MANONMANIAM SUNDARANAR UNIVERSITY,

TIRUNELVELI

UG COURSES – AFFILIATED COLLEGES 2021-2022

B.Sc. FOOD SCIENCE & NUTRITION

(Choice Based Credit System)

Sem	Pt. (2)	Sub No. (3)	Subject Status (4)	Subject Title(5)	Contact Hrs/ Week (6)	L (7)	T (8)	P (9)	C (10)
I	I	1	Language	Tamil/Other Language	6	6	0	0	4
	II	2	Language	Communicative English	6	6	0	0	4
	III	3	Core -1	Food Science	4	4	0	0	4
	III	4	Major Practical - I	Food Science	2	0	0	2	2
	V	5	Add on Major (Mandatory)	Professional English for life Sciences - I	4	4	0	0	4
	III	6	Allied - I	Human Physiology	4	3	0	0	3
	III	7	Allied Practical - I	Human physiology Practical	2	0	0	2	2
	IV	8	Common	Environmental Studies	2	2	0	0	2
	Subtotal				30				29
II	I	9	Language	Tamil/Other Language	6	6	0	0	4
	II	10	Language	English	6	6	0	0	4
	III	11	Core-3	Public Health Community Nutrition	5	4	0	0	4
	V	12	Add on Major (Mandatory	Professional English for life Sciences – II)	4	4	0	0	4

	III	**13**	**Allied - II**	**Human Development**	**5**	**3**	**0**	**0**	**3**
	III	**14**	**Allied Practical - II**	**Human Development**	**2**	**0**	**0**	**2**	**2**
	IV	**15**	**Common**	**Value Based Education money**	**2**	**2**	**0**	**0**	**2**
				Subtotal	**30**				**29**

L: Lecture **T**:Tutorials **P:**Practical's

I. Objectives

1. The curriculum offers robust academic and experiential opportunities across the health spectrum to address the health of individuals and populations from prevention to palliation.
2. To divulge theoretical understanding and practical skills that reinforces the various arenas of Food Science and Nutrition.
3. The course is aimed to enable students to gain knowledge about interaction between food, body and health under normal and special circumstances.

4. This course will enable students to use current information technologies to locate and apply evidence-based guidelines and protocols and get imparted with critical thinking to take leadership roles in fields of health, dietetics, special nutritional needs and nutritional counselling. Currently food industry is shifting its focus from taste to nutrition.
5. To expedite the undergraduates of Food Science and Nutrition to pursue higher studies which in turn offer career opportunities and research quests.
6. To apply the skills and knowledge gained through the subject to real life situations and face competitive examinations with self-confidence at National level.

II. Eligibility for Admission

The minimum eligibility conditions for admission to the **B.Sc Food Science and Nutrition** program are given below.

The candidates for admission of the **B.Sc Food Science and Nutrition** course will be required to have qualified the Higher Secondary Examination conducted by the Board of Higher Secondary Education, Government of TamilNadu or any other Examinations accepted by the syndicate of the ManonmaniamSundaranar University as equivalent there to in Science subject.

The candidate should have completed Higher Secondary (+2) with any of the three combinations of subjects Physics/ Chemistry/ Biology/ Home Science/ Mathematics/ Computer Science.

III. Duration of the Course

The students shall undergo the prescribed course of study for a period of not less than three academic years (Six semesters). The semester contains 90 working days.

IV. Elective Subject

One among the two given subjects will be selected.

V. Extension Program for the Department

- Apart from the curriculum, to enrich the skill development of the students following courses in their premises are conducted.
- Effective Communication Personality development Youth development.

VI. Internal Assessment

There is a separate passing minimum for the external and overall components.

Distribution of marks between External and Internal Assessment is

- ✶ For Theory 75 :25
- ✶ For Practical 50 :50

Pass minimum of 40% for external and overall components.

Internal Marks for **Theory** shall be allotted in the following:

The average of the best two from three compulsory tests. Each test is of one hour duration	20 Marks
Assignment	05 Marks
Total	**25 Marks**

Distribution of marks between External and Internal Assessment for Skill Based Elective - 75 :25.

The average of the best two from three compulsory tests. Each test is of one hour duration	20 Marks
Assignment	05 Marks
Total	**25 Marks**

Internal Marks for **Practical** shall be allotted in the following manner

Experimental Work	25 Marks
Regularity	25 Marks
Total	**50 Marks**

VII. Grading System

The performance of the students is indicated by the seven point scale grading system as per the UGC norms given below.

