ANNEXURE 18B12

V.V. VANNIAPERUMAL COLLEGE FOR WOMEN

(Belonging to Virudhunagar Hindu Nadars)

An Autonomous Institution Affiliated to Madurai Kamaraj University, Madurai

Re-accredited with 'A' Grade (3rd Cycle) by NAAC

VIRUDHUNAGAR - 626 001

CHOICE BASED CREDIT SYSTEM
REGULATIONS AND SYLLABUS
(with effect from Academic Year 2018 - 2019)

V.V. Vanniaperumal College for Women, Virudhunagar, established in 1962, offers 19 UG Programmes, 14 PG Programmes, 6 M.Phil.Programmes and 3 Ph.D. Programmes. All these programmes, except Ph.D. Programmes, have been framed as per the guidelines given by UGC under Choice Based Credit System (CBCS).

The Departments of Commerce, English and History upgraded as Research Centres offer Ph.D. Programmes as per the norms and regulations of Madurai Kamaraj University, Madurai and do not come under the purview of CBCS.

CHOICE BASED CREDIT SYSTEM (CBCS)

The CBCS provides an opportunity for the students to choose courses from the prescribed Courses. The CBCS is followed as per the guidelines formulated by the UGC.The students' performance will be evaluated based on the uniform grading system. Computation of the Cumulative Grade Point Average (CGPA) is made to ensure uniformity in evaluation system.

List of Programmes in which CBCS/Elective Course System is implemented

UG PROGRAMMES

Arts & Humanities	:	History (E.M. & T.M.), English and Tamil
Physical & Life Sciences	:	Mathematics, Zoology, Chemistry, Physics, Biochemistry, Home Science - Nutrition and Dietetics, Costume Design and Fashion, Microbiology, Biotechnology, Computer Science, Information Technology and Computer Applications.
Commerce & Management	:	Commerce, Commerce with Computer Applications, Commerce with Professional Accounting Business Administration.

PG PROGRAMMES

Arts & Humanities	:	History, English, Tamil
Physical & Life Sciences	:	Mathematics, Physics, Biochemistry, Food Processing & Quality Control, Chemistry, Zoology, Computer Science, Information Technology, Computer Applications (MCA*)
Commerce & Management	:	Commerce, Business Administration (MBA*)

* AICTE approved Programmes

PRE-DOCTORAL PROGRAMMES (M.Phil.)

Arts &Humanities	:	History, English, Tamil
Physical & Life Sciences	:	Mathematics, Biochemistry
Commerce & Management	:	Commerce

OUTLINE OF CHOICE BASED CREDIT SYSTEM (PG)

1. Core Courses
2. Discipline Specific Elective Courses (DSEC)
3. Non Major Elective Course (NMEC)

List of Non Major Elective Courses (NMEC) Offered

PG PROGRAMMES

Name of the Course	Semester	Department
History of Freedom Movement in India (A.D. 1885 – 1947)	III	History
Functional and Communicative English	III	English
jkpOk; gpwJiwfSk;	III	Tamil
Taxation Concepts and Assessment	III	Commerce
Entrepreneurship	III	Business Administration
Mathematics For Competitive Examinations	III	Mathematics
Digital Electronics	III	Physics
Industrial Chemistry	III	Chemistry
Apiculture	III	Zoology
Nutrition and Health	III	Home Science – Nutrition and Dietetics
Clinical biochemistry (Basics)	III	Biochemistry
Introduction to Internet and HTML	III	Computer Science
Fundamentals of Information Technology	III	Information Technology
Principles of Information Technology	III	Computer Applications

ELIGIBILITY FOR ADMISSION

The candidate should have passed Bachelor of Science in any recognized University.

DURATION OF THE PROGRAMME

The candidates shall undergo the prescribed Programme of study for a period of two academic years (four semesters).

MEDIUM OF INSTRUCTION

English

EVALUATION SCHEME

Components	Internal Assessment Marks	External Examination Marks	Total Marks
Theory	40	60	100
Practical / Project	40	60	100

Core Courses, Discipline Specific Elective Courses and Non Major Elective Course

INTERNAL ASSESSMENT
Distribution of Marks
Theory

Mode of Evaluation		Marks
Periodic Test	:	25
Seminar	:	10
Assignment	:	5
Total	**:**	**40**

Three Periodic Tests - Average of the best two will be considered
Two Assignments - Best of the two will be considered

Practical

Mode of Evaluation		Marks
Periodic Test	:	30
Record	:	5
Performance	:	5
Total	**:**	**40**

Three Periodic Tests - Average of the best two will be considered

On Job Training

The students should undergo on job training in any food processing industries for a period of 15 days.

Question Pattern for Periodic Tests **Duration: 2 Hours**

Section	Types of Question	No. of Questions	No. of Questions to be answered	Marks for each Question	Max. Marks
A Q.No.(1 - 5)	Multiple Choice	5	5	1	5
B Q.No.(6 - 10)	Internal Choice Either or Type	5	5	5	25
C Q.No.(11 - 13)	Open Choice	3	2	10	20
				Total	**50**

EXTERNAL EXAMINATION

Question Pattern **Duration: 3 Hours**

Section	Types of Question	No. of Questions	No. of Questions to be answered	Marks for each question	Total Marks
A Q.No.(1 - 5)	Multiple Choice (Atleast one question from each unit)	5	5	1	5
B Q.No.(6 - 10)	Internal Choice Either Or Type	5	5	5	25
C Q.No.(11-15)	Open Choice (one from each unit)	5	3	10	30
Total					**60**

ON LINE ASSESSMENT (SET/NET Preparation – General Paper)

Online Test with Multiple Choice Questions for 50 marks will be conducted in III Semester.

ELIGIBILITY FOR THE DEGREE

1. The candidate will not be eligible for degree without completing the prescribed Courses of study, lab work etc., and a minimum of 50% Pass marks in all the Courses.
2. Attendance, progress and conduct certification from the Head of the Institution will be required for the students to write the examination.
   - No Pass minimum for Internal Assessment.
   - Pass minimum for External Examination is 27 marks out of 60 for Core Courses, Discipline Specific Elective Courses and Non Major Elective Courses.

ATTENDANCE

The following rules are applicable to the students of all UG, PG and M.Phil. Programmes with effect from 2018-2019.

a) The students with an attendance of 85% and above are permitted to appear for the Summative Examinations without any condition.

b) The students with 78% - 84 % of attendance are permitted to appear for the Summative Examinations by paying a fine of ₹500/-

c) The students with 66% - 77% of attendance can appear for the Summative Examinations only after getting special permission from the Principal. Special permission shall be granted by the Principal only on medical grounds and those students should also pay a fine of ₹1000/- along with the application form for exemption. If permission is not granted, they have to appear for the Summative Examinations in the next Semester by paying a fine of ₹1000/-

d) The students who have less than 65% of attendance cannot appear for the Summative Examinations and have to repeat the whole semester.

e) For Part V Courses, the students require 75% of attendance to get the required credit.

f) For Certificate, Diploma, Advanced Diploma and Post Graduate Diploma Programmes, the students require 75% of attendance to appear for the Theory/Practical Examinations.

