

MANONMANIAM SUNDARANAR UNIVERSITY, TIRUNELVELI
UG COURSES – AFFILIATED COLLEGES

B.Sc. NUTRITION & DIETETICS

(Choice Based Credit System)

(with effect from the academic year 2020-2021 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	Communicative English	6	6	0	0	4
	III	3	Core -1	Food Science	4	4	0	0	4
	III	4	Core -2	Human Development	4	4	0	0	4
	III	5	Major Practical - I	Food Science	2	0	0	2	2
	III	6	Add on Major (Mandatory)	Professional English for life sciences-I	4	4			4
	III	7	Allied - I	Human Physiology - I	3	3	0	0	3
	III	8	Allied Practical - I	Human Physiology - I	2	0	0	2	2
	IV	9	Common	Environmental Studies	2	2	0	0	2
Subtotal					33				29
II	I	10	Language	Tamil/Other Language	6	6	0	0	4
	II	11	Language	English	6	6	0	0	4
	III	12	Core-3	Principles of Nutrition	4	4	0	0	4
	III	13	Core -4	Public Health and Community Nutrition	4	4	0	0	4
	III	14	Major Practical - II	Principles of Nutrition	2	0	0	2	2
	III	15	Add on Major (mandatory)	Professional English for life sciences-II	4	4	0	0	4
	III	16	Allied - II	Human Physiology - II	3	3	0	0	3
	III	17	Allied Practical - II	Human Physiology - II	2	0	0	2	2
	IV	18	Common	Value Based Education / சமூகஒழுக்கங்களும் பண்பாட்டு விழுமியங்களும் / Social Harmony	2	2	0	0	2
Subtotal					33				29

1. Objectives

- ★ To impart theoretical and practical skills in nutrition and dietetics
- ★ To enable the students to have a thorough understanding and knowledge of nutrition and dietetics
- ★ To study about nutrients in all our food products
- ★ To facilitate the students of B.Sc Nutrition & Dietetics to join PG courses which in turn offer them job opportunities and research pursuits.
- ★ To apply the skills and knowledge gained through the subject to real life situations and face competitive examinations with confidence at National level.

2. Eligibility for Admission

The minimum eligibility conditions for admission to the **B.Sc Nutrition & Dietetics** program are given below.

The candidates for admission into the first semester of the **B.Sc Nutrition & Dietetics** course will be required to have qualified the Higher Secondary Examination conducted by the Board of Higher Secondary Education, Government of Tamil Nadu or any other Examinations accepted by the syndicate of the Manonmaniam Sundaranar University as equivalent there to in Science subject.

3. 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.

4. Elective Subject

One among the two given subjects will be selected.

5. 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.

6. 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

7. 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	Upto 39	Re-Appear

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

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

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

8. 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 x 1 = 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

L: Lecture

T: Tutorials

P: Practicals

FOOD SCIENCE

Objectives

1. To obtain knowledge of different food groups and their nutritional

value 2. To gain experience in the preparation of foods

Unit - 1

Introduction to foods

- a) Definition - food, food science, food additives, 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 - 2

Food preparation techniques

- a) Preliminary techniques
- b) Different methods of cooking and their influence on nutrient retention

Unit - 3

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 - 4

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 - 5

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 Publications 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. MeeraVashist, 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

HUMAN DEVELOPMENT

OBJECTIVES

To enable students

1. Understand the philosophy and aims of preschool education and its value to children, parents and community
2. Gain practical experience by observation and participation in the pre-school

Unit - 1

FUNDAMENTALS OF GROWTH AND DEVELOPMENT

- a) The principle of Growth and development, Factors that influence the development
- b) Methods of child study with special emphasis on case study and observation methods

Unit - 2

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 - 3

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
- e) Habits and Habit formation

Unit - 4

ADOLESCENCE

- a) Physical and 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 relationship between the adolescent, his home and community

Delinquency in children

Unit - 5

PERIOD OF SENESENCE

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

REFERENCES

1. Breakenridge, 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. Breakenridge : Marian. E.Murphy: Margaret Neatitt - Growth and Development of the young child W.D.Saunders & Co.,Phildelphia : 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 relationship, Macmillan Co., 1952
9. Skindmore, Rex.A. Cannon, Arthur, S. Building your marriage
10. Muralidharan R. (Edited) - System Preschool education in India. IAPE, New Delhi .1972
11. Journals Childhood Education - Journal of the Association for childhood

