

MANONMANIAM SUNDARANAR UNIVERSITY, TIRUNELVELI

UG COURSES – AFFILIATED COLLEGES

B.Sc., FOOD SCIENCE & NUTRITION

(Choice Based Credit System)

(with effect from the academic year 2017-2018 onwards)

Se m. (1)	Pt. I/II/ III/ IV/ V (2)	Sub No. (3)	Subject Status (4)	Subject Title (5)	Con - tact Hrs./ Week (6)	L Hr s./ we ek (7)	T Hr s./ we ek (8)	P Hrs / wee k (9)	C Cre- dits (10)
I	I	1	Language	Tamil/Other Language	6	6	0	0	4
	II	2	Language	English	6	6	0	0	4
	III	3	Core -1	Food Science	4	4	0	0	4
	III	4	Core -2	Public Health and Community Nutrition - I	4	4	0	0	4
	III	5	Major Practical - I	Food Science	2	0	0	2	2
	III	6	Allied - I	Human Physiology - I	4	4	0	0	4
	III	7	Allied Practical - I	Human Physiology	2	0	0	2	2
	IV	8	Common	Environmental Studies	2	2	0	0	2
Subtotal					30				26
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	Human Development	4	4	0	0	4
	III	12	Core -4	Public Health and Community Nutrition - II	4	4	0	0	4
	III	13	Major Practical - II	Human Development	4	0	0	4	2
	III	14	Allied - II	Human Physiology - II	3	3	0	0	3
	III	15	Allied Practical - II	Human Physiology	4	0	0	4	2
	IV	16	Common	Value Based Education. சமூக ஒழுக்கங்களும் பண்பாட்டு விழுமியங்களும். Social Harmony	2	2	0	0	2
Subtotal					30				26

L: Lecture

T: Tutorials

P: Practicals

**MSU/2017-18/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 nutrient retention

Unit III

Cereals, pulses, nuts and oilseeds:

- 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 Oilseeds – 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 1985
2. N. Shakuntala Manay, M. Shadaksharaswamy., Foods Facts and Principles, New age International (P) Ltd., Publishers Second Edition, 2001
3. Seema Yadav, Basic Principles of Nutrition, Anmol Publication PVT Ltd., First Edition 1997
4. B. Srilakshmi., Food Science, New age International (P) Ltd., 2001
5. Vijay Kaushik, Food Science and Nutrition, Mangal Deep Publications, 2000
6. Meera Vashisht, 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

PUBLIC HEALTH AND COMMUNITY NUTRITION - I

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

Introduction to Health and Diseases

- a) Definition- Health, public health and community health
- b) Determinants of health, concepts in community health-biomedical, ecological, psychological and holistic
- c) Concept of disease
- d) Classification of diseases

Unit II

Hygiene

Hygiene – Meaning; need for personal hygiene with special reference to hair, hands, teeth, nails, nose, face, throat and other parts of the body – its significance in food handling and service.

Unit III

Food Poisoning

Different types- Clinical symptoms, causative factors and prevention - salmonella, staphylococcus, clostridium, use of disinfectants

Unit IV

Infection

- a) Infection - Sources, mode of transmission, Prevention and control.
- b) Immunity – Active, Passive.
- c) Common Infectious organisms – Helminthes and Insects

Unit V

National and International Organizations

ICDS, Noon meal programme, ICMR, ICAR, CFTRI, NIN, WHO, FAO, UNICEF

REFERENCES:

1. Park J.E. and Park K.K. “Preventive and Social medicine”, Bannar, Sidas Bhanot and company Ltd, India 1975.
2. Joshua A.K, “Microbiology”, India Printing works.
3. Frazier, W.C, “Food Microbiology” Tata Mc Grew Hill book Company, Bombay 1992.
4. Rao and Bhat, 1997, Food Safety, Bappco publishers, Bangalore.
5. Bamji, 1997, Text book of Human Nutrition Oxford publishers, New Delhi.

**MSU/2017-18/UG-Colleges/Part-III (B.Sc. Food Science & Nutrition) Semester - I /
Major Practical - I**

FOOD SCIENCE

- a) Preparation of cereals
- b) Preparation of pulses
- c) Preparation with fruits
- d) Preparation of vegetables
- e) Preparation of dishes with meat, fish and poultry
- f) Preparation with egg.
- g) Preparation with milk.
- h) Preparation of beverages

HUMAN PHYSIOLOGY - I

Objectives:

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

Unit I

Cell and digestive system:

Cell and tissue –cell structure and functions of epithelial, connective, muscular and nervous tissue

Unit II

Digestive System

Anatomy, process of digestion, liver and its functions

Unit III

Circulatory system:

- a. Blood – Composition, functions, blood groups – RH factors- Blood coagulation
- b. Heart – Anatomy and physiology, blood vessels – structure of artery, vein, capillaries, cardiac cycle, blood circulation.

Unit IV

Respiratory System

Respiratory System: Structure and mechanism.

Unit V

Excretory System:

Physiology of Kidney – Nephron, structure and function, formation of urine.

