say More Than You Think*. USA: Harmony 2011.
4. Fine Debra. *The Fine Art of Small Talk*. New York: Hyperion. 2005.
5. Gore Saylee. *English for Marketing and Advertising*. England: Oxford university Press. 2010.
6. Lafond Charles, Sheila Vine, Birgit Welch. *English for Negotiating*. USA: OUP. 2010.
7. Lougheed, Lin. *Business Correspondence: Guide to Everyday Writing.* England: Longman 2003.
8. Robinson, Nick. *Cambridge English for Marketing.* UK: Cambridge University Press 2010.
9. Taylor, Shirley. *Model Business Letters, Emails, and Other Business Documents.* Pearson Education India. 2013.
10. Sethi,Anjanee&Bhavana Adhikari.*Business Communication*. New Delhi: Tata McGraw Hill
11. Tickoo, Champa& Jaya Sasikumar. *Writing with a Purpose*. New York: OUP, 1979.
12. Sonie, Subhash C. *Mastering the Art of Effective Business Communication*. New Delhi: Student Aid Publication, 2008.
13. Herekar, Praksh. *Business Communication*. Pune: Mehta Publications, 2007.
14. Herekar, Praksh. *Principles of Business Communication*. Pune: Mehta Publications, 2003.
15. Rai, Urmila& S. M. Rai.*Business Communication*. Himalaya Publishing House, 2007.
16. Pradhan, N. S. *Business Communication.* Mumbai: Himalaya Publishing House, 2005.

Diploma in Food Processing
Semester II
Paper VII – Fundamentals of Nutrition

Work Load – 8	Total Credits – 6	Total Marks – 50
Theory – 4 Lecture / Week	Theory – 3	Theory – 40
Practical - 4 Lecture/Week/Batch	Practical – 3	Practical – 10

Course Outcomes: The students will enable to-

1. Comprehend the functions of nutrients with health.
2. Associate the knowledge of nutrients with their deficiencies.
3. Calculate the nutritive value of food product.
4. Apply knowledge in determining nutritional requirements.
5. Know the sources of nutrients and able to deal with deficiencies by selecting nutrient rich foods.
6. Acquire skills in preparing nutrient rich food.

Course content: **45 lectures**

Module 1: Introduction to Nutrition

1.1 Definition of nutrition, nutrients, RDA

1.2 Classification of nutrients (Macro, Micro)

Module 2: Macro nutrients (Carbohydrates, Proteins, Fats)

2.1 Classification, Sources

2.2 Functions, RDA

2.3 Deficiency, excess

Module 3: Micro nutrients(Vitamin: Fat soluble – Vitamin A,D, E, K and Water soluble – Vitamin B and C, Minerals- Calcium, Iron)

3.1 Classification, Sources

3.2 Functions, RDA

3.3 Deficiency, excess

Module 4: Water and Fibre

4.1 Composition, Sources and Classification

4.2 Functions and RDA

4.3 Deficiency and excess

Practical:

1) Preparation of list of nutrient rich food sources (Carbohydrates, proteins, fats)

2) Calculation of nutritive value of foods

3) Preparation of high carbohydrate product from cereals with calculation of nutritive value

4) Preparation of high fibre product with calculation of nutritive value

5) Preparation of high protein product from plant source with calculation of nutritive value

6) Preparation of high protein product from animal source with calculation of nutritive value

7) Preparation of high fat product with calculation of nutritive value

8) Preparation of low fat product with calculation of nutritive value

9) Preparation of iron rich product with calculation of nutritive value

10) Preparation of calcium rich product with calculation of nutritive value

11) Preparation of Vitamin A, B1, B2, B3 and Vitamin C rich product with calculation of nutritive value

Scheme of External Practical Examination **10 marks**

1)	Submission of Record book	5 marks
2)	Viva – Voce	5 marks

Reference Books:

1) Shubhangini Joshi, Textbook of food and nutrition, Tata Macgrohill Publishing Co., New Delhi.

2) B. Shrilakshmi, Nutrition Science, New Age International Publishers

3) Muddambi S.R. and Rajgopal M. V., Fundamentals of Food and Nutrition, Wiley Eastern Ltd., New Delhi.

4) Nutritive Value of Indian Foods, NIN, Hyderabad.

5) Dietary Guidelines for Indians, NIN Hyderabad 2018

Diploma in Food Processing
Semester II
Paper VIII – Food Preservation - II

Work Load – 8	Total Credits – 6	Total Marks – 100
Theory – 4 Lecture / Week	Theory – 3	Theory – 50
Practical - 4 Lecture / Week.Batch	Practical – 3	Practical – 50

Course Outcomes: The students will enable to-

1. Know the importance and basic principles of food preservation.
2. Acquire knowledge of food preservation and preservation techniques.
3. Apply the methods of preservation of various methods.
4. Identify appropriate food processing and preservation methods.
5. Acquire knowledge regarding establishment of a food processing unit.
6. Choose appropriate packaging material.
7. Professionally competent to take up careers in food processing and service industry.