MSU/2016-17/UG-Colleges/Part-III (B.Sc. Nutrition & Dietetics) Semester-I /

Major Practical - I

FOOD SCIENCE

- a) Preparation of cereals
- b) Preparation of pulses
- c) Preparation of 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

DIGESTIVE SYSTEM 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 - 1

CELL AND DIGESTIVE TISSUE

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

Unit - 2

Anatomy, process of digestion, liver and its functions

Unit - 3

CIRCULATORY SYSTEM

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

Unit - 4

RESPIRATORY SYSTEM

Respiratory System: Structure and mechanism

Unit - 5

EXCRETORY SYSTEM

Physiology of kidney - Nephron, Structure and function, formation of urine

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, 1985, 5th edition General Physiology Mc.Graw Hill
4. D'amount 1984, 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/2020-21/UG - Colleges/Part-III (B.Sc. Nutrition & Dietetics) Semester I /
Allied Practical - 1**

Allied Practical - I

HUMAN PHYSIOLOGY - I

1. Histology of epithelial, muscular, connective tissue bone, cartilage, nerve tissues
2. Estimation of Haemoglobin
3. Histology of artery and vein and capillaries
4. Visit to hospitals/clinics

PROFESSIONAL ENGLISH FOR LIFE SCIENCES I

OBJECTIVES:

- To develop the language skills of students by offering adequate practice in professional contexts.
- To enhance the lexical, grammatical and socio-linguistic and communicative competence of first year physical sciences students
- To focus on developing students' knowledge of domain specific registers and the required language skills.
- To develop strategic competence that will help in efficient communication
- To sharpen students' critical thinking skills and make students culturally aware of the target situation.

LEARNING OUTCOMES:

- Recognise their own ability to improve their own competence in using the language
- Use language for speaking with confidence in an intelligible and acceptable manner
- Understand the importance of reading for life
- Read independently unfamiliar texts with comprehension
- Understand the importance of writing in academic life
- Write simple sentences without committing error of spelling or grammar
(Outcomes based on guidelines in UGC LOCF – Generic Elective)

NB: All four skills are taught based on texts/passages.

UNIT 1: COMMUNICATION

Listening: Listening to audio text and answering questions

- Listening to Instructions

Speaking: Pair work and small group work.

Reading: Comprehension passages –Differentiate between facts and opinion

Writing: Developing a story with pictures.

Vocabulary: Register specific - Incorporated into the LSRW tasks

UNIT 2: DESCRIPTION

Listening: Listening to process description.-Drawing a flow chart.

Speaking: Role play (formal context)

Reading: Skimming/Scanning-

Reading passages on products, equipment and gadgets.

Writing: Process Description –Compare and Contrast

Paragraph-Sentence Definition and Extended definition-

Free Writing.

Vocabulary: Register specific -Incorporated into the LSRW tasks.

UNIT 3: NEGOTIATION STRATEGIES

Listening: Listening to interviews of specialists / Inventors in fields
(Subject specific)

Speaking: Brainstorming. (Mind mapping).

Small group discussions (Subject- Specific)

Reading: Longer Reading text.

Writing: Essay Writing (250 words)

Vocabulary: Register specific - Incorporated into the LSRW tasks

UNIT 4: PRESENTATION SKILLS

Listening: Listening to lectures.

Speaking: Short talks.

Reading: Reading Comprehension passages

Writing: Writing Recommendations

Interpreting Visuals inputs

Vocabulary: Register specific - Incorporated into the LSRW tasks

UNIT 5: CRITICAL THINKING SKILLS

Listening: Listening comprehension- Listening for information.

Speaking: Making presentations (with PPT- practice).

Reading : Comprehension passages –Note making.