Grade	Grade Point	Percentage of Marks	Performance
O	9.5 and above	95 – 100	Outstanding
E	8.5 and above	85 – 94	Excellent
D	7.5 and above	75 – 84	Distinction
A	6.0 and above	60 – 74	Very Good
B	5.0 and above	50 – 59	Good
C	4.0 and above	40 – 49	Average
RA	0	Up to 39	Re-Appear

The overall performance level of the candidates will be assessed by the following formula :

Cumulative weighted average of marks = $\frac{\sum \text{Marks} \times \text{Credits}}{\sum \text{Credits}}$

Cumulative weighted average Grade Points = $\frac{\sum \text{Grade Point} \times \text{Credits}}{\sum \text{Credits}}$

VIII. Question Pattern

Section	Type of Question	No. of Question	Marks
Part A	Objective Type Questions (Two questions from each unit)	5 x 2 = 10	10 x1= 10
Part B	Internal Choice Questions (One question from each unit)	5 x 1 = 5	5 x 5 = 25
Part C	Internal Choice Questions (One question from each unit)	5 x 1 = 5	5 x 8 = 40
	Total		**75 Marks**

Programme Outcome, Programme Specific Outcome

Department of Home Science	After successful completion of three years degree program in B.Sc. (Food Science and Nutrition)

Programme Outcomes	PO1- Developed problem-solving competencies in life skills PO2- Understood the role of interdisciplinary sciences in the development of individual, families and communities PO3-Enhanced the application of science and technologies in quality of life of individual PO4- Acquired professional and entrepreneurial skills for Economic empowerment of self in particular and community in general PO5- Trained students in professional skills PO6- Developed professional skills in foods and nutrition, textiles Science, housing, product making, communication technologies and human development PO7- Adopted and transfer the scientific innovations from lab to the community

Programme Specific Outcome	PSO1- Understood the concepts of different areas of home science PSO2- Produced knowledgeable and skilled human resources which is employable in food industries, hospitals and textile industries PSO3-Comprehended the current techniques in foods and nutrition PSO4- Produced entrepreneurs who developed customized solutions for small and medium Enterprises

I Semester

MSU/2021-22 /UG-Colleges/Part-III (B.Sc. Food Science & Nutrition) / Semester – I

Core -1

FOOD SCIENCE

Objectives:

- To obtain knowledge of different food groups and their nutritional value
- To gain experience in the preparation of foods

Unit I

Introduction to Foods:

a) Definition –food, food science, food additives, food technology, food fortification, phytochemicals, food safety and regulations, antioxidants
b) Nutrients present in foods
c) Nutritional classification of foods
d) Need for grouping foods and Basic food groups-basic four and basic five

Unit II

Food preparation techniques

a) Preliminary techniques
b) Different methods of cooking and their influence on nutritive value.

Improving Nutritional Quality of foods

c) Germination, Fermentation, Supplementation, Fortification and enrichment.

Unit III

Cereals, pulses, nuts and oil seeds:

a) Cereals : rice, wheat – structure, milling, parboiling, by products, nutritive value and changes in nutritive value during cooking, role in cookery
b) Pulses – nutritive value, milling, germination, role in cookery
c) Nuts and Oil seeds – Nutritive value and its importance in the diet

Unit IV

Fruits, vegetables, beverages, spices and condiments

a) Fruits – classification based on pigments, ripening of fruits, serving of fruits, nutritive value
b) Vegetables – Classification according to structure, selection, loss of nutrients during cooking, effect of cooking on pigments, nutritive value, effect of heat, acid and alkali, role in cookery
c) Beverages – Classification and their role in the diet
d) Spices and condiments – uses and abuses

Unit V

Animal Foods:

a) Milk and milk products – nutritive value, types of milk, role of milk and milk products in cookery
b) Flesh Foods: Meat, Fish and Poultry –classification, nutritive value – methods of cooking
c) Egg: Structure, composition, testing the quality, role in cookery

References:

