

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)

III	I	17	Language	Tamil/Other Languages	6	6	0	0	4
	II	18	Language	English	6	6	0	0	
	III	19	Core – Paper V	Nutrition Through Life Cycle	4	4	0	0	4
	III	20	Major Practical III	Nutrition Through Life Cycle	2	0	0	2	1
	III	21	Allied - II	Food Microbiology	4	2	2	0	3
	III	22	Allied Practical II	Food Microbiology	2	0	0	2	1
	III	23	Skill Based-I Core	Food service Management- I	4	4	0	0	4
	IV	24	Non-Major Elective –I	Principles of Interior Decoration – /Food Microbiology	2	2	0	0	2
	IV	25	Common	Yoga	2	2	0	0	2
				Subtotal	30+ 2	24+ 2	2	4	25
IV	I	26	Language	Tamil/Other Languages	6	6	0	0	4
	II	27	Language	English	6	6	0	0	4
	III	28	Core – Paper VI	Food Chemistry	4	4	0	0	4

	III	29	Major Practical IV	Food Chemistry	2	0	0	2	1
	III	30	Allied –II	Food processing and preservation	4	2	2	0	3
	III	31	Allied Practical –II	Food Processing and Preservation	2	0	0	2	1
	IV	32	Skilled Based -II Core	Food Service Management - II	4	4	0	0	4
	IV	33	Non-Major Elective – II	Principles of Interior Decoration II / Food Microbiology II	2	2	0	0	2
	IV	34	Common	Computers for Digital Era	2	2	0	0	2
	V	35	Extension Activity	NCC/NSS/YRC/YWF	-	-		-	1
				Subtotal	30 +2	24+ 2	2	4	26

V	III	36	Core – Paper VII	Dietetics	6	6	0	0	4
	III	37	Core – Paper VIII	Bakery and Confectionery	6	6	0	0	4
	III	38	Major Elective-I	Family Resource Management _ I	4	4	0	0	4
	III	39	Major	Functional Foods and Nutraceuticals/ Fundamentals	4	4	0	0	4

			Elective – II	of Textiles and clothing					
	III	40	Major Practical V	Dietetics	8	0	0	8	4
	III	41	Major Practical VI	Bakery and Confectionery					
	IV	42	Skill Based Common	Personality Development/ Effective Communication/ Youth Leadership	2	2	0	0	2
				Subtotal	30	22	0	8	22

VI	III	43	Core Paper IX	Health, Fitness And Sports Nutrition	5	5	0	0	4
	III	44	Core Paper X	Food Product Development And Entrepreneurship	5	5	0	0	4
	III	45	Core Paper XI	Clinical Biochemistry	5	5	0	0	4
	III	46	Major Elective – III	Food Packaging / Food Quality Control	4	4	0	0	4
	III	47	Major Practical VII	Clinical Biochemistry	4	0	0	4	2

	III	48	Project	Group Project	7	0	0	7	7
Subtotal					30	19	0	1 1	25
Grand Total					180 +4	13 7+ 4	8	3 5	144

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 formula :

Marks x Credits

$$\frac{\sum \text{Marks} \times \text{Credits}}{\sum \text{Credits}}$$

Cumulative weighted average of marks =

$$\frac{\sum \text{Marks} \times \text{Credits}}{\sum \text{Credits}}$$

Cumulative weighted average Grade Points

$$\frac{\sum \text{Grade Point} \times \text{Credits}}{\sum \text{Credits}}$$

=

$$\frac{\sum \text{Grade Point} \times \text{Credits}}{\sum \text{Credits}}$$

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: Practical

NUTRITION THROUGH LIFE CYCLE

Objectives:

L T P C

1. To help students to understand the basis of meal planning **4 0 0 4**
2. To obtain knowledge on various nutritional deficiency disorders
3. To understand the nutritional needs of members at different age levels

UNIT-I

MEAL PLANNING

(13hrs)

Basic Principles of Meal Planning –Basic Principles and factors to be consider while planning menu for different age groups Recommended allowance-RDA for Indians, basis for requirement, energy allowance for different growth pattern of children, energy allowance for various activities.

Unit:2

PREGNANCY AND LACTATION

(12hrs)

Nutritional needs during Pregnancy – Stages of pregnancy Normal growth and weight change, complications, Nutritional requirements, and meal planning Nutrition during Lactation - physiology of lactation, hormonal control and relaxation, nutritional components of colostrum and mature milk. Nutritional requirements of lactating women.Meal planning.

Unit:3

INFANCY, PRESCHOOL AND SCHOOL GOING CHILDREN

(13hrs)

Nutrition during Infancy - Growth and development- advantages of breast feeding, factors to be considered in bottle feeding. Weaning foods. Growth chart, Problems of feeding in normal and premature infants. Nutritional needs of toddlers (1-5 year) and School going children - Nutritional requirements of toddlers. Factors to be considered while planning meals for school going children. Eating problems of children and their management, packed lunch.

Unit:4

NUTRITION DURING ADOLESCENT

(11hrs)

Nutrition during Adolescence - Physical Growth- changes, Nutritional requirements and problems in adolescence- anemia, obesity, anorexia nervosa and bulimia nervosa.

Unit:5

NUTRITIONAL NEEDS OF ADULT AND OLD AGE

(11hrs)

Nutritional needs of adults (men and women) – In relation to occupation, Nutrition in Menopausal women, hormonal changes, Low cost balanced food. Nutrition during Old Age - Physiological changes in ageing- psycho-social and economic factors affecting eating behaviour. Nutritional problems of aged and their management.

Reference:

1. Sri Lakshmi, B.Dietetics, Wiley Eastern publishers.2004.
2. Corrine Robinson and Lawler. Normal and Therapeutic Nutrition, Oxford and IBH publishers.1990.
3. Swaminathan. M. Principles of Nutrition and Dietetics, BAPPCO publishers, Bangalore.2003.
4. Gopalan, Balasubramaniam&Ramasastry Nutritive Value of Indian foods, NIN publication, Hyderabad.1996.
5. BhavanaSabarwal. Principles and practices of Dietetics, Ajay Verma common wealth publishers, New Delhi.1999.

6. Davidson Passmore. Human Nutrition and Dietetics, London Churchill and Livingston publishers.1989.
7. Manay,S. and Shadaksharaswamy. M (2017) Foods, Facts and Principles, New Age, 2nd Edition, International Pvt Ltd Publishers.
8. Vinodhini Reddy, Prahlad Rao, Govmth Sastry and Kashinath (1993) Nutrition Trends in India, NIN, Hyderabad.
9. Shills, E.M. Olson, A.J. and Shike, Lea and Febiger (2001) Modern Nutrition in Health and Diseases, 9th Edition,
10. Chandrasekhar, U. (2002) Food Science and applications in Indian Cookery Phoenix Publishing House, New Delhi
11. Krause, M.V. and Hunesher, M.A. (2013) Food, Nutrition and Diet Therapy, 14th Edition, W.B. Saunders Company, Philadelphia, London

NUTRITION THROUGH LIFE CYCLE

L T P C

Objectives:

0 0 2 1

1. To help students to understand the basis of meal planning
2. To obtain knowledge on various nutritional deficiency disorders
3. To understand the nutritional needs of members at different age levels

1. Menu planning, preparation and evaluation for a preschool child
2. Menu planning, preparation and evaluation for school age
3. Menu planning, preparation and evaluation for adolescence boys & girls
4. Menu planning, preparation and evaluation for a pregnant woman
5. Menu planning, preparation and evaluation for a lactating mother
6. Menu planning, preparation and evaluation for aged
7. Planning and preparing of low, medium, and high cost food items for sedentary, Moderate and heavy worker adults.