Comprehension: Motivational article on Professional Competence,
Professional Ethics and Life Skills)

Writing: Problem and Solution essay– Creative writing –Summary writing

Vocabulary: Register specific - Incorporated into the LSRW tasks

PRINCIPLES OF NUTRITION

Objectives:

1. To understand the role of nutrition in the maintenance of good health
2. To study nutritional deficiencies and their prevention

UNIT - 1

BASIC CONCEPTS OF NUTRITION

Definition - Nutrition, Nutrients, Adequate Optimum and good nutrition, signs of malnutrition **UNIT - 2**

CARBOHYDRATES

Classification, digestion, absorption, metabolism, functions, sources and requirements

UNIT - 3

PROTEIN

Classifications, digestion, absorption, EAA, metabolism, functions, sources, requirements and deficiency - Kwashiorkor, Marasmus

FATS (Lipids)

Classification, digestion, absorption, metabolism, functions, PUFA, Sources and effects of deficiency **UNIT - 4**

MICRONUTRIENTS

a) Vitamins: History, absorption, functions, requirements, effects of deficiency

1. Fat soluble vitamins - A, D, E and K

2. Water soluble vitamins - C and B complex vitamins

b) Minerals: Functions, sources, requirements and effects of deficiency of minerals

1. Major Minerals - Calcium, Phosphorous, Sodium, Potassium, Iron

2. Trace Elements - Functions, sources, requirements and effects of deficiency - Copper, Zinc,

Iodine, fluorine, selenium

UNIT - 5

ENERGY

Definition, energy needs of the body, BMR, factors affecting BMR, determination of energy value - Bomb calorimetric method, determination of energy requirements - Direct calorimetric method

REFERENCES

1. Dr.M.Swaminathan, Advanced Text - Book on Food and Nutrition, Bappco 1985
2. N.ShakuntalaManay, 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. Robinson, C.H. and Lawler, R.M. Normal and Therapeutic Nutrition, Maxmillan Publication & Co., New York, 1994, 17th edition
5. Srilakshmi ,B.,Dietetics, New Age International Private Ltd.,New Delhi 1995
6. Mahtab, S. Bamji , Pralhab Rao,R and Vinodhini,Text Book of Human Nutrition, Oxford and IBH Publishing Co.Pvt.Ltd.,New Delhi

PUBLIC HEALTH AND COMMUNITY NUTRITION

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 improvement in alleviating nutrition problems

Unit - 1

COMMON WATER AND FOOD BORNE DISEASES

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

Unit - 2

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 - 3

FOOD ADULTERATION

Definition, common food adulterants, specifications

Unit -4

HEALTH PROGRAMMES

- a) Immunization programmes
- b) National Malaria Education programme
- c) Leprosy control programme
- d) Tuberculosis control programme

Unit - 5

NUTRITION EDUCATION

- a) Meaning, Scope
- b) Methods - Planning, Conduct of evaluation of nutrition education programme

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 McGraw 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

Major Practical - 2

PRINCIPLES OF NUTRITION

1. Formation of spot test
2. Identification of deficiencies through spot test
3. Qualitative test for Sugars
4. Qualitative test for proteins
5. Qualitative test for Minerals
6. Qualitative estimation of Vitamin C in Greens
7. Qualitative estimation of Vitamin C in Lime Juice
8. Quantitative estimation of Vitamin C in Curds
9. Quantitative estimation of reducing sugar in fruit juices
10. Quantitative estimation of reducing sugar in honey
11. Quantitative estimation of Calcium
12. Quantitative estimation of Phosphorous

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 - 1

ENDOCRINE GLANDS 1

Structure and functions of Thyroid, Pituitary, Parathyroid

Unit - 2

ENDOCRINE GLANDS 11

Structure and functions of adrenals, pancreas and sex gland

Unit - 3

REPRODUCTIVE SYSTEM

- a) General anatomy of male reproductive system
- b) General anatomy of female reproductive system - Menstrual cycle, Fertilization, Pregnancy, Parturition and Physiology of Lactation

Unit -4

NERVOUS SYSTEM

Structure and function of brain - Cerebrum, thalamus, hypothalamus, mid brain, pons, Medulla oblongata and cerebellum

Unit - 5

NERVOUS SYSTEM

Spinal Cord - Structure and function

- a) Ascending and descending tract
- b) Sympathetic and Parasympathetic nervous system

**MSU/2016-17/UG-Colleges/Part-III (B.Sc Nutrition & Dietetics) Semester - II / Allied
Practical – II**

Allied Practical – II

HUMAN PHYSIOLOGY - II

1. Determination of blood groups
2. Determination of Rh factor
3. Demonstration of WBC Count
4. Demonstration of RBC Count