M.Sc. FOOD PROCESSING AND QUALITY CONTROL

Programme Code – 7018

PROGRAMME OUTCOMES

- Acquire technological, managerial and entrepreneurial skills in food processing.
- Gain proficiency in the use of food processing equipments.
- Generate new scientific insights for the innovation of new applications of research in food industries.
- Apply critical thinking skills to develop new food products.
- Achieve practical proficiency to work efficiently in food analysis laboratories.
- Work in teams to develop communication skills and adopt good manufacturing practices in food industries.
- Develop ability to undertake diverse and challenging career opportunities in food industries and academia.

PROGRAMME SPECIFIC OUTCOMES

- Impart knowledge in Food, Nutrition and Dietetics, Food Processing technology, Food Safety and Quality Control and Food Bio- technology.
- Provide systematic knowledge of basic and applied aspects of food processing technology.
- Apply research skills in developing new food products.
- Develop the value added food products by utilising the various by- products of food industries.

V.V. VANNIAPERUMAL COLLEGE FOR WOMEN

(Belonging to Virudhunagar Hindu Nadars)
An Autonomous Institution Affiliated to Madurai Kamaraj University, Madurai
Re-accredited with 'A' Grade (3rd Cycle) by NAAC
VIRUDHUNAGAR - 626 001

M.Sc. FOOD PROCESSING AND QUALITY CONTROL (7018)

Programme Structure - Allotment of Hours and Credits
For those who join in the Academic Year 2018-2019

Components	Semester				Total Number of Hours/Credits
	I	II	III	IV	
Core Course	6(5)	5(4)	6(5)	6(6)	23(20)
Core Course	5(4)	5(4)	6(5)		16(13)
Core Course	5(4)	6(5)	6(5)	-	17(14)
Core Practical	5(3)	5(3)	6(3)	-	16(9)
Core Practical	3(2)	3(2)	-	-	6(4)
DSEC	6(5)	6(5)	-	6(6)	18(16)
Non Major Elective	-	-	5(4)	-	5(4)
Online Assessment (SET/NET Preparation- General Paper)	-	-	1(1)	-	1(1)
Project	-	-	-	18(9)	18(9)
Total	**30(23)**	**30(23)**	**30(23)**	**30(21)**	**120(90)**

V.V. VANNIAPERUMAL COLLEGE FOR WOMEN

(Belonging to Virudhunagar Hindu Nadars)
An Autonomous Institution Affiliated to Madurai Kamaraj University, Madurai
Re-accredited with 'A' Grade (3rd Cycle) by NAAC
VIRUDHUNAGAR - 626 001

MASTER OF FOOD PROCESSING AND QUALITY CONTROL
Programme Code – 7018
M.Sc. Food Processing and Quality Control -SEMESTER I

S.No.	Components	Title of the Course	Course Code	Hours per Week	Credits	Exam Hours	Marks		
							Int.	Ext.	Total
1	Core Course-1	Advanced Food Science and Chemistry	18PFPC11	6	5	3	40	60	100
2	Core Course-2	Processing of Agricultural Produce	18PFPC12	5	4	3	40	60	100
3	Core Course-3	Processing of Horticultural Produce	18PFPC13	5	4	3	40	60	100
4	Core Practical-1	Food Analysis Lab	18PFPC11P	5	3	3	40	60	100
5	Core Practical-2	Food Processing Lab-1	18PFPC12P	3	2	3	40	60	100
6	DSEC-1	**Elective:** Research Methodology and Instrumentation/ Fats and Oil Processing	18PFPE11/ 18PFPE12	6	5	3	40	60	100
TOTAL				**30**	**23**				**600**

DSEC - Discipline Specific Elective Course

SEMESTER II

S.No.	Components	Title of the Course	Course Code	Hours per Week	Credits	Exam Hours	Marks		
							Int.	Ext.	Total
1	Core Course-4	Advanced Food Microbiology	18PFPC21	5	4	3	40	60	100
2	Core Course-5	Animal Food Processing	18PFPC22	5	4	3	40	60	100
3	Core Course-6	Bakery and Confectionery	18PFPC23	6	5	3	40	60	100
4	Core Practical-3	Food Microbiology Lab	18PFPC21P	5	3	3	40	60	100
5	Core Practical-4	Food Processing Lab-II	18PFPC22P	3	2	3	40	60	100
6	DSEC-2	**Elective:** Dietetics / Food Service Management	18PFPE21/ 18PFPE22	6	5	3	40	60	100
			TOTAL	**30**	**23**				**600**

DSEC- Discipline Specific Elective Course

SEMESTER III

S.No.	Components	Title of the Course	Course Code	Hours per Week	Credits	Exam Hours	Marks		
							Int.	Ext.	Total
1	Core Course-7	Food Safety and Quality Control	18PFPC31	6	5	3	40	60	100
2	Core Course-8	Statistics and Computer Applications	18PFPC32	6	5	3	40	60	100
3	Core Course-9	Food Biotechnology	18PFPC33	6	5	3	40	60	100
4	Core Practical-5	Quality Control and Statistical Analysis Lab	18PFPC32P	6	3	3	40	60	100
5	NMEC	**Non-major Elective:** Nutrition and Health	18PFPN31	5	4	3	40	60	100
6	Online Course	SET/NET Preparation - General	18POLS31	1	1	-	100	-	100
			TOTAL	**30**	**23**		**600**		

SEMESTER IV

S.No.	Components	Title of the Course	Course Code	Hours per Week	Credits	Exam Hours	Marks		
							Int.	Ext.	Total
1	Core Course-10	Food Product Development and Marketing	18PFPC41	6	6	3	40	60	100
2	Core Course-11	Dissertation	18PFPC42PR	18	9	-	40	60	100
3	DSEC -3	Elective: Functional Food and Nutraceuticals / Food Packaging Technology	18PFPE41/ 18PFPE42	6	6	3	40	60	100
Total				**30**	**21**				**300**

V.V. VANNIAPERUMAL COLLEGE FOR WOMEN

(Belonging to Virudhunagar Hindu Nadars)
An Autonomous Institution Affiliated to Madurai Kamaraj University, Madurai
Re-accredited with 'A' Grade (3rd Cycle) by NAAC
VIRUDHUNAGAR - 626 001

M.Sc. FOOD PROCESSING AND QUALITY CONTROL (SEMESTER)
(2018 -19 onwards)

Semester: I	**ADVANCED FOOD SCIENCE**	Hours/Week:6	
Core Course-1		Credits: 5	
Course Code **18PFPC11**		Internal 40	External 60

COURSE OUTCOMES

On completion of the course, students will be able to

- gain knowledge regarding the physical and chemical properties of the food constituents.
- understand the physical and chemical changes which occur during the production, processing and storage.
- be familiar with the recent advances and research in the field of food.
- understand the functions of foods in relation to health.
- know the structure, composition, selection of different foodstuffs and changes in them due to cooking.
- apply safety principles related to food, personnel and consumers.

UNIT I

Food chemistry - definition - Properties of food - physical properties of food, acid, bases and buffers. Colloids - classification of colloidal system and its properties.