Reference:

1. Sri Lakshmi, B.Dietetics, Wiley Eastern publishers.2004.
2. Corrine Robinson and Lawler. Normal and Therapeutic Nutrition, Oxford and IBH publishers.1990.
3. Swaminathan. M. Principles of Nutrition and Dietetics, BAPPCO publishers, Bangalore.2003.
4. Gopalan, Balasubramaniam&Ramasastry Nutritive Value of Indian foods, NIN publication, Hyderabad.1996.
5. BhavanaSabarwal. Principles and practices of Dietetics, Ajay Verma common wealth publishers, New Delhi.1999.
6. Davidson Passmore. Human Nutrition and Dietetics, London Churchill and

FOOD MICROBIOLOGY

Objectives

L T P C

2 2 0 3

- To instruct students who are having their first experience with microbiology on the nature of micro organism
- To outline the source of contamination and their aspects of foods
- To understand the principles of food preservation
- To gain knowledge of the methods to prevents contamination

UNIT –I

Introduction to Basic Microbiology

(11Hrs)

- a) Definition – History – scope of Microbiology – Application
- b) Microscopy – principles, applications and types.
- c) Basic principles and methods of - sterilization, tyndallisation, pasteurization, control of micro organism by physical and chemical method.

UNIT –II

(13Hrs)

General Morphology of Microorganisms, Microbiology of water and food

- a) Structure, Classification and General Morphology of Microorganisms - Bacteria, Fungi, Algae, Yeast, Virus and protozoa
- b) Water – sources of contamination, methods of water purification, types of microorganisms. Air – microbial pollution control measures.
- c) Sources of microorganism in food – food contamination -food preservation – food spoilage

UNIT –III

(13Hrs)

Microbiology of Non-Perishable Foods

a) Outline of Contamination- Spoilage and Preservation of Cereal and Cereal Products

b) Contamination – spoilage and preservation of Sugar and Sugar Products

c) canned foods – causes of spoilage – types of spoilage.

UNIT – IV

(12Hrs)

Microbiology of Perishable Foods

a) Outline of Contamination- Spoilage and Preservation of Vegetables and Fruits.

b) Contamination – spoilage and preservation of meat and Meat Products.

c) Contamination – spoilage and preservation of milk and milk products

UNIT – V

Food – borne disease

(11Hrs)

a), food poisoning – chemical poisoning – intoxications – botulism, food infection – enterotoxin , cytotoxin

b) Physiology and mechanism of action, modification

c) Prevention and control of toxin contamination

References:

1. Anna .K.Joshua, Microbiology, Popular Book Depot, Madras. 2000.
2. Martein Probisher, Fundamentals of microbiology. Fifth edition. Saunders Publishers. 2007.
3. Goss, R.C., Experimental Microbiology. Guide laboratory, Kalyani publishers. 1995.
4. Frazier, W.C. Food Microbiology, Tata McGraw Hill Book Company, Bombay, 1988.
5. Adams, M.R and Moss M.O. Food Microbiology Royal Society of Chemistry, Cambridge, 1995.
6. Banwart, G.T, Baric Food Microbiology CSS Publishers, New Delhi. 1987.
7. Atlas, M.Ronald Principles of Microbiology, 1st Edition, Mosby-Year Book,

Objectives

- To instruct students who are having their first experience with microbiology on the nature of micro organism
 - To outline the source of contamination and their aspects of foods
 - To understand the principles of food preservation
 - To gain knowledge of the methods to prevents contamination
1. Identify different types of microorganisms
 2. Methylene blue reduction tests of milk samples
 3. Observe and note the spoilage in cereal products
 4. Observe & note the spoilage in fruits
 5. Observe & note the spoilage in vegetable
 6. Observe and note the spoilage in milk
 7. Observe and note the spoilage in fish
 8. Observe and note the spoilage in egg
 9. Observe and note the spoilage in meat and poultry.
 10. Bacteriological examination of curd.
 11. Staining method – simple, negative, gram staining.

References:

1. Joshua. A.K. Microbiology, India printing works
2. MarteinProbisher, Fundamentals of micro –biology
3. Goss, R.C., ExperinmentalMicrobiology . Guide laboratory, Kalyani publishers
4. Frazier, W.C. Food Microbiology, TaTa Mc. Graw Hill Book Company, Bombay.
1948
5. Adams, M.R. and Moss M.O. Food Microbiology Royal Society of Chemistry,
Cambridge,
1955
6. Banwart, G.T. Baric food Microbiology CSS Publishers, New Delhi. 1987

MSU/2021 -22/UG colleges/Part III (B.Sc. Nutrition& Dietetics)

Semester III/ 23/Skilled based – 1 Core

FOOD SERVICE MANAGEMENT -I

Objectives:

L T P C

1. Gain knowledge about various types of food service. **4 0 0 4**
2. Understand the principles and functions of managements
3. Realise the importance of sanitation

UNIT –I

(11 Hrs)

Food service Institutions and Management

- a) History and Development
- b) Definition and Importance
- c) Factors affecting development of food service Institutions
- d) Principles, tools and functions of organization, Recent trends in food service Institutions
- e) Types of institutional food service operations
- f) Commercial and Non commercial food service Institutions

UNIT – II

(11Hrs)

Menu planning and services

- a) Types of menu, techniques of menu writing
- b) Importance, principles of menu planning in food service Institutions
- c) Food service
 - Formal and Informal types
 - Styles of food services
 - Centralised and decentralised system of service
- d) Self services, tray services, waiter services

f) Vending and portal services

UNIT – III

(12 Hrs)

Quantity and quality control

- a) Principles of food cost control, elements of food cost, labour cost and over head expenses
- b) Quantity food production, standardization of Receptes, food cost and portion control
- c) Factors responsible for losses in a food service industry
- d) Methods of controlling food cost leading to profit
- e) Costing of dishes, meals and events, methods of pricing

UNIT – IV

(13 Hrs)

Food service unit Layout and Design

- a) Steps and different types of planning
- b) Various phases of layout and various factors influencing layout design
- c) Pointing work centres
- d) Work pattern
- e) Equipment - classification, selection and design
- f) Factors influencing selection of various equipments
- g) Base Materials and finishes in food industries

UNIT – V

(13Hrs)

Food storage and purchasing

- a) Types of storage, maintenance of food quality in storage, store record, Maintenance of record
- b) Inventory management - Assessing requirements and receiving and release of stocks
- c) Food purchase - principles, selection, methods of buying and receiving
- d) Marketing - Definition, functions, marketing mix, sales promotion, selling techniques and advertisement

Reference:

1. MohiniSethiand SurjeetMaljan. Catering Management an integrated approach Wiley Eastern Ltd., New Delhi.
2. Malhotra – Food Service Management – Anmol Publisher, New Delhi.
3. The theory of catering, Kinton and Ceasarani

MSU2021 - 22/UG colleges/Part IV (B.Sc. Nutrition& Dietetics)**Semester III/ 24/Non Major Elective -I****PRINCIPLES OF INTERIOR DECORATION – 1****Objectives :****L T P C**

1. To learn the basic principles of art **2 0 0 2**
2. To develop the skill of applying the principles of art in decorating the house.

UNIT – I**Family Housing :****(7Hrs)**

- Need and importance of Housing.
- Factors influencing selection of site
- Factors to be considered for good housing, Ventilation

UNIT – II**Elements Of Design:****(6Hrs)**

Design –Definition – Kinds of design. Elements of design line – Direction – Shapes. Size ,Texture and Colour.