Course content:

Module 1: Preservation by Low Temperature

1.1Concept and History

1.2 Types of preservation methods by low temperature

1.3 Different equipment used for preservation by low temperature

1.4 Treatments prior to freezing

Module 2: Preservation by Preservative

2.1 Concept and definition

2.2 Types of preservatives

2.3 Classification of preservatives- Class I, II and GRAS

Module 3: Modern techniques in food preservation

3.1 Concept and definition

3.2 High Hydrostatic pressure

3.3 Hurdle Technology

3.4 Pulse electric field

Module 4: Food packaging

4.1 Importance and need

4.2 Types of food packaging material

4.3 techniques of food packaging – Aseptic packaging, Vaccum packaging , Modified Atmosphere packaging (MAP), Controlled Atmoshere Packaging

Practical :

1. Introduction to freezing equipment.
2. Freezing of fruits (Any two)
3. Preparation of product using salt as a preservative (Any two)
4. Preparation of product using sugar as a preservative (Any two)
5. Preparation of product using oil as a preservative (Any two)
6. Preparation of product using chemical preservative as a preservative (Any two)
7. Preparation of packaging material album
8. Visit to cold storage unit / Packaging unit

Scheme of practical examination

Internal practical examination		**50 marks**
i)	Preparation of one of the product from above	20 marks
ii)	Identification of packaging materialand its uses	10 marks
iii)	Submission of practical record book	10 marks
iv)	Viva – Voce	10 marks

References:

1) Prakash Triveni : Food Preservation, Aadi Publication, Delhi.

2) M. Shafiur Rahman : Hand Book of Food Preservation, Marcel Dekker Inc, New york.

3) McWillims and Paine : Modern Food Preservation, Surjeet Publication.

4) Fellows ,P. and Eills H. 1990 Food Processing Technology: Principles and Practicals, New York

5) NPCS Board, Modern Technology on Food Preservation

6) B. Sivasankar: Food Processing and Preservation

7) Hosahalli S. Ramaswamy, Michele Marcotte. 2005. Food Processing: Principles and Applications. CRC Press.

8) Taylor & Francis Group. Boca Raton, Finland. Fellows, P. and Ellis H. 1990. Food Processing Technology: Principles and Practice, New York.

9) Jelen, P. 1985. Introduction to Food Processing. Prentice Hall, Reston Virginia, USA.

10) Norman N. Potter and Joseph H. Hotchkiss. 1998. Aspen Publishers Inc., Maryland.

11) Arsdel W.B., Copley, M.J. and Morgen, A.I. 1973. Food Dehydration. AVI, Westport.

12) Bender, A.E. 1978. Food Processing and Nutrition. Academic Press, London.

13) Lewis, M.J. 1990. Physical Properties of Food and Food Processing Systems.

14) Woodhead, UK. Wildey, R.C.1994. Minimally Processed Refri. Fruits and Vegetables.

Chapman and Hall, London. CC- 102:

Diploma in Food Processing
Semester II
Paper IX– Milk and Milk Product Processing

Work Load – 8	Total Credits – 6	Total Marks – 100
Theory – 4 Lecture / Week	Theory – 3	Theory – 50
Practical - 4 Lecture / Week/Batch	Practical – 3	Practical – 50

Course Outcomes: The students will enable

1. Acquire techniques of milk and milk product processing.
2. Associate the knowledge of properties and nutritive value of milk with preparation of milk products.
3. Identify appropriate milk and milk product processing methods.
4. Acquire knowledge of equipment used in milk and milk product processing methods.
5. Establish professional responsibility through project/internship/field visits/industrial visits.
6. Apply skill based knowledge in food industry.
7. Acquire entrepreneurial skills in the field of dairy.