Gels - structure, formation, strength and types

Sols - properties

Emulsions-formation, stability, surfactants and emulsifiers

Foams- structure, formation, stabilization and anti-foaming agents

Water – properties of water and ice, structure of water molecules, free and bound water in food products, role of water in food systems. (18 Hours)

UNIT II

Carbohydrates - classification, structure - monosaccharides, disaccharides and starch, properties, functions of sugar in food- browning reaction - maillard reaction.

Lipids - structure, classification of fatty acids, classification of lipids, phospholipids, triglycerides- physical characteristics of fats, reaction of fats- rancidity and polymerization, role of lipids in food. Fat replacers and trans fat. (17 Hours)

UNIT III

Proteins - classification of amino acids and its characteristics. Proteins - Sources, structure, classification, properties and denaturation of proteins, texturised protein. Functional role of protein in food.

Food proteins - animal and vegetable protein, non-traditional protein.

Gluten - factors affecting gluten formation and development in dough.

Extraction of proteins from solid and liquid sources – properties and its applications. (17 Hours)

UNIT IV

Vitamins - classification, applications of vitamins in food industries, general causes of variation/losses of vitamins in food during processing.

Minerals – classification, functional role of minerals in food industries, effect of processing on mineral content in foods. (19 Hours)

UNIT V

Pigments and colours- chlorophylls, anthocyanins, tannins, betalins, carotenoids, myoglobin and haemoglobin - sources, properties and effect on processing.

Flavour compounds - terpenoids, flavonoids and sulphur compounds- sources, properties and effect on processing.

Food additives - antioxidants, chelating agents, chemical preservatives, anticaking agent, stabilizers, thickeners, leavening agents, flour improvers and non-nutritive sweetners - applications in food processing industries, permissible amount, evaluation of food safety in food additives. (19 Hours)

REFERENCE BOOKS

1. Potter ,N.(1987). *Food Science*, CBS Publishers and Distributors, Delhi.
2. Richard Owusu,(2005). *Introduction to Food Chemistry*, CRC Press, Washington.
3. Srilakshmi, B. (2014). *Food Science*, New age (P) Ltd, Ansari Road, Delhi.
4. Shakuntalamanay,N.(2008). *Foods Facts and Principle,* New Age International (p) Ltd, Delhi.
5. Sivasankar,B.(2005). *Food Processing and Preservation*, Prentice Hall of India Private Ltd, Delhi.
6. Swaminathan,M. (1995). *Food Science and Experimental Foods*, Ganesh and Co., Madras.
7. VijayaKhader. (2001*). Text Book of Food Science and Technology*, ICAR, New Delhi.
8. Fennema,O.R., (1996). *Food Chemistry*, Marcel Dekker, Inc, New York.

V.V. VANNIAPERUMAL COLLEGE FOR WOMEN

(Belonging to Virudhunagar Hindu Nadars)
An Autonomous Institution Affiliated to Madurai Kamaraj University, Madurai
Re-accredited with 'A' Grade (3rd Cycle) by NAAC
VIRUDHUNAGAR - 626 001

M.Sc. FOOD PROCESSING AND QUALITY CONTROL (SEMESTER)
(2018 -19 onwards)

Semester: I	**PROCESSING OF AGRICULTURAL PRODUCE**	Hours/Week:5	
Core Course-2		Credits: 4	
Course Code **18PFPC12**		Internal 40	External 60

COURSE OUTCOMES

On completion of the course, students will be able to

- gain knowledge of agricultural produce and their processing technology
- acquire knowledge of basic principles and procedures in the production of plant foods and their products.
- know the production process of oil extraction.
- develop skill in the manufacturing process of various sugar products
- understand the applications of extruded products.
- recognize the importance of organic foods

UNIT I

Cereals and Millets

Rice, wheat, maize – structure and composition, types, parboiling techniques of rice, milling and products of rice, wheat and maize.

Oats, Bajra, ragi - composition and processing.

Barley- milling and malting.

Breakfast cereals-uncooked breakfast cereals and ready to eat cereals. (15 Hours)

UNIT II

Processing of pulses, nuts and oil seeds

Pulses - bengal gram, red gram, black gram, green gram – composition, processing. Pulse products – tofu, fried dhal and its quality characteristics.

Toxic constituents of pulses and its removal technics.

Extraction of oil-cotton seed oil, soya bean oil, sunflower oil, palm oil, pea nut, coconut and rice bran oil.

Oil refining process – oil quality parameter.

Commercial fat products – vanaspathi, margarine and mayonnaise. (15 Hours)

UNIT III

Sugar, Sweetners and Honey

Sugar – types**,** manufacture of sugar – raw sugar, refined sugar, white sugar and Jaggery.

Sweetners – manufacture of high fructose corn syrup, glucose, lactose, sugar alcohol and properties of honey.

Reactions of sugar – caramalization, hydrolysis and crystallization

By-products of sugarcane. (15 Hours)

UNIT IV

Storage structures and preservation

Cereals, pulses, nuts and oil seeds - principles, storage structure - rural and modern storage structure.

Changes in food grain during storage-chemical, physiological and biological changes.

Type of grain spoilage.

Pests and their control - detection of insect infestation, preventive and curative measures of insect infestation. (15 Hours)

UNIT V

Extruded foods - principle, methods and applications-pasta, precooked masa snacks, coextruded snacks, flatbread snacks, high moisture dough snacks.

Organic foods – importance of organic foods, organic food certification process and labelling.

(15 Hours)

REFERENCE BOOKS

1. Shakuntalamanay, N. (2008). *Food Facts and Principle,* New Age International (p) Ltd Publishers, New Delhi.
2. NIIR Board (2006) *Modern Technology of Oils, Fats and its Derivatives*, Asia Pacific Business Press, New Delhi.
3. Chakraverty, A. (2006*). Post-harvest Technology of Cereals, Pulses and Oil seeds*, Oxford and IBH Publishing co Pvt Ltd, New Delhi.
4. Harry Lawson (1997*). Food Oils and Fats* , CBS Publishers, New Delhi
5. Bremma,G.(2006).*Food processing Hand book*, Wiley VCH verlag MBH &Co, Germany.
6. Bhupendrasinghkhatkhar. (2007) *Food Science and Ttechnology,* Daya Publishing House, Delhi.
7. Meenakshipaul. (2007). *Effect of Food Processing on Bioactive Compounds*, Gene tech books, New Delhi.
8. Gordon Booth,R. (1997). *Snack Food*, CBS Publishers, New Delhi.
9. Vijayakhader. (2001*). Text book of Food Science and Technology*, ICAR, New Delhi.

V.V. VANNIAPERUMAL COLLEGE FOR WOMEN

(Belonging to Virudhunagar Hindu Nadars)
An Autonomous Institution Affiliated to Madurai Kamaraj University, Madurai
Re-accredited with 'A' Grade (3rd Cycle) by NAAC
VIRUDHUNAGAR - 626 001

M.Sc. FOOD PROCESSING AND QUALITY CONTROL (SEMESTER)
(2018 -19 onwards)

Semester: I	**PROCESSING OF HORTICULTURAL PRODUCE**	Hours/Week:5	
Core Course-3		Credits: 4	
Course Code **18PFPC13**		Internal 40	External 60

COURSE OUTCOMES

On completion of the course, students will be able to

- know the basic and fundamental aspects of horticulture
- understand the importance and scope of fruit and vegetable preservation.
- acquire the principles and methods of preservation
- gain knowledge about the methods of preparation of juices, squashes, syrups, cordials and fermented beverages.
- develop skills in the preparation of jam, jelly and marmalade

UNIT I

Fruits and Vegetables - Maturity standards and post-harvest physiology

Post-harvest management of fruits and vegetables - handling, cleaning, grading, pre-treatment, waxing, pre-cooling, chilling, packaging and transportation. (15 Hours)

UNIT II

Dehydration – driers, types of driers, principles, methods, techniques, advantages and disadvantages.