UNIT –III**Principles of Design:****(5Hrs)**

Harmony, Balance, Rhythm, Proportion, Emphasis.

UNIT –I V

(6Hrs)

Use of colour In Interior:

Classification of colour – primary, binary, intermediate, tertiary and quaternary. Qualities of colour, Hue value, intensity ,Prang colour system , colour and emotion, use of colour in interior decoration.

UNIT – V

(6Hrs)

Furniture selection:

Care and selection of furniture in dining room, office, bed room, living room.

References

1. Nickel, P. and Dorsey, J.M. – Management in Family living, Tohn Wiley and Sons, Inc, New York 1986.
 2. Varghese and Oglae, Home Management, Wiley Eastern Ltd., New Delhi 1994.
 3. Butt, H.H., Home Furnishings, John Wiley and Sons, New York, 1971.
 4. Deshpande, R.S., Modern Ideal Homes for India – United Book Corporations, Pune, 1971.
 5. Stella Soundararaj. A Textbook of House hold Arts, Orient Longmans, Bombay, 1968.
 6. Margaret Kaye. A. A Students hand book of House wifery,J.M. Dent Sons Ltd., London.1986.
 7. PaulenaNickell, Jean Muir Dorsey – Management in Family Living, Wiley Eastern Private Ltd., 1976.
- Varghese A. Home Management, New Age International, 1985

MSU/2021- 22/UG colleges/Part IV (B.Sc. Nutrition& Dietetics)

Semester III/ 24/Non Major Elective -I

FOOD MICROBIOLOGY – I

Objectives

- . To instruct students who are having their first experience with microbiology on the nature of micro organism
- . To outline the source of contamination and their aspects of foods
- .To understand the principles of food preservation
- . To gain knowledge of the methods to prevent contamination

UNIT –I

General characteristics: (6Hrs)

General characteristics of main group of microorganisms – Bacteria, fungi, yeast.

UNIT –II

Microorganisms of soil, water, sewages and atmosphere: (6Hrs)

- a) Soil- Nitrogen cycle, carbon, cycle, Sulphur cycle and phosphorus cycle.
- b) Water – methods of water purification, types of microorganisms.
- c) Sewage- Sewage treatment methods, types of microorganisms.
- d) Air – microbial pollution- control measures.

UNIT –III

Contamination of cereals and cereals products: (7 Hrs)

- a. Contamination and Prevention of spoilage of cereals and cereals products
- b. Contamination and Prevention of spoilage of vegetables and fruits

UNIT – IV

Contamination of milk, fish, ,meats: (6Hrs)

- a. Contamination and Prevention of spoilage of milk and milk products

- b. Contamination and Prevention of spoilage of meats, fish and other sea foods.

UNIT – V

Contamination of egg and poultry:

(5Hrs)

- a. Contamination and Prevention of spoilage of eggs
- b. Contamination and Prevention of spoilage of poultry

References

1. Joshua . A. K. Microbiology, India printing works
2. MarteinProbisher, Fundamentals of microbiology
3. Gross , R. C., Experimental Microbiology ,Guide laboratory , kalyani publishers
4. Frazier, W.C. Food Microbiology, Tata Mc, Graw Hill Company, Bombay 1988

MSU/2021- 22/UG colleges/Part III (B.Sc. Nutrition& Dietetics)

Semester IV/ 28/ Core paper -VI

FOOD CHEMISTRY

L T P C

Objectives:

4 0 0 4

1. Understand the meaning and chemical preparation of carbohydrates in foods
2. Explain the role of lipids and protein in foods
3. Acquire Knowledge on the chemical changes occurring in foods

UNIT – I

(13Hrs)

Carbohydrates in food:

- a) Introduction to food chemistry
- b) Monosaccharide – structure , properties & derivatives
- c) Oligosaccharides – structure, properties & derivatives
- d) Polysaccharides – structure, properties & derivatives

UNIT –II

(13Hrs)

Starch and sugar in food:

- a) Components of Starch. Swelling of Starch Granules. Gel Formation. Retrogradation, Syneresis. Agents on Starch
- b) Effect of Sugar, Acid, Alkali, Fat and Surface Active
- c) Stages of Sugar Cookery, Crystal Formation and factors affecting it.
- d) Chemistry of Milk Sugar.

UNIT –III Lipids in food

(14Hrs)

- a) Classification and composition of lipids, Physical and Chemical Properties of Fats and Oils, functional properties
- b) Shortening Power of Fats, Changes in Fats and Oils during Heating. Factors Affecting Fat Absorption in Foods
- c) Rancidity, Hydrogenation, Winterization, Decomposition of Triglycerides

UNIT – IV

(10Hrs)

Functional role of proteins

- a) Components of Wheat Proteins, Structure, Gluten Formation
- b) Effect of Soaking, Fermentation and Germination on Pulse Proteins
- c) Properties of Egg Protein. Chemistry of Milk Protein. Changes in Milk. Egg and Meat Proteins during Heating.
- d) Denaturation of proteins, Foam formation of proteins, Functional role in foods

UNIT – V

(10Hrs)

Functional role of vitamins and minerals

- a) Fruits and vegetables – structure, composition
- b) Pectin and plant acids
- c) Types of pigments
- d) Effect of cooking on colour and texture of vegetables

e) Browning reaction – enzymatic and non enzymatic and its prevention

MSU/2021- 22/UG colleges/Part III (B.Sc. Nutrition& Dietetics)

Semester IV/ 29/ Major Practical - IV

FOOD CHEMISTRY

L T P C

Objectives:

0 0 2

1

- Acquire Knowledge on the chemical changes occurring in foods
- Explain the role of lipids and protein in foods
- Understand the meaning and chemical preparation of carbohydrates in food

1. Evaluation of food grains for their character
2. Qualitative test for carbohydrate.
3. Estimation of reducing sugar.
4. Determination of gluten content
5. Determination of acidity in flour
6. Evaluation of milk samples

References:

1. SeemaYadav, 1997, Food Chemistry, Anmol Publications Pvt.Ltd, New Delhi
2. Meyer .L.H. Food Chemistry
3. Srilakshmi B. Food Science, New Age International (P) Ltd. New Delhi. 2002.
4. Shankuntala Manay, 2001, Food Principles, New Age International (P) Ltd. New Delhi

MSU/2021- 22/UG colleges/Part III (B.Sc. Nutrition& Dietetics)

Semester IV/ 30/ Allied- II

FOOD PROCESSING AND PRESERVATION

L T P C

2 2 0 3

Objectives:

1. To understand the principles of food preservation
- 2.To develop skills for setting up production units

Unit – I

(11Hrs)

- a) Objectives and principles of food preservation -method of food preservation.
- b) removal of microorganism – maintenance of anaerobic condition
- c) food dehydration - irradiation

Unit – II

(13Hrs)

- a) Low temperature – Cold preservation and processing – freezing-Chilling-hydro cooling-Additional developments.
- b) High temperature – Heat preservation and processing Degrees of preservation - Selecting heat treatments- Heat resistance of microorganisms-heat transfer boiling-pasteurization- HTST-UHT
- c) Canning - drying

Unit - III

(12Hrs)

- a)Preservation by use of chemicals - Developed preservatives.
- b) Preservations by food additives - Classification and food additives - Nature and characteristics of additives in foods, antimicrobial preservation Added preservatives
- c) Smoking – spices -antibiotics – alcohol – formaldehyde.

Unit- IV

(13Hrs)

- a) Preservation by use of salt - pickling – principles and methods - curing

b) Preservation by use of sugar – Jam, Jelly, Marmalade, Tuity – Fruity .

c) Preparation of crush, squashes, synthetic syrup.