Course content: **45 lectures**

Module 1: Introduction to Milk and milk products

1.1Definition, Production and Processing status of milk

1.2 Physio-chemical properties

1.3 Nutritive value

Module 2: Processing of milk

2.1 Pasteurisation

2.2 Sterilization

2.3 Dehydration

Module 3: Special Milks

3.1 Re-constituted or Re-hydrated milk

3.2 Condensed milk, Toned milk and Flavoured milk

3.3 UHT Milk

Module 4: Milk Products

4.1 Dahi, Chakka, Shrikhand

4.2 Butter, Butter Milk, Butter Oil, Lassi

4.3 Channa, Paneer, Rasogolla

4.4 Khoa, Pedha and Basundi

4.5 Ice-cream and Cheese

Practical:

1) Physical examination of milk
2) Platform tests of milk
3) Determination of Fat content of milk (Gleber's method)
4) Determination of pH acidity of milk
5) Adulteration Test of milk
6) Preparation of curd
7) Preparation of Shrikhand and Lassi
8) Preparation of Basundi / Khoa / Pedha / Gulabjam
9) Preparation of Paneer / Rasgulla
10) Preparation of Ice-cream and Kulfi
11) Visit to Dairy unit / Milk processing unit

Scheme of practical examination

External practical examination	**50 marks**
i) Preparation of one of the product from above	20 marks
ii) Performance of Physical test/Platform test/Determination of fat content	10 marks
iii) Submission of practical record book	10 marks
iv) Viva – Voce	10 marks

Reference:

1) Dey S., 1994, Outlines of Dairy Technology, Oxford Univ. Press, New Delhi.
2) Rosenthal I., 1991, Milk and Milk Products, VCH, New York.
3) Robinson R. K., (2 vol. set), 1986, Modern Dairy Technology, Elsevier Applied Science, UK.
4) Warnar J. M., 1976, Principles of Dairy Processing, Wiley Eastern Ltd, New Delhi

Diploma in Food Processing
Semester II
Paper X– Food Quality Control and Waste Management

Work Load – 8	Total Credits – 6	Total Marks – 100
Theory – 4 Lecture / Week	Theory – 3	Theory – 50
Practical - 4 Lecture / Week / Batch	Practical – 3	Practical – 50

Course Outcomes: The students will enable

1. to understand concept of sampling and quality of the foods**.**
2. to study the working of equipments for quality control of food products.

Course content: **45 lectures**

Module 1: Introduction to Quality Control and Sampling
1.1 General concepts of quality and quality control
1.2 Major quality control functions
1.3 Sampling of Food - Sample Selection and Sampling Plans
1.4 Preparation and storage of Laboratory Samples
1.5 Sampling Methods

Module 2: Standard tests for quality assessment

2.1 Physical Tests
2.2 Chemical tests
2.3 Microbiological tests
2.4 Sensory analysis

Module 3: Waste Management in Food Industry
3.1 Types of waste generated: non-degradable and biodegradable wastes

3.2 Methods of utilizing wastes to make value added products

3.3 Storage and disposal of solid, liquid and gaseous waste

3.4 Methods of waste disposal – Land filling, composting, recycling, biological treatment of food industry waste

Module 4: Food laws and Standards

4.1 Indian Food Laws and Standards – PFA, FPO, ECA, BIS, AGMARK, FSSAI

4.2 International Food Laws and Standards – CODEX, ISO, HACCP

Practical:

1. Determination of Moisture content of food
2. Determination of ash content of food
3. Determination of protein content of food
4. Determination of Fat content of food
5. Determination of crude fiber content from the food sample
6. Sensory analysis of food products
7. Determination of hardness of water
8. Determination of Total Plate Count
9. Determination of Yeast and Mould Count
10. Visit to Quality Control Lab / Waste disposable unit

Scheme of practical examination

External practical examination	**50 marks**
i) Determination of one from above	20 marks
ii) Sensory evaluation of any one food product	10 marks
iii) Submission of practical record book	10 marks
iv) Viva – Voce	10 marks

References:

1. Philip, A.C. Reconceptualizing Quality. New Age International Publishers,Banglore. 2001.
2. Bhatia,R. and Ichhpujan,R.L. Quality Assurance in Microbiology. CBS Publishers and Distributors, New Delhi. 2004.
3. Kher, C.P. Quality control for the food industry. ITC Publishers, Geneva. 2000.
4. The Prevention of Food Adulteration Act, 1954 & The Food Safety and Standard Act, 2006. Professional Book Publishers, Delhi.
5. Ranganna S. 2012. Handbook of analysis and quality control for fruits and vegetable

products. Tata McGraw Hill Education Pvt. Ltd., New Delhi

6. Pomeranz Y and Meloan C. 2000. Food Analysis: Theory and Practice. Aspen Publication,

7.Maryland H. R. Moskowitz, J. H. Beckley and A. V. A. Resurreccion. 2006. Sensory and

8. consumer research in food product design and development. IFT Press, Blackwell publishing. Iowa, USA.

9. R. Lawley, L. Curtis and J. Davis. 2008. The Food Safety Hazard Guidebook. Royal Society of Chemistry Publication, UK

10. R. H. Schmidt and G. E. Rodrick. 2003. Food Safety Handbook. Wiley-Interscience.

11. John Wiley & Sons Publication, New Jersey CCPR-305 Laboratory Co