Low temperature methods - refrigeration – requirements of refrigerated storage, Freezing - methods, cold storage unit.-purpose and its advantages.

Irradiation – principle –dosage required in horticultural produces - onion and potato.

Canning – principle, method, unit operation, advantages and disadvantages and quality assessment of the products after processing. (15 Hours)

UNIT III

Beverages – classification-soft drinks - carbonated and non-carbonated. Processing of coffee bean, tea leaves and cocoa bean

Fruit Juice – method of extraction – clarification – pasteurization – concentrates

Fruit beverages - RTS, squashes, syrups, sherbet.

Stimulating beverages - types of coffee, tea and cocoa drinks. (15 Hours)

UNIT IV

Processing of Fruits and Vegetables :

Jam, jellies and marmalades – preparation, types of spoilage and its preventive measures.

Preserves and candies – glazed, crystallized candies – preparation.

Pickles and chutneys – preparation, spoilage and its preventive measures.

Tomato products – juice, puree, paste, ketchup, soup and sauces – preparation, spoilage and its preventive measures. (15 Hours)

UNIT V

Spices – processing, storage and preservation of chilly, pepper, cardamom, onion and garlic.

Extraction of essential oils. (15 Hours)

REFERENCE BOOKS

1. Desrosie, N.W. and Desrosier, J.N. (1987) The technology of food preservation, CBS Publishers, Delhi
2. Ranganna.(1997). *Manual of Analysis of Fruits and Products*, Tata McGraw Hill Publications Company, Delhi.
3. Marian, Fields,L.(1997). *Laboratory Manual in Food Preservation* AVI Publishing Company, IWC West Ports Company.
4. NIIR (2006), *The complete technology book on Processing, Dehydration, Canning, Preservation of Fruits and Vegetables*, Kamala nagar, New Delhi.

V.V. VANNIAPERUMAL COLLEGE FOR WOMEN

(Belonging to Virudhunagar Hindu Nadars)
An Autonomous Institution Affiliated to Madurai Kamaraj University, Madurai
Re-accredited with 'A' Grade (3rd Cycle) by NAAC
VIRUDHUNAGAR - 626 001

M.Sc. FOOD PROCESSING AND QUALITY CONTROL (SEMESTER)
(2018 -19 onwards)

Semester: I	**FOOD ANALYSIS LAB**	Hours/Week:5	
Core Practical -1		Credits: 3	
Course Code **18PFPC11P**		Internal 40	External 60

COURSE OUTCOMES

On completion of the course, students will be able to

- understand the basic principles, methods and techniques of qualitative and quantitative analysis of foods.
- understand the basic principles of physical, chemical and biochemical analysis of foods.
- identify the reasons for determining composition and characteristics of food
- recognize the role of food analysis in food standards and regulations for the manufacture and sale of food products

PRACTICAL:

1. Determination of moisture content in foods by different methods.
2. Determination of energy content in foods by using bomb calorimeter.
3. Estimation of reducing sugars in foods.
4. Estimation of pectin in foods.
5. Estimation of fiber content in food sample.
6. Estimation of protein by Kjeldhal/Lawry's method
7. Estimation of crude fat by Soxhlet method.
8. Determination of
   i. Specific gravity of oil.
   ii. Refractive index of oil.
9. Estimation of acid value of fats and oils.
10. Estimation of saponification value of fats and oils.

11. Determination of iodine number of oil.
12. Estimation of ascorbic acid
13. Estimation of thiamine and riboflavin
14. Estimation of β-carotene by Spectrophotometer
15. Estimation of ash content in foods
16. Estimation of sodium
17. Estimation of phosphorus
18. Estimation of iron
19. Estimation of calcium
20. Qualitative analysis of phytochemicals.
21. Demonstration on food analysis using TLC, HPLC and GC.
22. Antioxidant activity of the given food samples.

REFERENCE BOOKS

1. Sadasivam ,S. and Manickam. (2004) *Biochemical Methods*, New Age International Publishers, New Delhi.
2. Sathe A.Y. (1999). *A First Course in Food Analysis*, New Age International (P) Ltd, New Delhi.
3. Ajay Paul.(2012). *Basic and Applied Biochemistry-Apractical Manual*, CCS Hariyana University, Haryana.

V.V. VANNIAPERUMAL COLLEGE FOR WOMEN

(Belonging to Virudhunagar Hindu Nadars)
An Autonomous Institution Affiliated to Madurai Kamaraj University, Madurai
Re-accredited with 'A' Grade (3rd Cycle) by NAAC
VIRUDHUNAGAR - 626 001

M.Sc. FOOD PROCESSING AND QUALITY CONTROL (SEMESTER)
(2018 -19 onwards)

Semester: I	**FOOD PROCESSING LAB –I**	Hours/Week:3	
Core Practical-2		Credits: 2	
Course Code **18PFPC12P**		Internal 40	External 60

PRACTICAL:

1. Tools and equipments used in food processing industries.
2. Market survey of processed cereal and pulse products.
3. Physical characteristics of food grains.
4. Parboiling of paddy.
5. Malting of grains.
6. Puffing and flaking of cereals and pulses.
7. Enzymatic browning in fruits and vegetables.
8. Preservation of fruits and vegetables by brining and syruping.
9. Preparation of concentrates, syrups, sherbet, fresh juices, RTS squashes and wine.
10. Preparation of jams, jelly and marmalades.
11. Preparation of preserves, tuty fruity, bars and candies.
12. Preparation of pickles and chutneys.
13. Preparation of tomato products.
14. Preparation of fruit powders and vegetable powders.
15. Grading and quality evaluation of egg.
16. Preparation of egg-based products-cake, icing and pudding.
17. Effect of processing on the sheep meat (moisture content, color change, shrinkage and sensory quality attributes).

18. Effect of tenderizing agent on meat cookery.
19. Salting and drying of meat.
20. Estimation of salt in food sample.
21. Visit to modern rice mill ,dhal mill, flaking and puffing Mill
22. Visit to slaughter house.
23. Conducting survey on the availability of animal foods in the selected areas
24. Visit to oil mill and flour mill.
25. Visit to cold storage unit.
26. Visit to canning industry-fruits and vegetables.

V.V. VANNIAPERUMAL COLLEGE FOR WOMEN

(Belonging to Virudhunagar Hindu Nadars)
An Autonomous Institution Affiliated to Madurai Kamaraj University, Madurai
Re-accredited with 'A' Grade (3rd Cycle) by NAAC
VIRUDHUNAGAR - 626 001

M.Sc. FOOD PROCESSING AND QUALITY CONTROL (SEMESTER)
(2018 -19 onwards)

Semester: I	**RESEARCH METHODOLOGY AND INSTRUMENTATION**	Hours/Week:6	
Elective Course-1		Credits: 5	
Course Code **18PFPE11**		Internal 40	External 60

COURSE OUTCOMES

On completion of the course, students will be able to

- understand the significance of research methodology in food and nutrition field.
- formulate the basic framework of research process.
- identify the appropriate research topics.

  know the concept of research and report writing.
- understand the principles of various instruments used in food analysis.
- organize and conduct research (advanced project) in a systematic way.