Unit – V

(11Hrs)

a)Beneficial Effects of Microorganisms

b)Microbiology of Fermented Foods - Curd, production of Cheese, Sauerkraut, Meat, Soy Based Foods, Alcoholic, Beverages and Vinegar,SCP

c) Production of bread - other fermented foods, Microbial Biomass

References

1. PrakashTriveni, Food Preservation, Aadi publication, Delhi. 2008.
2. ShafiurRahman. M. Hand Book Of Food Preservation, Marcel Dekker Inc, New York.2007.
3. McWilliams and Paine, Modern Food Preservation, Surjeet Publication.1996.
4. Fellows, P and Ellis H. Food Processing Technology: Principal and Practicals, NewYork. 1990.
5. NPCS Board, Modern Technology on Food Preservation Second Edition, Asia Pacific Business Press,Inc 2012.
6. Sivasankar; B. Food Processing and Preservation,Prentice Hall, India Learning Private Limited 2004.
7. Tanchev,&Stoyan. Methods of Food Preservation. Food Safety: A Practical and Case Study Approach. 2007.

FOOD PROCESSING AND PRESERVATION

L T P C

Objectives:

0 0 2 1

1. To understand the principles of food preservation
2. To develop skills for setting up production units

1. Preparation of jam – Pine apple, Multi fruits, Papaya.
2. Preparation of squashes – Mango, Grapes, Pineapple, Lime and ketchup.
3. Preparation of sauces
4. Preparation of pickle - Mixed vegetables, Mango, Garlic, Lemon, Chilies, Fish and Mutton.
5. Visiting a food preservation factory
6. One week training in Food Preservation Unit.

References

1. Prakash Triveni, Food Preservation, Aadi publication, Delhi. 2008.
2. Shafiur Rahman. M. Hand Book Of Food Preservation, Marcel Dekker Inc, New York. 2007.
3. McWilliams and Paine, Modern Food Preservation, Surjeet Publication. 1996.
4. Fellows, P and Ellis H. Food Processing Technology: Principal and Practicals, New York. 1990.
5. NPCS Board, Modern Technology on Food Preservation Second Edition, Asia Pacific Business Press, Inc 2012.
6. Sivasankar; B. Food Processing and Preservation, Prentice Hall, India Learning Private Limited 2004.
7. Tanchev, & Stoyan. Methods of Food Preservation. Food Safety: A Practical and Case Study Approach. 2007.

MSU/2021- 22/UG colleges/Part IV (B.Sc. Nutrition& Dietetics)

Semester IV/ 32/ Skilled Based – II Core

FOOD SERVICE MANAGEMENT - II

Objectives

L T P C

1. Gain knowledge about various types of food service **4 0 0 4**
2. Understand the principles and functions of management
3. Realise the importance of sanitation

UNIT – I

(13Hrs)

ORGANIZATION POLICY & SAFETY PROCEDURE IN OPERATION

- a) Standardized recipe system format, Maintain IPR
- b) Occupational health and safety requirements, standards and objectives of hygiene standards
- c) Sanitation guidelines at work place
- d) Maintain safety at work place, identification of equipment
- e) Handling and uses, cleaning procedure of equipment
- f) Food laws - National PFA, Essential commodities Act, ISO, WTO and consumer protection Act, Concept of TQM

UNIT – II

(13Hrs)

PERSONAL MANAGEMENT

- a) Definition, Development and policies
- b) Sources of Recruitment, selection, Induction, Training, Development, promotion, motivation and leadership
- c) Wages and other welfare benefits for personal
- d) Labour laws and other legal aspects

e) Importance of good human relations

UNIT – III

(12Hrs)

MATERIAL MANAGEMENT

a) Principles of quantity food purchase

- Selection, methods of buying and receiving
- Methods of delivery and accounting of different foods

b) Inventory management - Assessing requirements and Receiving and release of stocks

c) Types of storage, maintenance of food quality in storage and store record
Maintenance

d) Marketing - Definition, functions, marketing mix, sales promotion, selling techniques and advertisement

UNIT – IV

(11Hrs)

FINANCIAL MANAGEMENT

a) Definition - Book keeping, account maintenance, Balance sheet

b) Application of Management, Account of catering operators, cost concepts

c) Systems of book keeping, inventor budgetary control

d) Types of budget, Record for purchase, Receiving, storage and production

e) Service and income and expenditure record

f) Costing and cost control

- Factors affecting cost control
- Importance and components of costing
- Break even analysis
- Determining selling price of food

- check list for cost control

UNIT – V

(11Hrs)

HYGIENE AND SANITATION

- a) Personal hygiene
- b) Types and sources of contamination
- c) Causes and prevention of accidents and safety education
- d) Methods of controlling infestation
- e) Methods of dish washing
- f) Definition and Importance of hygiene and sanitation in food handling

REFERENCES

1. Mohinisethi and – SurjeetMalhan
2. Catering management an integrated approach , Wiley Eastern Ltd., New Delhi
3. Malhotra – Food service management - Anmol Publishers, New Delhi
4. The theory of catering, Kinton and Ceasarani

MSU/2021- 22/UG colleges/Part IV (B.Sc. Nutrition& Dietetics)

Semester IV/ 33/Non major Elective – II

PRINCIPLES OF INTERIOR DECORATION - II

Objectives:

L T P C

- 1 To learn the basis principles of art **2 0 0 2.**
- 2 To development the skill of applying the principles of art in decorating the house

UNIT – I

(7Hrs)

Decors :

Furnishings – selection, use and care. Draperies and curtains, floor coverings.Hanging Pictures.Table settings.

UNIT – II**(6Hrs)****Flower Arrangements:**

Requirements of flower arrangement. Treatment of flower styles in flower arrangement (traditional oriented and modern), Types of flower arrangement. Steps in making flower arrangement.

UNIT – III**(6Hrs)****Household Equipment and cleaning:**

- a. Study about various house hold equipment. Need for house hold cleaning.
- b. Reagents, Equipment, Methods of cleaning.
- c. Principles followed in cleaning
- d. Furniture cleaning and polishing. care doing cleaning

UNIT – IV**(5Hrs)****Household Pests:**

Common house hold pests mode of infection, methods of eradication, pest control common natural and artificial

UNIT – V**(6Hrs)****Illumination**

Sources-Types-methods- uses

Reference:

1. Nickel, P. and Dorsey, J.M. – Management in Family living, Tohn Wiley and Sons, Inc, New York 1986.
2. Varghese and Oglae, Home Management, Wiley Eastern Ltd., New Delhi 1994.
3. Butt, H.H., Home Furnishings, John Wiley and Sons, New York, 1971.
4. Deshpande, R.S., Modern Ideal Homes for India – United Book Corporations, Pune, 1971.
5. Stella Soundararaj. A Textbook of House hold Arts, Orient Longmans, Bombay, 1968.
6. Margaret Kaye. A. A Students hand book of House wifery,J.M. Dent Sons Ltd.,

London.1986.