**MSU/2017-18/UG-Colleges/Part-III (B.Sc. Food Science & Nutrition) Semester II /
Core - 3**

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 Infancy

- a. Appearance, size and proportion of new born
- b. Physical care and daily routine; Feeding –natural and artificial, bathing, clothing and sleeping.
- c. Health and Hygiene
- d. Behavioural 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 school child
 Habits and Habit formation

Unit IV

Adolescence

- a. Physical & psychological changes during adolescence
- b. Needs, interests, problems of the adolescents
- c. Personality development of adolescents
- d. The influence of the peer group
- e. The value of the healthy relationships between the adolescent, his home and community
- f. Delinquency in children

Unit V

Period of Senescence

- a) Age related changes, theories of ageing, modulating process of ageing
- b) Physical and physiological problems, psychology, family attitudes towards the aged

Reference:

1. Breckenridge, M.E. & Vincent, E.Lee – Child Development, W.B. Saunders & CO., 1956.
2. Hurlock, E.B. Child Development McGraw Hill Co., New York 1950.
3. Breckenridge: Mariaan. E. Murphy : Margaret Neatitt – Growth and Development of the young child W.D. Saunders & Co., Philadelphia: 1958.
4. Read, K.H. The nursery school, W.B. Saunders & Co., 1955.
5. Crow and Cros – Adolescent Development and Adjustment, McGraw Hill Book Co., 1956.
6. Malm and Jamison – Adolescent, McGraw Hill Book Co., 1952.
7. Burgess, E.W. The Family American Book Co., New York 1953.
8. Foster, Roberts – Marriage Family relationships, Macmillan Co., 1952.
9. Skindmore, Rex.A. Cannon, Arthur, S. Building your marriage.
10. Muralidharan R. (Edited) – System Pre-school education in India. IAPE, New Delhi. 1972.
11. Journals: 1 Childhood Education – Journal of the Association for childhood.

**MSU/2017-18/UG-Colleges/Part-III (B.Sc. Food Science & Nutrition) Semester II/
Core - 4**

PUBLIC HEALTH AND COMMUNITY NUTRITION - II

Objectives:

1. To understand the basic concepts, principles, components and importance of health.
2. To obtain knowledge about various diseases and control measures
3. To understand the ongoing community nutrition programmes.
4. Appreciate the national and International contribution towards national

Unit I

Common water and Food borne diseases

a) Cholera, dysentery, diarrhoea, typhoid, paratyphoid
Salmonellosis, Listeriosis, Campylobacteriosis, Botulism, *E.Coli*, Hepatitis A- Causes, Symptoms, treatment and preventive measures

Unit II

Methods of assessment of Nutritional status

a) Sampling

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 III

Food Adulteration

Definition, common food adulterants, Specifications

Unit IV

Health programmes

- a. Immunization programme
- b. National Malaria Eradication Programme
- c. Leprosy Control Programme
- d. Tuberculosis Control Programme

Unit V

Nutrition Education

- a) Meaning and Scope of Nutrition education
- b) Methods - Planning, conduct of evaluation of Nutrition education Programme

Reference:

1. Park J.E. and Park K.K. "Preventive and Social medicine", Bannar, Sidas Bhanot and company Ltd, India 1975.
2. Joshua A.K, "Microbiology", India Printing works.
3. Frazier, W.C, "Food Microbiology" Tata Mc Grew Hill book Company, Bombay 1992.
4. Rao and Bhat, 1997, Food Safety, Bappco publishers, Bangalore.
5. Bamji, 1997, Text book of Human Nutrition Oxford publishers, New Delhi.

**MSU/2017-18/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 toy making
5. Preparing snacks for children
6. Maintaining a record of observation of children and home visits

Allied - II

HUMAN PHYSIOLOGY - II

Objectives:

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

Unit I

Endocrine glands I

Structure and functions of Thyroid, Pituitary, Parathyroid

Unit II

Endocrine glands II

Structure and functions of Adrenals, pancreas and sex glands.

Unit III

Reproductive system

- a) General anatomy of male reproductive system.
- b) General anatomy of female reproductive system.
- c) Menstrual cycle, Fertilization, Pregnancy, Parturition and physiology of lactation

Unit IV

Nervous system I

Structure and function of brain - cerebrum, thalamus, hypothalamus midbrain, pons, Medulla oblongata, and cerebellum

Unit V

Nervous system II

- a) Spinal Cord- Structure and functions
- b) Ascending and descending tract
- c) Sympathetic and parasympathetic nervous system

References:

1. Best and Taylor, 1971 4th edition, The Living Body, Chapman & Hall Ltd., London.
2. Guyton, A.G. 4th Edition, 1971. Text Book of Medical Physiology, W.B. Saunders Co.,
3. Mitchell, 1968 5th edition General Physiology Mc.Graw Hill.
4. D'amount, 1969 Basic Physiology, Oxford & IBH Publishing Co.,
5. Best C.H. Taylor, B.B. 3rd edition. The Human Body: Its Anatomy & Physiology, Holt, Rineshart & Winston Inc.
6. Chatterjee. C. C; 2002, Human Physiology, Medical Allied Agency, Kolkata
7. Chatterjee. C. C; 2000, Human Physiology, Medical Allied Agency, Kolkata

MSU/2017-18/UG-Colleges/Part-III (B.Sc. Food Science & Nutrition)

Semester – I & II / Allied Practical

HUMAN PHYSIOLOGY PRACTICALS

1. Histology of epithelial, muscular, connective tissue, bone, cartilage, nerve tissue, artery, vein
2. Estimation of Haemoglobin
3. Determination of blood groups
4. Determination of Rh factor
5. Demonstration of WBC count
6. Demonstration of RBC count