UNIT I

Research- definition, objectives, importance, criteria of good research, types of research and research design, Experimental designs – completely randomized, randomized block design, Latin square design and factorial design.

Collection of data-definition, types - primary data, secondary data (19 Hours)

UNIT II

Hypothesis - definition, characteristics, types, procedure for hypothesis testing. Sampling- definition, advantages and disadvantages, types- random sampling method- simple random sampling, restricted random sampling- systematic random sampling, stratified random sampling, multi stage sampling, Non random sampling-judgement, convenience and quota sampling. (19 Hours)

UNIT III

Report writing - definition, characteristics of good report, types of report, format of a good report and chapterisation, reference, figures, formatting and typing of research report. Plagiarism – meaning and importance (17 Hours)

UNIT IV

Centrifugation - types,pH and pH meter, Colorimeter, Bomb calorimeter, Spectrophotometer, Fluorimeter, Refractometer, FTIR - principle and its applications.(18 Hours)

UNIT V

Chromatography – classification - paper chromatography, TLC, Column chromatography, GC, Liquid chromatography and HPLC- principle and its applications.

(17 Hours)

REFERENCE BOOKS

1. Veer BalaRastogi.(2006*) Fundamentals of Statistics* ,Ane books India, Lucknow.
2. Prem ,S.M.(2004). *Introductionary Statistics*, John wiley, Singapore.
3. Wilkinson, T.S. and Bhandarkar P.L., (1984).*Methodology and Techniques of Social Research*, Himalaya Publishing House, Bombay.
4. Sharma B.A.V., Prasad R.D. and Satyanarayana P.(1985). *Research Methods in Social Sciences*, Sterling Publishers pvt.Ltd.
5. Kothari G.R.,(1990). *Research Methodology Methods and Techniques*, Wiley Eastern Limited, New Delhi.
6. Gurumani,N.(2006). *Research Methodology*, MJP Publishers, Chennai.
7. Meloan,C.E.(1996). *Food Analysis*, CBS Publishers and distributors, New Delhi.
8. Arumugam,N., Gopi,A., Sundaralingam,A. ,Meena,A., and Kumaresan,V. (2010). *Biostatistica Computer Application Bioinformatics and Instrumentation*. Saras Publications, Nagercoil.

V.V. VANNIAPERUMAL COLLEGE FOR WOMEN

(Belonging to Virudhunagar Hindu Nadars)
An Autonomous Institution Affiliated to Madurai Kamaraj University, Madurai
Re-accredited with 'A' Grade (3rd Cycle) by NAAC
VIRUDHUNAGAR - 626 001

M.Sc. FOOD PROCESSING AND QUALITY CONTROL (SEMESTER)
(2018 -19 onwards)

Semester: I	**FATS AND OIL PROCESSING**	Hours/Week:6	
Elective Course-2		Credits: 5	
Course Code **18PFPE12**		Internal 40	External 60

COURSE OUTCOMES

On completion of the course, students will be able to

- acquire systematic knowledge of food processing and technology applied to Fats and Oil.
- gain knowledge of basic principles and procedures in the production of oils and Fat products.
- obtain the basic chemistry of fats and oils with focus in the understanding of the relevance of their physicochemical properties in their functions as ingredients in foods.
- attain the updated knowledge on the nutritional and health benefits of fats and oils.
- recognise the processing techniques and technology used to produce a range of fats and oils products.
- identify the causes and methods to determine chemical changes in fats and oils during storage.

UNIT I

Types of edible oils – sources-oilseeds-oil content-coconut oil, palm oil, peanut oil, rice bran oil, sunflower oil. Physical properties of fats and oils – colour, odour consistency. Chemical properties of fats and oils-Iodine value, saponificationvalue,meltingpoint,free fatty acids.

(17 Hours)

UNIT II

Industrial production of oils-rendering, pressing - cold pressing and hot pressing. Solvent extraction method – milling – extraction – removal and recovery of solvent form miscella – removal and recovery of solvent from extracts residue. Refining oil- methods – coagulation, adsorption, chemical bleaching, alkali refining, passage of steam at high temperature.

(17 Hours)

UNIT III

Winterization of oil, hydrogenation of oil- generation and storage of hydrogen, production and regeneration of catalyst, hydrogenation, deodourization and filteration of the hardened oil. (18 Hours)

UNIT IV

Production of special oils - palmoil, peanut oil.

Production of rice bran oil, soybean oil.

Production of special fats- butter- physical nature of butter, production of butter , storage etc.

Production of Margarine-selection and preparation of fats- partial sterilization, emulsification, chilling, kneading and rolling, incorporation of salt, colouring substances. (19 Hours)

UNIT V

Oil processing machinery-hydraulic press, expeller, oil deodourizing plant, hydrogenator. Changes during storage of oil – rancidity- causes- atmospheric oxidation and enzyme action- free fatty acid- colour.

Non edible oils-castor oil, linseed oil, vegetable waxes- production.Industrial application of fats and oils- soap, candle, paints and varnishes. Packaging and distribution of oils-packaging- hard butter, mayonnaise, peanut butter, shortenings- plasticizing. (19 Hours)

REFERENCE BOOKS

1. Hilditch,T.P.(1943).Industrial Chemistry of the Fats and Waxes. Bailliere, Tindall and cox, London.
2. Krischenbauer,H.G.(1994).Fats and Oils . Reinhold publishing coporation, New York.
3. Weiss,T.J.(1970). Food Oils and their Uses. The AVI publishing company, Connecticut.

V.V. VANNIAPERUMAL COLLEGE FOR WOMEN

(Belonging to Virudhunagar Hindu Nadars)
An Autonomous Institution Affiliated to Madurai Kamaraj University, Madurai
Re-accredited with 'A' Grade (3rd Cycle) by NAAC
VIRUDHUNAGAR - 626 001

M.SC. FOOD PROCESSING AND QUALITY CONTROL (SEMESTER)
(2018 -19 onwards)

Semester: II	**ADVANCED FOOD MICROBIOLOGY**	Hours/Week:5	
Core Course-4		Credits: 4	
Course Code **18PFPC21**		Internal 40	External 60

COURSE OUTCOMES

On completion of the course, students will be able to

- gain knowledge over the contributions made to the science of microbiology over the centuries.
- realize the beneficial role of microbes in human health and food industries.
- think critically about the problems and issues concerning harmful microorganisms in food.
- recognize the symptoms, epidemiology and pathogenesis of food borne pathogens.
- understand the role of micro-organisms in food spoilage and advanced techniques used in food preservation.
- apprehend the principles of fermentation and its applications.
- know the importance of food hygiene to safeguard the microbial quality of food.

UNIT I

Microbiology - definition and scope, History-spontaneous generation and golden age of microbiology.

Types of microbes- based on nutrition, temperature and oxygen requirement. Growth curve of microbes.