7. PaulenaNickell, Jean Muir Dorsey – Management in Family Living, Wiley Eastern Private Ltd., 1976.Varghese A. Home Management, New Age International, 1985

MSU/2021- 22/UG colleges/Part IV (B.Sc. Nutrition& Dietetics)

Semester IV/ 33/Non major Elective – II

FOOD MICROBIOLOGY - II

Objectives: **L T P C**

To study the cereals and cereals products **2 0 0 2**

To know contamination and prevention of fruits and vegetables

UNIT – I **(6Hrs)**

Cereals and cereals products:cereals products:

Contamination and prevention of spoilage of cereals and cereals products

UNIT – II **(6Hrs)**

Fruits & Vegetables:

Contamination and prevention of spoilage of vegetables and fruits

UNIT – III **(7Hrs)**

Contamination of milk

Contamination and prevention of spoilage of meats, fish, and others sea foods

UNIT – IV Contamination of fish, meats: **(6Hrs)**

Contamination and prevention of spoilage of meats, fish and other sea foods

UNIT – V: **(5Hrs)**

Contamination of eggs and poultry

Contamination and prevention of spoilage of poultry

Reference

1. Joshua. A.K. Microbiology, India printing works
2. MarteinProbisher, Fundamentals of micro – biology
3. Goss, R.C., Experimental Microbiology. Guide laboratory, Kalyani publishers
4. Frazier, W.C. Food Microbiology, Tata Mc. Graw Hill Book Company, Bombay, 1988
5. Adams, M.R. and Moss M.O. Food Microbiology Royal Society of Chemistry Cambridge. 1995
6. Banwart, G.T. Basic Food Microbiology CSS Publishers, New Delhi. 1987.

MSU/2021- 22/UG colleges/Part III (B.Sc. Nutrition& Dietetics)

Semester V/ 36/ Core Paper –VII

DIETETICS

Objectives

L T P C

1. To gain insight in to the national nutritional problems and their implications **6 0 0 4**
2. To obtain knowledge about the methods of assessment of nutritional status
3. Develop in organising and evaluating nutrition project in the community

UNIT – I

(18Hrs)

OBJECTIVES OF DIET THERAPY

Objectives of diet therapy - Role of a dietician. Principles of diet preparation and counseling. Normal diet in the hospitals –, liquid, semi liquid, light , soft diet, bland diet and regular diet
Different types of Feeding - Basic concepts of oral feeding, tube feeding, IV feeding, gastrostomy feeding.

Unit:2

THERAPEUTIC DIETS

Therapeutic diets for the following disorders- Under weight - definition, etiology, treatment
Obesity - definition, etiology, treatment. Diseases of the gastro intestinal tract- ulcer,
constipation and diarrhoea. Diverticular Diseases, Crohn's Disease and Ulcerative Colitis

Unit: 3

DISEASE OF LIVER.GALL BLADDER AND HEART

Diseases of the liver and gall bladder (risk factors and diet therapy) jaundice, hepatitis,
cirrhosis, fatty liver and Diet Therapy Diseases of the cardio vascular system (risk factors and
diet therapy), atherosclerosis, arteriosclerosis, hypertension and congestive heart failure.

Unit: 4

DIABETES MELLITUS

Diabetes mellitus – Types, causes, symptoms, bio-chemical changes, insulin, hypo- glycemic
drugs, types only, food exchange list, dietary management Diseases of the kidney and urinary
tract - Acute and chronic nephritis, Nephrotic syndrome, Renal failure, Urinary calculi
Causes and dietary treatment of kidney diseases and dialysis.

Unit: 5

DIET IN ALLERGY, FEBRILE CODITIONS, STRESS & CANCER AND AIDS

Diet in Allergy - Definition, classification, common food allergy, test of allergy, diet
therapy. Diet in febrile conditions - Short duration -Typhoid, Long duration- Tuberculosis.
Metabolic stress and cancer - Metabolic and clinical aberrations, diagnosis, complications,
treatment, MNT and dietary counselling in Metabolic Stress -Surgery, Burns, Sepsis and
Trauma Critical care, Cancer- General and Specific cancers, Effect of Cancer therapy on
MNT, Diet in AIDS

References:

1. Sri Lakshmi (2004) Dietetics, Wiley Eastern publishers.
2. Corrine Robinson (1990) Normal and Therapeutic Nutrition, Oxford and IBH publishers.
3. Swaminathan. M. (2003) Principles of Nutrition and Dietetics, Bappco publishers,
Bangalore.
4. Gopalan, Ramasastry and Balasubramanian (1996) Nutritive value of Indian food, NIN
publication, Hyderabad.
5. Bhavana sabarwal (1999) principles and practices of Dietetics, Ajay verma common
wealth publishers, New Delhi.
6. Davidson Passmore (1989) Human Nutrition and Dietetics, London Churchill and
Livingston publishers

BAKERY AND CONFECTIONERY

OBJECTIVES

L T P C

- | | |
|---|----------------|
| 1. Understand basic concept of baking | 6 0 0 4 |
| 2. Acquaint with the role of various major and minor ingredients in bakery products | |
| 3. Familiarise with baking process and operation | |
| 4. Learn the quality parameters of bakery products | |

UNIT – I

(14Hrs)

INTRODUCTION TO BAKERY

- a) Organization chart of Bakery Unit
- b) Bakery Layout - The required approvals for setting up of a Bakery - Government procedures and Bye - laws
- c) Wheat - Types, structure and composition of the wheat, steps and by products of wheat milling, principles of Baking
- d) Flour - Types of flour, composition, quality assessment of flour
- e) Scope of Bakery and confectionery, bakery items, Organization chart of Bakery Unit
- f) Factors for setting up a Bakery Unit, Baking temperature and it's importance

UNIT – II

(20Hrs)

OTHER INGREDIENTS AND THEIR FUNCTION IN BAKING

- a) Yeast - Types, functions, effects of over and under fermentation
- b) Eggs - Functions of Egg in bakery
- c) Sugar - Types of sugar, classification of sugar

- d) Fats - Classification, function, effects of cooking
- e).Milk and milk products, Emulsifiers, dried fruits and leavening agents
- f) Water and Salt (Baking soda)

UNIT – III

(20Hrs)

BAKING PROCESS

- a) Bread Making - Steps and Methods, Role of Ingredients, Variety Breads, Qualities of Good loaf, Bread Faults
- b) Commercial Bread Making Methods - Recent advances, chemical dough development, mechanical dough development, sheeting extrusion, other rapid methods, Evaluation e bread and quality control, Microbial aspects of different bakery products, prevention of bacterial rope and mold infection
- c) Basic Concepts, Batch or Continuous Dough Mixing, Dividing, Moulding, Proofing, Baking
- d) Formation and expansion of gases, Trapping of gases in air cells, coagulation of protein, Gelatinization of starches, Evaporation of water, Melting of shortening, Browning of the sugar

UNIT – IV

CAKES , PASTRIES, TARTS AND CHOCOLATE

(14Hrs)

- a) Cake making - cake Mixing methods, types of cakes, cake judging, cake faults and remedies
- b) Biscuits Making - cookie making, types of cookies, care to be taken while preparing cookies, temperature of baking cookies
- c) Types of Icings
- d) Pastries - Types, Recipes and Methods of preparation, uses of each pastry, care to be taken while preparing pastry, Reason for fault in the above preparation
- e) Tarts - Types, Recipes and Methods of preparation, mixing pie dough, Reason for fault in the above preparation, Baking and filling
- f) Manufacturing and processing of chocolate, Types of Chocolate, Uses of Chocolate

UNIT – V

(18Hrs)

BAKERY MACHINERY AND EQUIPMENTS

- a) Types of ovens - construction and working of conventional and modern oven
- b) Bulk Handling, mixers, forming, moulding, cuttings, embossing, packaging, auxillary equipment

REFERENCES

1. Kent.N.L.Technology of cereals-with special reference of wheat,pergamonpress,New york ,USA,1975
2. Sultan.W.J (1976),Practical baking manual - students and instructors,AVI Publishing Co.INC,WestPort,Connecticut
3. Matz S.A Technology for the materials of Baking- Eisevier Science Publishers,Barking,England