1. Dr. M. Swaminathan., Advanced Text – Book on Food & Nutrition, Bappco, Bangalore 2015
2. N. ShakuntalaManay, M. ShadaksharaSwamy, Foods Facts and Principles, New age International (P) Ltd., Publishers Second Edition, 2008
3. SeemaYadav, Basic Principles of Nutrition, Anmol Publication PVT Ltd., First Edition 1997
4. B. Srilakshmi., Food Science, New age International (P) Ltd., 2015
5. Vijay Kaushik, Food Science and Nutrition, Mangal Deep Publications,2000
6. MeeraVashisht, Introduction to Food, Nutrition and Food Processing, Anmol Publications Pvt. Ltd,1998
7. S.R. Sharma Vijay Kaushik, Food Nutrition and Cookery, Anmol Publications Pvt. Ltd,1994

MSU/2021-22/UG-Colleges/Part-III (B.Sc. Food Science & Nutrition) Semester - I / Major Practical - I

FOOD SCIENCE

Objectives:

1. To acquire skills in food preparation techniques
2. To use appropriate methods of cooking for preparation of specific food products

a) Display of basic five food groups

b) Preparation with fruits (Stages of Sugary products)

c) Preparation of vegetables (Soups use of salt)

d) Preparation of dishes with meat, fish and poultry

e) Preparation with egg.(Evaluation of Egg quality)

f) Preparation with milk.

g) Preparation of beverages

MSU/2021-22/UG-Colleges/Part-III (B.Sc. Food Science & Nutrition) / Semester - I

Allied -1

HUMAN PHYSIOLOGY

Objectives:

- To understand the structure and physiology of various organs in the body
- To identify the physiological process applicable to human nutrition

Unit I

Principles of Physiology and Cell

a) Objectives and Principles of Physiology

b) Cell and Tissue - Cell structure and functions of epithelial, connective, muscular and nervous tissue

c) Structure and function of skin

d) Regulation of temperature of the body.

Unit II

Gastrointestinal system and Reproductive System

a) Structure and Functions of various organs of the GI Tract

b) Digestion and Absorption of food and the role of enzymes and hormones.

c) Structure and functions of sex glands and organs including hormones.

d) Menstrual Cycle. Physiology of Pregnancy, Parturition, Lactation and Menopause.

Unit III

Circulatory system:

a) Blood – Composition, functions, blood groups – RH factors- Blood coagulation
b) Heart – Structure and Function of heart.
c) Blood vessels – structure of artery, vein, capillaries, cardiac cycle, and blood circulation.
d) Heart rate, Cardiac output, Blood Pressure and its regulation.

Unit IV

Respiratory System

a) Structure of lungs.
b) Mechanism of respiration and its regulations
c) Transport of Gases in human bodily fluids (O2 and CO2 transport in blood)
d) Vital capacity and other lungs volumes.
e) Muscular exercise.

Unit V

Excretory System and Nervous System

a) Structure and function of kidney, bladder, formation of urine, role of kidney in homeostasis.
b) Elementary Anatomy of Nervous System
c) Function of different parts of the brain
d) Special Senses - Structure and functions of Sensory organs - Eyes, Nose, Tongue, Ear and Skin.

HUMAN PHYSIOLOGY PRACTICALS

a. Histology of Tissue(Connective, Epithelial, Muscular and Nervous Tissue) and Organ (Brain, Lung, Heart and Kidney)
b. Estimation of Hemoglobin
c. Determination of blood groups
d. Determination of Rh factor
e. Determination of Blood Pressure
f. Identification of SpO2

II Semester

MSU/2021-22/UG-Colleges/Part-III

(B.Sc. Food Science & Nutrition) / Major/ Semester - II / Core - 2

PUBLIC HEALTH AND COMMUNITY NUTRITION

Objectives:

- To understand the basic concepts, principles, components and importance of health.
- To obtain knowledge about various diseases and control measures
- To understand the ongoing community nutrition programmes

Unit I

Concept and Scope of Community Nutrition

a) Concept, objectives, scope, Principles of Community Nutrition

b) Health care definition and types

c) Multiple causes of public nutrition problems.

Unit II

Nutritional Problems of the Community and implications for public Health

a) PEM

b) Nutritional Anemia

c) Micro nutrient deficiencies (Vit A, Iodine and Fluorosis)

Unit III

Methods of assessment of Nutritional status

a) Sampling Technique

b) Direct assessment – Diet survey, anthropometry, clinical and biochemical estimation.

c) Indirect assessment -Food balance sheet, Agricultural data, Ecological parameter and vital statistics, use of growth chart.