Microbiological methods – isolation, sterilization-Heat, filtration, radiation and chemicals.Maintenance and preservation of cultures. (15 Hours)

UNIT II

Food Microbiology – food spoilage.Sources of food contamination, factors affecting the growth of microorganisms in food, causes of food spoilage. Spoilage of different foods- cereals and cereal products, vegetables and fruits, milk and milk products, fish and sea foods, meat and meat products , poultry and poultry products, canned foods, control of food spoilage. Microbiological analysis of foods – Direct examination, enumeration method, alternative methods and rapid methods. (15 Hours)

UNIT III

Fermentation – definition, advantages, factors affecting fermentation, fermented products - wine, beer, vinegar, cheese and traditional fermented products.

Probiotics- meaning, characteristics and role of probiotics, prebiotics and symbiotics in human health (15 Hours)

UNIT IV

Food borne diseases – bacterial food borne diseases - staphylococcal poisoning, Bacillus cereus poisoning, Botulism, Salmonellosis, Shigellosis. Non-bacterial food borne diseases - Aflatoxicosis, Ergotism .Investigation of food borne disease out breaks and preventive measures. (15 Hours)

UNIT V

Food sanitation and hygiene - personal hygiene.Bacteriology of water supplies – drinking water, plant water.Storage and disposal of waste- solid waste, liquid waste / sewage, gaseous waste.Sanitation in food processing industries. (15 Hours)

REFERENCE BOOKS

1. Frazier,W.C. and Westhoff,D.C. (1998). *Food Microbiology,* McGraw Hill Inc. New Delhi.
2. Roday S.(1999). *Food Hygiene and Sanitation,* Tata McGraw Hill, New Delhi.
3. Atlas,M. and Ronald.(1995). *Principles of Microbiology*, 1st Ed. Mosby – year book Inc. Missouri, USA.
4. James ,M. (2000). *Modern Food Microbiology,* Aspen Publishers, Maryland.

5. Adams, M.R. and Moss M.G.(1995). *Food Microbiology*, New Age International Private Ltd., New Delhi.
6. Ananthanarayanan,R. and Panicke,C.K.(2009). *Text book of Microbiology*,Universities Press (India) Pvt ltd, Hyderabad.
7. Sugandharbabu (2008).*Food Microbiology*,Adhyayan Publishers, New Delhi.
8. Sharma ,P.D.(2001). *Microbiology*,Rastogi Publication, New Delhi.
9. Prescott and Dunn (2004). *Industrial Microbiology*, CBS Publishers, Delhi.
10. N.Khetarpaul and SudeshJood (2003). *Food Microbiology*. Agrotech Publishing Academy, Udaipur.

V.V. VANNIAPERUMAL COLLEGE FOR WOMEN

(Belonging to Virudhunagar Hindu Nadars)
An Autonomous Institution Affiliated to Madurai Kamaraj University, Madurai
Re-accredited with 'A' Grade (3rd Cycle) by NAAC
VIRUDHUNAGAR - 626 001

M.Sc. FOOD PROCESSING AND QUALITY CONTROL (SEMESTER)
(2018 -19 onwards)

Semester: II	**ANIMAL FOOD PROCESSING**	Hours/Week:5	
Core Course-5		Credits: 4	
Course Code **18PFPC22**		Internal 40	External 60

COURSE OUTCOMES

On completion of the course, students will be able to

- understand the classification and composition of milk, meat, poultry and fish.
- know the preparation methods of different types of products from meat, poultry and fish.
- obtain the importance of hygiene and sanitation in a slaughter house.
- realize the potential uses of various by-products of meat and poultry processing.
- understand the factors affecting the keeping quality of milk, meat, poultry and eggs.
- gain knowledge in the storage of meat, poultry, milk and fish.

UNIT I

Composition of milk- physico -chemical properties of milk, processing of milk- collection, chilling plants, milk reception, plat form test, bacteriological quality of milk, milk standardization, homogenization, pasteurization, sterilization and packaging.

Special milk- skim milk, toned milk, reconstituted milk, recombined milk and condensed milk

(15 Hours)

UNIT II

Fish-classification, composition and nutritive value, selection of fresh fish, factors affecting quality of fresh fish, post mortem changes and assessment of quality of fish -sensory, bio- chemical and biological method.

Fish products- fish protein concentrate, fish flour, surmi, fish isolate, texturised meat from fish and fish sausage. Packaging of fish and fish products. (15 Hours)

UNIT III

Meat-structure and composition, classification, cuts and grade of meat, post mortem changes in meat - rigor mortis, ageing of meat. Poultry-classification and processing

Fresh meat and chicken - quality - tenderness, juiciness, flavour, colour, pH, WHC, factors affecting keeping quality.

Meat products- bacon, ham, sausages, barbeque, corned beef, salami, luncheon meat,

Chicken products- canned chicken (15 Hours)

UNIT IV

Egg- structure, quality of egg, egg foams, egg products - dehydrated egg powder and frozen eggs, egg foam products-meringues, soufflés

Slaughter house-hygiene and sanitation, utilization of slaughter house

By-products - importance, benefits and disposal. (15 Hours)

UNIT V

Poultry, meat and fish preservation – chilling, freezing, curing, smoking, salting, dehydration, canning and irradiation

Egg preservation - cold storage, oil treatment, thermostabilization and immersion in liquids.

Milk – preservation of milk. (15 Hours)

REFERENCE BOOKS

1. Farral,W.(2004*). Engineering for Dairy and Food Products,*Rekridges Publishing co., USA.
2. IbraheemKutty,C. and Sheebakhamer.(2006). *Milk Production and Processing*, Daya Publishing House, Delhi.
3. Ajay Kappore(2004).*Milk and its Products*, Vishvabharti Publications, New Delhi.
4. NIIR Board (2006). *Modern Technology of Milk Processing and Dairy Products*, National Institute of Industrial Research, New Delhi.

5. David,J.(2004). *Technological Advances in Indigenous Milk Products*, KitapMahal, Allagabad.
6. Sen,D.(2005). *Advances in Fish Processing Technology*, Allied Publishers, Delhi
7. NIIR Board (2006). *Preservation of Meat and Poultry Products*, Asia pacific business press,Delhi.
8. Winton and Winton (2003). *Poultry Eggs*, Agrobios, Jodhpur.
9. Winton and Winton (2000).*Fish and Fish Products*, Agrobios, Jodhpur.
10. Pearson,A.M and Gillett,T.A.(2003). *Processed Meats*, CBS Publishers and distributors, Delhi.
11. Richard,R.I. and Mead,G.C.(2005).*Poultry Meat Science*, Research co book centre, Delhi.
12. Alan R.Sams(2001).*Poultry Meat Processing*, CRC press, Noida.