MSU/2021- 22/UG colleges/Part III (B.Sc. Nutrition& Dietetics)

Semester V/ 38/ Major Elective - I

FAMILY RESOURCE MANAGEMENT

L T P C

Objectives

4 0 0 4

- 1.To attain a thorough knowledge of understanding values and goals in house keeping
2. To gain basic knowledge of planning and constructing house
3. To understand a basic designs and art

UNIT - I

(13Hrs)

CONCEPT OF HOME MANAGEMENT AND STEPS

- a) Home Management - Definition, Importance of Management, Qualities of good home maker

b) House planning - Factors to be considered in the site selection, Functions of house and it's importance, lighting and ventilation

c) Basis for Home Management - values, goals and standards, Home Management process - planning, controlling, Evaluating

d) Kitchen planning - Different types - work triangle, House plan - Low, Middle and high income groups

e) Decision Making - Definition, characteristics, steps in decision making, Types of decision, Home management and Decision making

UNIT – II

(13Hrs)

INTERIOR DESIGN & DECORATION

a) Design - Elements of Design, types of design, characteristics of design

b) Principles of design - Harmony, Balance, Proportion, Rhythm and Emphasis - Definition and types

c) Colour - Definition, classification, prang colour chart, colour Harmonies and use of colour in interior Decoration

d) Accessories, picture and wall hangings - selection, uses and care

e) Types, Selection and uses of furniture - living room, bed room and dining room

f) Table settings

UNIT – III

(12Hrs)

CARE AND MAINTENANCE OF HOUSE

a) Care and maintenance of house and it's importance

b) Daily, weekly and periodical cleaning to keep the house in good condition

c) Insect and pest control - types, preventive and remedial measures to be adopted

UNIT – IV

(11Hrs)

WORK SIMPLIFICATION

a) Definition

- b) symbols, techniques
- c) Mundels class of change
- d) Time Management - tools in time management
- e) Time Management process
- f) Energy Management - types of fatigue, measures to relieve fatigue

UNIT – V

FLOWER ARRANGEMENT

(11Hrs)

- a) Principles of flower arrangement - Design, Scale, Balance, Harmony, Rhythm and colour
- b) Patterns and style - Symmetrical and Asymmetrical, Traditional, Oriental, Modern, Dried flower arrangement
- c) Types - Floral Bouquets, Floral Wreaths, Floral Baskets, Table centrepiece
- d) Basic design - line, Mass, Line - Mass
- e) Guidelines, Aids and Accessories and care of flowers

REFERENCES

1. Mohiniseti - SurjeetMalhan
3. Malhotra - Food Service Management - AnmolPblishers,New Delhi
4. The theory of catering ,kinton and Ceasarani

MSU/2021- 22/UG colleges/Part III (B.Sc. Nutrition& Dietetics)

Semester V39/ Major Elective- II

FUNCTIONAL FOODS AND NUTRACEUTICALS

OBJECTIVES

L T P C

1. To understand the functional foods and nutraceuticals

4 0 0 4

2. To Know about phytochemicals

3. To Study about the colonic Functional foods

UNIT – I

(13Hrs)

FUNCTIONAL FOODS

a) Introduction, Definition, Importance

b) Health attributes of functional foods - Introduction, Health living index provides information on healthy diet, fitness, emotional wellness.

UNIT – II

PROBIOTIC

(13Hrs)

a) FFN and acute infection and probiotic - Probiotic immune system, sources of micro algal health supplements

b) Probiotic functional foods and treatment of GI disorders.

UNIT – III

(12Hrs)

PHYTOCHEMICALS

a) Introduction - terpenoids, polyphenolics, Anthocyanins, Isoflavones, silymarin, Tangeretin, saponins

b) Other dominant phytochemicals.

UNIT – IV

(11Hrs)

NUTRACEUTICALS

a) Other nutraceuticals - PUFAs - polyunsaturated fatty acids - Source, Natural constituents of animal and vegetable lipids, function of PUFAs

b) Functional foods in the control of aging, mood and performance, medical foods

UNIT – V

(11Hrs)

COLONIC FUNCTIONAL FOODS

Introduction to colonic foods, metabolism of colonic foods, probiotics, symbiotics, health aspects of functional colonic foods, Host-microbe interaction

REFERENCE

1. Mary k.Schimsl and Theodore P. Labuza:Essentials of functional foods 2000,culinary and Hospitality industry publication services
2. C.Remacle and B.Reusens,FunctionalFoods,Aging and Degenerative Diseases,Culinary& Hospitality Publications Services

MSU/2021- 22/UG colleges/Part III (B.Sc. Nutrition& Dietetics)

Semester V/ 39/ Major Elective - II

FUNDAMENTALS OF TEXTILES AND CLOTHING

OBJECTIVES

L T P C

1. To understand the charecteristics& properties of textile fibers **4 0 0 4**
2. To acquire through knowledge on fabric & Yarn
3. To understand the construction of yarn and fabric

UNIT – I

(13Hrs)

a)FIBERS - Definition,classification,general characteristics of cellulose,protein,thermoplasticand mineral fibers

b) MAJOR AND MINOR TEXTILE FIBRES- Manufacturing process, properties, use and care of textile fibers, Eg -Cotton, silk, rayon

Study of minor fibres jute, hemp, coir.

UNIT –II

(13Hrs)

a. Yarn Construction

Definition, twist, types and counts

b. Fabric construction

Weaving- definition, types of weaves- basic weaves- plain , twill, satin, & decorative, weaves (jacquard weave)

UNIT – III

(12Hrs)

a. Fabric finishes- definition

b. Boiling, Scouring, sizing, carbonizing, bleaching, shearing, singering, calendaring, tendering, weighting, mercerizing.

UNIT IV

(11Hrs)

a. Dyeing - initial dyeing- stock, yarn, piece, cross dyeing, tie & dye batick methods

b. Printing- types block, stencil, and screen

c. Parts and function of sewing machines, uses & care.

- Tools for clothing construction.

- Basic hand stitches.

Temporary - basting-even, uneven, diagonal.

Permanent - hemming, back stitch, whipping, overcasting, run stitch

Embroidery - stem, chain, cross, bullion, lazy-Daisy, fly, wheel, couching, blanket

UNIT – V

(11Hrs)

SEAMS, NECK LINE, PLACKETS, GATHERS, FASTENERS, BIAS

a) Seams- definition, types

b) Bias- uses types

c) Neck line- facing, binding, collar, peter, pan collar.

d) Fastners-types, uses, and disadvantages

REFERENCES:

1. Fundamanentals of textiles and their use.(orient Longman Ltd.,)

2. Textiles fibres and their use - X. P Hoss
3. Household Textiles and laundry work Danilkar
4. Clothing for modern - Macmillian and co.
5. Patter drafting and making up - Belakapoor

MSU/2021- 22/UG colleges/Part III (B.Sc. Nutrition& Dietetics)

Semester V/ 40/ Major Practical - V

DIETETICS

L T P C

Objectives

0 0 4 2

- To gain insight in to the national nutritional problems and their implications
 - To obtain knowledge about the methods of assessment of nutritional status
 - Develop in organising and evaluating nutrition project in the community
1. Menu planning, preparation and evaluation of peptic ulcer, hepatitis and cirrhosis
 2. Menu planning, preparation and evaluation of typhoid, tuberculosis
 3. Diabetes Mellitus
 4. Menu planning, preparation and evaluation of Atherosclerosis and hypertension
 5. Menu planning, preparation and evaluation of glomerulonephritis, renal failure, urinary calculi
 6. Menu planning, preparation and evaluation of obesity and underweight
 7. Visit to hospitals for diet counselling