Unit IV

Nutrition Education

a) Meaning and Scope, Objectives of Nutrition education
b) Methods, importance, Functions of Nutrition education
c) Nutrition education Programme

Unit V

National and International Organizations in uplifting the nutritional Status

ICDS, Noon meal programme, IDDM, ICMR, ICAR, CFTRI, NIN, WHO, FAO, UNICEF, CARE, CSIR.

REFERENCES:

1. Park J.E. and Park K.K. "Preventive and Social medicine", Bannar, SidasBhanot and company Ltd, India1 2017.
2. Rao and Bhat, 1997, Food Safety, Bappcopublishers,Bangalore.
3. Bamji, Textbook of Human Nutrition, Oxford publishers, NewDelhi, 2019.

MSU/2021-22/UG-Colleges/Part-III (B.Sc. Food Science & Nutrition) Semester II/ Core - 4

HUMAN DEVELOPMENT

Objectives:

To enable students

- Understand the philosophy and aims of pre-school education and its value to children, parents and community
- Gain practical experience by observation and participation in the pre-school
- Understand the growth development of the child during the period 6-12 years and study his needs during this period
- Gain knowledge of the needs, interest and problems of the adolescent, relation to the family, friends, peers and community

Unit I

Fundamentals of growth and development

a) The principle of Growth and development.

b) Factors that influence the development

c) Methods of child study with special emphasis on case study and observation methods

Unit II

Period of Prenatal and Infancy

a) Stages of prenatal development, conditions affecting prenatal development

b) Conditions affecting prenatal development and hazards during prenatal development

c) Appearance, size and proportion of newborn, Physical care and daily routine; Feeding – natural and artificial, bathing, clothing and sleeping.

d) Health and Hygiene, Behavioral patterns

Unit III

Early and Late Childhood Period

a) Physical and motor growth
b) Language and intellectual development
c) Emotional and social development
d) Needs and interest of the schoolchild Habits and Habit formation

Unit IV

Adolescence

a) Definition, different views regarding the period
b) Physical Development – puberty, growth spurt, primary and secondary sex Characteristics, early and late maturing adolescents.
c) Identify – Definition, body image, positive and negative outcomes (role confusion, ego identity)
d) Peers and Heterosexual relationship- importance, age of occurrence, patterns of friendship
e) Problems- drug and alcohol abuse, Delinquency.

Unit V

Period of Senescence

a) Definition, physiological changes, health problems and cognitive and memory changes.
b) Retirement- effect of retirement on self, family, society, financial problems faced
c) Personality characteristics of old age factor in ageing.
d) Social family factors, attitudes towards the aged, old age and friendship
e) Interests- recreational interest of the aged.

Reference:

- Breakenridge, M.E. & Vincent, E.Lee – Child Development, W.B. Saunders & CO., 1956.
- Hurlock, E.B. Child Development, Mcgraw Hill Co., New York 2017
- Breakenridge: Mariaan. E. Murphy : Margaret Neatitt – Growth and Development of the young child W.D. Saunders & Co., Phildelphia:1958.
- Read, K.H. The nursery school, W.B. Saunders & Co.,1955.
- Crow and Cros – Adolescent Development and Adjustment, McGraw Hill Book Co., 1956.
- Malm and Jamison – Adolescent, McGraw Hill Book Co.,1952.
- Burgess, E.W. The Family American Book Co., New York1953.
- Foster, Roberts – Marriage Family relationships, Macmillan Co.,1952.
- Skindmore, Rex.A. Cannon, Arthur, S. Building your marriage.
- Muralidharan R. (Edited) – System Pre-school education in India. IAPE, New Delhi. 1972.
- Journals: 1 Childhood Education – Journal of the Association forchildhood.

MSU/2021-22/UG-Colleges/Part-III (B.Sc. Food Science & Nutrition) Semester II/

Major Practical - II

HUMAN DEVELOPMENT PRACTICALS:

1. Over all observation of:
    b. Physical setup of pre-school
    c. Equipment
    d. Pupil – Teacher ratio
    e. Daily programme
2. Detailed observation and case history of one child.
3. Observation of pre-school children to note
    a. Physical Development.
    b. Language Development – pronunciation &speech.
    c. Social Development - contact with peer group, movements, sharing capacity
    d. Intellectual Development – learning, skill and memory capacity
    e. Emotional development.
4. Having experience in planning and carrying out play activities, science experiments, story-telling and Home made toys for kids.
5. Preparing snacks for children.
6. Maintaining a record of observation of children and home visits.