V.V. VANNIAPERUMAL COLLEGE FOR WOMEN

(Belonging to Virudhunagar Hindu Nadars)
An Autonomous Institution Affiliated to Madurai Kamaraj University, Madurai
Re-accredited with 'A' Grade (3rd Cycle) by NAAC
VIRUDHUNAGAR - 626 001

M.Sc. FOOD PROCESSING AND QUALITY CONTROL (SEMESTER)
(2018 -19 onwards)

Semester: II	**BAKERY AND CONFECTIONERY**	Hours/Week:6	
Core Course-6		Credits: 5	
Course Code **18PFPC23**		Internal 40	External 60

COURSE OUTCOMES

On completion of the course, students will be able to

- acquire the skills in various baking processes.
- get familiarized with the various kinds of ingredients used in baking.
- attain the working knowledge of the equipments needed.
- generate employment potential in the field of baking and confectionery.
- understand the concepts in baking theory and methodology through hands-on development and sensory analysis.
- attain advanced classical and contemporary pastry and confectionery techniques in the planning, development, execution, and evaluation of products, menus, and creative presentations.

UNIT I

Baking –definition and principles

Role of Ingredients: Flour –types , composition, role of constituents, functions and quality assessment.

Leavening agents, methods of leavening, Yeast – types, functions and its effects on fermentation and other leavening agents.

Eggs – composition, functions in bakery and confectionery.

Sugar – types and uses.

Fats – composition, classification and functions.

Moistening agents - milk and water

Emulsifiers, dried fruits and enzymes. (20 Hours)

UNIT II

Major and minor equipments used in bakery.

Baking process - mixing, fermentation, proofing and baking.

Formula construction and computation of yeast raised products

Bread-Methods of making bread, characteristics of bread, bread faults and their causes, rope and mold, staling of bread, procedure for testing gluten and yeast. (17 Hours)

UNIT III

Methods of preparation of cakes, biscuits, cookies-faults and their causes. (18 Hours)

UNIT IV

Icing-types of icing

Preparation of pizza and burger

Pastries-types, ingredients, methods of preparing pastries, faults and their causes in each pastry. (15 Hours)

UNIT V

Confectionery – Ingredients used – sugar boiled confectionery – chocolate confectionery – traditional Indian confectionaries and other products – quality evaluation – packaging.

(20 Hours)

REFERENCE BOOKS

1. Yogambal (2008). *Baking and confectionary,* visiga Publication, TamilNadu
2. Smith,W.H. (1972). *Biscuit, Crackers and Cookies* vol. 1, Technology, Production and Management, Applied Science Publishers Ltd, Essex, England.
3. Hanneman, L.J.(1987) Bakery - Flour Confectionery, William Heinemann Ltd, London, England.
4. Herisssse. E. and Herman Senn. C(1973) Pastry Making and Confectionery, Warlock and Co London.
5. Beenion and Bambord (1973).*The Technology of Cake making,* Leonard Hill Book Bucks, UK.
6. Pomeranz, Y. (1988). *Wheat Chemistry and Technology*, Vol I &II AmericanAssn of Cereal chemists 3rd Ed. St.Paul Minnesota, USA.
7. Malik R.K. and Dhingara K.C. (1981). *Technology of Bakery Products, Modern Bakery Industries.* Small Industry Research Institute, New Delhi.

V.V. VANNIAPERUMAL COLLEGE FOR WOMEN

(Belonging to Virudhunagar Hindu Nadars)
An Autonomous Institution Affiliated to Madurai Kamaraj University, Madurai
Re-accredited with 'A' Grade (3rd Cycle) by NAAC
VIRUDHUNAGAR - 626 001

M.Sc. FOOD PROCESSING AND QUALITY CONTROL (SEMESTER)
(2018 -19 onwards)

Semester: II	**FOOD MICROBIOLOGY LAB**	Hours/Week:5	
Core Practical-3		Credits: 3	
Course Code **18PFPC21P**		Internal 40	External 60

COURSE OUTCOMES

On completion of the course, students will be able to

- operate all equipments in the food microbiology laboratory.
- understand the different important microbiological examination necessary for each food product.
- isolate and characterize microorganisms associated with different foods.

PRACTICAL:

1. Personal protection and conduct in microbiology laboratory.
2. Functioning and usage of various microbial equipments.
3. Microscopy- principles, use and maintenance.
4. Principle and methods of sterilization techniques.
5. Preparation of media for bacteria.
6. Preparation of selective and differential media.
7. Preparation of culture media for yeasts and moulds.
8. Isolation of pure cultures
    i) Pour plate technique
    ii) Spread plate technique
    iii) Streak plate technique.
9. Motility determination of bacteria by hanging drop technique.
10. Enumeration of bacteria by Plate count method and haemocytometer.

11. Direct microscopic observation of bacterial shape – cocci, rods, chains, fungal spores – mycelium, yeast budding.
12. Staining techniques – simple, negative, gram's, spore, capsule, lacto phenol cotton blue, fungal slide culture.
13. Biochemical tests: - carbohydrate fermentation, IMViC test, hydrolysis of starch, cellulose, gelatin, casein, catalase test, oxidase test, urease test, nitrate reduction.
14. Microbial analysis of food sample- soft drinks, ice creams, pickles, bread and meat samples.
15. Isolation and identification of microbes from fruits and vegetables.
16. Analysis of microbial load in food processing equipments.
17. Determination of the quality of milk sample by methylene blue reductase test.
18. Standard quality analysis of water sample.
    a) Presumptive test
    b) Confirmative test
    c) Completed test
19. Antibiotic activity of the given food samples
    a) Disk diffusion method
    b) Well diffusion method.

REFERENCE BOOKS

1. Gunasekaran, P. (2005*). Laboratory Manual in Microbiology*, New Age International (P) Limited Publishers, New Delhi.
2. Arora and Arora ,D.R. (2007). *Practical Microbiology,* CBS Publishers, New Delhi.
3. Kalaiselvan,P.T.(2006). *Microbiology and Biotechnology a Laboratory manual*, MJP Publishers, Tamilnadu.
4. Rajan,S. and SelviChristy,R. (2011).*Experimental Procedures in Life Sciences*, Anjanaa book house, Chennai.

V.V. VANNIAPERUMAL COLLEGE FOR WOMEN

(Belonging to Virudhunagar Hindu Nadars)
An Autonomous Institution Affiliated to Madurai Kamaraj University, Madurai
Re-accredited with 'A' Grade (3rd Cycle) by NAAC
VIRUDHUNAGAR - 626 001

M.SC. FOOD PROCESSING AND QUALITY CONTROL (SEMESTER)
(2018 -19 onwards)

Semester: II	**FOOD PROCESSING LAB - II**	Hours/Week:3	
Core Practical -4		Credits: 2	
Course Code **18PFPC22P**		Internal 40	External 60

PRACTICAL:

1. Equipments used in the marine and dairy industry – quantity and volume equivalence of household measures.
2. Preparation of flavoured milk (synthetic and natural), milk based fruit juice blended RTS.
3. Processing of different types of ice creams, khoa, puddings and custard
4. Pickling of fish.
5. Salting and drying of fish
6. Preparation of Partially Hydrolyzed and Deodorized Fish Powder (PHD)
7. Preparation of extruded fish products.
8. Preparation of different types of biscuits.
9. Preparation of pastries, puffs, danish pastries, flaky pastries and their quality parameters.
10. Preparation of cakes – plain cake, sponge cake and cup cake.
11. Preparation of special variety cakes, icings, creams and their quality parameters.
12. Preparation of bread using different dough.
13. Preparation of bread rolls, preparation of pancakes, pizza and burger.
14. Preparation of pie, tarts and doughnuts.
15. Sugar cookery: hard ball stage for brittles (eg: Peanut Chikki) soft ball stage (eg: tilladdos), recrystallisation of sugar from syrup (eg: Channamurgi, sugar – coated sweets) Fondants and Fudge.
16. Indian sweets – milk / khoa based burfis, gulabjamun, paneerandrasagulla, flour based – Jalebi, Pulse based – besanladdo, boondiladoo and mysore Pak.