References:

1. Sri Lakshmi(2004)Dietetics, wileyEasern publishers.
2. Corrine Robinson (1990)Normal and Therapeutic Nutrition, Oxford and IBH Publishers.
3. Swaminathan.M.(2003) Principles of Nutrition and Dietetics, Bappco Publishers, Bangalore
4. GopalanEtal,(1996) Nutritive value of Indian food,NIN Publications, Hyderabad.
5. Bhavanasabarwal(1999)Principles and practices and practices of Dietetics,AjayVerma common wealth publishers,Newdelhi
6. Davidson Passmore (1989) Human Nutrition and Dietetics,London Churchill and Livinston publishers

MSU/2021- 22/UG colleges/Part III (B.Sc. Nutrition& Dietetics)

Semester V/ 41/ Major Practical - VI

BAKERY AND CONFECTIONERY

L T P C

OBJECTIVES

0 0 4 2

1. Understand basic concept of baking
2. Acquaint with the role of various major and minor ingredients in bakery products
3. Familiarise with baking process and operation
4. Learn the quality parameters of bakery products

PRACTICALS

1. Identify different types of flour
2. Visit to bakery unit
3. Preparation of different types of cakes, biscuits, cookies and different icings
4. Bread making demonstration

5. Preparation of pizza
6. Preparation of different types of pies, sweet meats
7. Chocolate demonstration

REFERENCES

1. Kent.N.L.Technology of cereals-with special reference of wheat,pergamonpress,New york ,USA,1975
2. Sultan.W.J (1976),Practical baking manual - students and instructors,AVI Publishing Co.INC,WestPort,Connecticut
3. Matz S.A Technology for the materials of Baking- Eisevier Science Publishers,Barking,England

MSU/2021- 22/UG colleges/Part III (B.Sc. Nutrition& Dietetics)

Semester V/ 43/ Core Paper - IX

HEALTH, FITNESS AND SPORTS NUTRITION

L T P C

OBJECTIVES

5 0 0 4

1. Understand the importance of health for quality living.
- 2 Acquire knowledge about the role of food and exercise for sound health
- 3 Analyze the importance of nutrition for sports personnel
- 4 Evaluate the effect of exercise on health
- 5 Discuss the techniques used in weight management

UNIT: 1

(15Hrs)

INTRODUCTION

Health – Definition, concept/ meaning of health and factors affecting health. Health hazards – environment, population explosion, explosives, adulteration, dampness and measures to prevent health hazard. Health insurance schemes (ESI, Mediclaim)

Unit:2

(16Hrs)

FUNCTIONS OF FOOD

Functions of food – Physiological, psychological and socio - cultural functions, constituents of food and their functions.

Unit: 3

(14Hrs)

PHYSICAL EDUCATION

Physical education – Meaning and scope, role of gymnastic exercises and yoga in improving health. Difference between yoga and other gymnastic exercises. Health club equipments and activities – Tread mill, hammer strength, steppers, cycles, body sculpting, kick boxing, Reebok ridge rocker, hanging, hand grips, swing, climbing and lifting weight.

Unit:4

(14Hrs)

SPORTS NUTRITION

Sports nutrition –Introduction to kinanthropometry, Requirements during training and performance for athletes and endurance games, aerobic and anaerobic exercise, fuel for exercise, glycogen load. Exercise to maintain fitness.

Unit:5

(16Hrs)

WEIGHT MANAGEMENT

Weight Management - Ideal body weight, weight loss – making weight and rapid weight loss strategies, Nutrition for special population: child athlete, ageing athlete, and athletic diabetes, vegetarian and disabled athlete.

REFERENCES:

1. Werner W. K Hoejer (1989), Life time Physical Fitness and Wellness, Morton Publishing Company, Colorado.

2. Mishra, S. C (2005) Physiology in Sports. Sports Publication, New Delhi
3. Greenberg, S. J and Pargman, D (1989) Physical Fitness – A Wellness Approach Prentice Hall International (UK) Limited, London
4. Swaminathan M. (2008) Essentials of Food and Nutrition Bangalore Printing Publishing Co. McArdle, W. D, Frank I. Katch, F. I and Victor L. Katch (1996) Exercise Nutrition: Energy Nutrition and Human Performance. William & Wilkin Publishing USA.
5. Mahan, K and Stump, E. S (1996) Krause Food and Nutrition and Diet Therapy W.B Saunders Company, USA.
7. McArdle, W. D, Frank I. Katch, F. I and Victor L. Katch (2010) Essentials of Exercise Physiology, 7th edition. William & Wilkin Publishing USA. Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]
8. <https://www.sciencedaily.com>
9. <https://www.nutritionist-resource.org>

MSU/2021-22/UG colleges/Part III (B.Sc. Nutrition& Dietetics)

Semester V/ 44/ Core Paper - X

FOOD PRODUCT DEVELOPMENT AND ENTREPRENEURSHIP L T P C

OBJECTIVES:

5 0 0 4

1. Focussing on creating or improved food products.
2. Develop innovative and health food

UNIT I

(15Hrs)

INTRODUCTION

Definition and classification, characterization and factors shaping new product development. Food needs and consumer preference: market survey and its importance. Advantages of processed foods in urbanized modern society.

Unit: 2

SHELF LIFE REQUIREMENTS

(16 Hrs)

Shelf life requirements and factors affecting shelf life. Evaluation of shelf life, sensory attributes and effects of environmental conditions; accelerated shelf life determination; sensory attributes and effects of environmental conditions; accelerated shelf life determination selection and training of judges, development of score card analysis of data.

Unit:3

(14hrs)

NEW PRODUCT DEVELOPMENT

Designing new products and new food product development (NPD) process and activities, uses of traditional recipe and modification, recent development.

Unit:4

ENTREPRENEURSHIP

Importance of entrepreneurship and its relevance in carrier growth. Entrepreneur, entrepreneurship and enterprise, concept and development and characteristics of an entrepreneur. Types of enterprises and ownership, employment, self-employment and entrepreneurship.

Unit:5

AUTOMATION AND USES OF COMPUTER IN FOOD ANALYSIS:

Tools of automation, automation in food industries and its example, Computer in food analysis and its application: Bar code technology, GSI system, RFID technology.

Reference:

1. Sudhir Gupta (2017) Handbook of Packaging Technology, Engineers India Research Institute, New Delhi
2. Daise, Frank, A. (Ed.) 2015, Modern Processing, Packaging and Distribution

System for Food, Blackie, Glasgow and London.

3. Suja, R. Nair(2014) Consumer Behaviour and Marketing Research, 1st Edition, Himalaya Publishers. Reference Books
4. Food Packaging Technology Handbook, 2013, NIIR Board of Consultants and Engineers, National Institute of Research, New Delhi
5. Modern Packaging Industries, 2014, NIIR Board of Consultants and Engineers, National Institute of Industrial Research, New Delhi.
6. Potter, N.M., Food Science, The AVI Publishing Company Inc., West Post, Connecticut, USA 2015,
7. Khanaka, S.S. (2016) Entrepreneurial Development, S. Chand and Company Ltd, New Delhi. Hmacfie (2017) Consumer led Food Product Development, Weedhead Publishing Ltd., UK .
8. <http://mek.oszk.hu/11400/11406/11406.pdf>
9. http://entrepreneuriat.inforoutefpt.org/documents/ang_nc-4328_projet.pdf
10. www.destechpub.com › wp-content › uploads › 2015/01

MSU/2021- 22/UG colleges/Part III (B.Sc. Nutrition& Dietetics)

Semester V/ 45/ Core Paper - XI

CLINICAL BIOCHEMISTRY

Objectives

1 To study different test for diseases

2 Toknow the biochemical composition of blood and different parts of the body

Unit 1

Introduction

(15Hrs)

Basic concepts of Clinical Biochemistry – Development of Clinical Biochemistry, Laboratory investigation in Clinical Biochemistry – Evaluation of Laboratory Test, Specimen collection and processing (Blood, Urine, Faeces), Anticoagulant preservatives for blood and urine, Transport of specimens.

Unit II

Inborn Errors of Carbohydrates Metabolism (16 Hrs)

Disorders of carbohydrate metabolism – Normal and Abnormal of blood glucose, maintenance of blood glucose concentration, Diabetes Mellitus – classification, complication, GTT, diabetic coma, Glycogen storage diseases, fructosuria, galactosemia, glycosuria.

Unit III (14Hrs)

Inborn Errors of Lipid Metabolism

Disorders of carbohydrate metabolism - Types and level of lipids in blood, Plasma lipoproteins in health and disease, fatty liver, Atherosclerosis, Lipid storage diseases, hypolipoproteinemia, hyperlipoproteinemia.

Unit IV (14Hrs)

Inborn Errors of Protein Metabolism

Plasma – Types – Functions, Nitrogen balance, Proteinuria, multiple myeloma, Wilsons Disease. Inborn errors of amino acid metabolism – Phenylketonuria, Albinism, Alkaptonuria, Gout, fanconic syndrome, Hartnups disease.

Unit V (16Hrs)

Gastric disorders

Bile Salts and Bile acids – Synthesis and Functions, Synthesis of bile pigments from hemoglobin, Liver function Test.

Reference:

- a) Cantrow A and Trumper, Clinical Bio-Chemistry, M.W.B. Saunders co -1975.
- b) Swaminathan, m. Bio- Chemistry for medical Teachers.
- c) Saunder's C Clinical Bio-chemistry.

MSU/2021- 22/UG colleges/Part III (B.Sc. Nutrition& Dietetics)

Semester V/ 46/ Major Elective - III

FOOD PACKAGING

L T P C

4 0 0 4

Objectives

1. Gain knowledge about various packaging materials and importance of packaging
2. Be familiar with testing and evaluation of packaging media
3. Be familiar with packaging laws and regulations

Unit – I

(13Hrs)

Packaging

- a) Concepts, Definition, Significance, Classification ,requirements and Application
- b) Importance & scope , frame work of packaging strategy, environmental considerations
- c) Food in Packaging – types –flexible and retail &bulk, level of packaging

Unit – II

(13Hrs)

Packaging materials

- a) Different types of packaging materials, their key properties & applications, metal can, manufacture of metal can

- b) Plastic packaging- different types of polymer used in food packaging
- c) manufacture of plastic packaging materials, profile extrusion, brown film, sheet extrusion, blow molding , extrusion blow mounding
- d) Advantage & disadvantages of different packaging materials

Unit – III

(12Hrs)

Testing of packaging

- a) Testing and evaluation of packing media – retail packs (including shelf life evaluation) and transport packages
- b) Testing materials for flexible materials, rigid materials & semi rigid materials, Test for paper(thickness, bursting, strength, breaking length, stiffness, tear resistance, folding endurance, ply bond test, surface oil absorption test) plastic film and laminates (Thickness, tensile strength, haze, burning test to identify polymer)aluminium foil (thickness, pinhole) glass container (visual defect, colour,) metal container (pressure test, product computability)

Unit – IV

(11Hrs)

Packaging Systems and Methods for Food Products

- a) Nutritional label of packaging, gas packaging, Aerosol packaging, Shrink packaging, Aseptic & retort packaging, MAP, CAS, vacuum packaging, active packaging, smart packaging
- b) Packaging requirements for raw and processed foods, and their selection of packaging materials
- c) Factors affecting the choice of packaging materials
- d) Disposal and recycling of packaging waste.

Unit – V

(11Hrs)

STORAGE

Storage, handling and distribution of packages (foods) – effect of improper packaging- preventive techniques

- a) Branding and labeling
- b) Packaging laws and regulations.

References

1. Sachrow&Griffin,Food Packing – AVI Publications
2. Hotchikess Food & Packaging Interaction – American Chemical Society
3. Darry, R,&T,Blackie. Principles & Applications of MAP – Academic & Professions
4. Bhatia S.C. Canning & Preservation of fruits and Vegetables – New Delhi

MSU/2021- 22/UG colleges/Part III (B.Sc. Nutrition& Dietetics)

Semester V/ 46/ Major Elective - III

FOOD QUALITY CONTROL

Objectives

L T P C

4 0 0 4

1. Enables students to use various sensory methods for evaluation variety of foods.
2. Enables students to analyses and interpret sensory evaluation data.

UNIT – I

(13Hrs)

- a) General principles of Quality Control- Quality Attributes - size, shape, colour, consistency, viscosity, texture, taste and colour
- b) Methods of evaluation of food quality – Sensory, objective technique, microbiological methods of quality evaluation.

UNIT - II

(12Hrs)

- a) Food Contaminants – Naturally occurring toxicants, anti – nutritional factors
In foods
- b) Environmental contaminants. Biological contaminants, pesticide residues,
Veterinary drug residues and heavy metals.

UNIT – III

(12Hrs)

- a) Indirect additives, Anti-microbial and veterinary drugs, pesticides, poly cyclic
Aromatic hydrocarbons
- b) Other organic residues, packing materials, heavy metals, Radio nuclides in foods

UNIT-IV

(11Hrs)

Standard and specifications:

- Voluntary & compulsory standard
- Packaging & labelling standard
- ISO & HACCP
- FSSAI

UNIT – V

(11Hrs)

Quality improvement techniques & external quality control activities:

- Quality improvement plan (QIP)
- Quality Control circles (QCC)
- Total quality Management (TQM)

External quality control activities:

- Certification & quality marks
- National standard bodies
- Testing laboratories

REFERENCES

1. Giridarilalsidappa , G.s., and Tandon, G.L. (1979) Preservation of fruits and
vegetables,ICAR ,NEW DELHI

2. FPO (1955) Quality Control
3. Horace ,D. Graham ,1980,the safety of foods,2nd End ,AVI publishing Co.,Inc,Westport

MSU/2021- 22/UG colleges/Part III (B.Sc. Nutrition& Dietetics)

Semester V/ 47/ Major Practical - VII

CLINICAL BIOCHEMISTRY

Objectives

- 1 To study different test for diseases
- 2 To know the biochemical composition of blood and different parts of the body

PRACTICALS

1. Visit to lab to observe the lists used for abnormal glucose level in blood
2. Visit to lab to observe the lists used for abnormal glucose level in Urine
3. A mini project related to heart diseases
4. Conduct a survey to find out the prevalence of Inborn errors of metabolism
5. Visits to labs to observe liver and gastric test
6. To determine the glucose from the serum sample
7. To estimate the cholesterol from the serum sample
8. Qualitative analyze the abnormal constituents in urine.

References

1. Cantrow A and Trumper, Clinical Bio-chemistry, M.W.B. Saunders co- 1975
2. Swaminathan. M, Bio-Chemistry for medical teachers
3. Harold valley, Clinical, Bio-Chemistry (1986)

MSU/2021- 22/UG colleges/Part III B.Sc. Nutrition& Dietetics) Semester VI/47/project

Group Project

L T P C

0 0 7 7

Students are encouraged to work on Mini group projects to get acquaintance to real life problem solving and hands -on experience. The outcomes of the projects would be submitted as report and viva voce shall be conducted for individual student and not in a group.