17. Preparation of chocolate
18. Preparation of macroons and coconut burfi.

Visit to Bakery Unit, Dairy and Marine Industries.

V.V. VANNIAPERUMAL COLLEGE FOR WOMEN

(Belonging to Virudhunagar Hindu Nadars)
An Autonomous Institution Affiliated to Madurai Kamaraj University, Madurai
Re-accredited with 'A' Grade (3rd Cycle) by NAAC
VIRUDHUNAGAR - 626 001

M.SC. FOOD PROCESSING AND QUALITY CONTROL (SEMESTER)
(2018 -19 onwards)

Semester: II	**DIETETICS**	Hours/Week:6	
DSEC -2		Credits: 5	
Course Code **18PFPE21**		Internal 40	External 60

COURSE OUTCOMES

On completion of the course, students will be able to

- understand the role of dietitian.
- gain knowledge on the principles of diet therapy and different therapeutic diets
- develop aptitude for taking up dietetics as a profession
- understand the modifications in nutrient requirements for various diseases.
- develop skills in planning and preparation of therapeutic diets for various diseases.
- gain skill in qualitative tests and quantitative estimation of nutrients.
- plan therapeutic diets.
- learn skills in the preparation of therapeutic diets.
- develop capacity for taking up dietetics as a profession

UNIT I

Introduction and concept of therapeutic nutrition, health and its Dimension (Physical, psychological, emotional, spiritual)

Importance of Meal Planning, Factors affecting Meal Planning.

Characteristics and role of dietitians and IDA.

Diet Therapy-, Principles, classification, modification of normal diet for the therapeutic purposes. (17 Hours)

UNIT II

Energy imbalance- obesity and underweight-etiology, types and dietary management. Diabetes Mellitus-etiology, types, clinical signs and symptoms, diagnosis, dietary management.

Febrile conditions – Influenza, malaria, tuberculosis, typhoid- etiology, signs and symptoms, metabolic changes during fever, and dietary management. (19 Hours)

UNIT III

Gastro-intestinal diseases- Peptic ulcer, constipation, diarrhoea, dysentry, inflammatory bowel syndrome, lactose intolerance, ulcerative colites, diverticulosis, celiacdisease and hernia-etiology, signs and symptoms, diagnosis and dietary management.

Liver diseases- Jaundice, hepatitis, cirrhosis, hepatic coma, cholelithiasis and pancreatitis-etiology, signs and symptoms, diagnosis and dietary management.

(18 Hours)

UNIT IV

Cardiovascular diseases- Atherosclerosis- risk factors, signs and symptoms, role of fat in the development of atherosclerosis and dietary management.

Hypertension- causes, types, symptoms and dietary management

Kidney and urinary tract diseases- Nephritis, nephrosis, acute and chronic renal failure, renal stones - etiology, signs and symptoms and dietary management.

Dialysis-principles and types. (19 Hours)

UNIT V

Food allergy –classification, clinical manifestation, common food allergies, tests for allergy and dietary management.

Burns, cancer and AIDS- etiology, clinical signs and symptoms and dietary management.

(17 Hours)

REFERENCE BOOKS

1. Srilakshmi B (2013) Dietetics, New Age International publishers, New Delhi.
2. Krause M.V and mahan L.K.(2012), Food, Nutrition and Diet Therapy, Alan R Liss Saunders Co., London.
3. Passmore R and Davidson S (1988) Human Nutrition and Dietetics, Living stone Publishers.
4. Robinson C.H., Lawler M.R, and Chenoweth, W.L,(1986). Normal and Therapeutic Nutrition, Macmillan Publishing Company, New York.
5. Shils, M.E., Olson, J.A., Shike, M E (1994). Modern Nutrition in Health and Disease, Lea and Febiger – A Waverly Company.

V.V. VANNIAPERUMAL COLLEGE FOR WOMEN

(Belonging to Virudhunagar Hindu Nadars)
An Autonomous Institution Affiliated to Madurai Kamaraj University, Madurai
Re-accredited with 'A' Grade (3rd Cycle) by NAAC
VIRUDHUNAGAR - 626 001

M.Sc. FOOD PROCESSING AND QUALITY CONTROL (SEMESTER)
(2018 -19 onwards)

Semester: II	**FOOD SERVICE MANAGEMENT**	Hours/Week:6	
DSEC-2		Credits: 5	
Course Code **18PFPE22**		Internal 40	External 60

COURSE OUTCOMES

On completion of the course, students will be able to

- gain knowledge on the quantity food production and various types of food service.
- develop skills in organizing and managing food service institutions.
- develop skills in handling equipments and maintenance
- develop skills in menu planning for quality food preparation
- understand the methods of calculating the food cost.
- understand the importance of sanitation and hygiene in food service institutions.

UNIT I

Management and Organisation

Food service establishment - history of development, types - commercial and non-commercial food service establishment .

Food service management- functions, tools of management.

Personnel management - staffing, recruitment and selection, induction, training and supervision.

(17 Hours)

UNIT II

Physical Plant and Equipment

Food plants - principles of plant layout, features of good layout and advantages of a good layout.

Kitchen - location, layout, work centres, lighting and ventilation.

Storage space – location, types and layout.

Service area-location, planning, service areas and layout.

Equipment- classification, selection, care and maintenance. (17 Hours)

UNIT III

Quantity Food Production and Services

Food - Purchasing, receiving, storing and issuing of foods.

Menu planning – meaning, types, points to be considered while planning the menu , construction of menu, standardisation of recipes, recipe adjustment, file and formats, Portion control and effective use of left over. Styles of food service (18 Hours)

UNIT IV

Financial Management

Pricing – definition, factors affecting pricing, pricing policy, method of pricing.

Costing - cost control, cost calculation, Break - Even analysis, standard dish costing.

Budget - advantages, steps in budget planning, preparation and types.

Accounting - types, books of account, trial balance, profit and loss account, balance sheet.

(19 Hours)

UNIT V

Sanitation and Safety

Sanitation and Hygiene – food hygiene, personnel hygiene, environmental hygiene.

Safety - accident - prevention and training, HACCP.

Laws and Regulations governing food service establishment. (19 Hours)

TEXT BOOKS

1. Mohinisethi and Surjeetmalhan.(1993). *Catering management and Integrated Approach,*Wiley Eastern Ltd., New Delhi.
2. Suganthi and Premakumari. (2017). *Food service Management,* Dipti press PVT Ltd., Chennai.

REFERENCE BOOKS

1. Malhotra R.K.(1998) .*Food service Management,*Anmol Publishers, New Delhi
2. Bobby George and SandeepChatterjee (2008). *Food and Beverage service Management*, Jaico publishing house, Chennai.
3. Brian Varghese (1999). *Professional food and Beverage Service Management*, Rajiv Beri for Macmillan India Ltd., Chennai.