Syllabus developed
According to NATIONAL EDUCATION POLICY 2020
C.B.C.S.
for
M.Sc. (Home Science)
MASTER OF SCIENCE [HOME SC. (GENERAL)]
Food & Nutrition

Semester- IX

Theories/ Practical	Major	Subject Name	Credit (24)
Theory	1	Applied Physiology	4
Theory	2	Food Microbiology	4
Theory	3	Geriatric Nutrition	4
Theory	4	Nutrional Biochemistry	4
Practical	1	Nutrional Biochemistry	4
Research	1	Research/ Project	4

Semester- Xth

Theories/ Practical	Major	Subject Name	Credit (24)
Theory	1	Food Processing & Preservation	4
Theory	2	Peadiatric Nutrition	4
Theory	3	Functional foods, Biodynamic Principles & Nutraceuaticals	4
Theory	4	Therapeautic Nutrition	4
Practical	1	Therapeautic Nutrition	4
Research	1	Research/Project	4

Syllabus developed

According to NATIONAL EDUCATION POLICY 2020

C.B.C.S.

for

SUBJECT : HOME SCIENCE

MASTER OF SCIENCE [HOME SC. (GENERAL]

FOOD & NUTRITION

Semester : IX

Paper : First

Subject- Applied Physiology

Course : Major (Compulsory) **Credit - 4 (Theory)**

Objectives:

1. Enabling the students of understend the alteration and adaptation of the functions of various usans in relation to internal and external environment in different physiologicul and environmental condifions

Unit I Introduction to Human Physiology

a. Definition of Human Physilogy and structural oragnization of cell.

b. Tissues- Formation of tissues and elementary tissues in human body.

Unit II Blood Circulation system

a. Blood- Formation, function and consposition of blood, hemotopoiesis, erythropoiesis, leukpbiesis.

b. Formatiomation and function of plasma protein.

c. Blood group, Blood clotting, hamoglobin synthesis.

d. Structure and function of heart, blood vessels, regulation of cardic output, blood preseeure and its significance.

Unit III Digestive System

a. Introduction of digestive system, structure of digestive tract, function of digestive system, salivary glunds and its secretion.

b. Stomach and its sections, Pancreas, Bile, Small intestine, Large intestine, Digestive juics and gastrointeetiral Hormones.

Unit IV Excretory System

a. Structure and funtion of kidney, Role of kidney in maintaining PH of Blood.

b. Mechanism of urine formation, Mechanism of filtration Electrolyte and acid base balance

c. Renal function tests (Blood and Urine) tests Diuretics.

Reference:

1. Chatterjee, C.C. 1992 Human Physiology, Vol I & II (11th Edition) Medical Allied Agency, Calculta.
2. Kale C.A. and Neil F. Samson N.F. Weight's Applied Physiology, O.U.P.
3. Sharma, S. Practical Biochemistry 1993, Classic Pub. House, Jaipur.

Syllabus developed

According to NATIONAL EDUCATION POLICY 2020

C.B.C.S.

for

SUBJECT : HOME SCIENCE

MASTER OF SCIENCE [HOME SC. (GENERAL]

FOOD & NUTRITION

Semester : IX

Paper : Second

Subject- Food Microbiology

Course : Major (Compulsory) **Credit - 4 (Theory)**

Objectives:

1. Making the students understand the basis of microbial growth and various food stuff and its benfeficial and harmful effects
2. Making students learn the ways and means to prevent microbial contamination during and after food processing to certain spoilage and poisoning

Unit I Introduction to Food Microbiology

a. Introduction to food microbology and its relevance to every day life.

b. General characteristics of Bacteri, Fungi, Virus, Protozoa and Algle.

Unit II Microorganisms Important in Food

a. Microoragnism Present in different foods.

b. Microbes in foods and fermented food.

c. Importance of Micro-organism in food-primary sources of micro-organisms in food Intrensis and extrinsic parameters of food affecting microbial growth.

d. Isolation and detection of microorganism in food and prevention measures.

Unit III Spoilage of different groups of food

a. Spoilage of different products by presence of microorgaism, Vegetables and fruits,meat and meat products, eggs and poultry, milk and milk products, canned foods.

Unit IV Food borne disease and infections

a. Food borne indication - Botulism and staphylococcal intoxication.

b. Food borne infections - Salmonellosis, clostridium, pergrigens illness and Bacillus cereus gastroentaits.

c. The HACCP system and food safety used in controling microbiological hazards

Reference:

1. Pelczar, M.I. and reid, R.D. Microbiology. McGraw Hill Book Company, New York.
2. Atlas, M.R. Principles of Microbiology. Mosby-Year book, Inc, Missouri, USA.
3. Frazier, W.C. and westhoff D.C. Food Microbiology. Mc Graw Hill Inc.

Syllabus developed

According to NATIONAL EDUCATION POLICY 2020

C.B.C.S.

for

SUBJECT : HOME SCIENCE

MASTER OF SCIENCE [HOME SC. (GENERAL]

FOOD & NUTRITION

Semester : IX

Paper : Third

Subject- Geriatric Nutrition

Course : Major (Compulsory) **Credit - 4 (Theory)**

Objectives

1. Understand the multifaceted aspects of aging
2. Understand the specific needs of elderly and effects of various diseases on nutritional status and nutritional requirements at these stage of life cycle

Unit I The Ageing Society

a. Introduction to geriatric nutrition : The Ageing process and changes associated with ageing process.

b. Physiological Changes : Body composition, gastrointestinal, cardiac, renal, muscular, skeletal, neural (including brain and spinal cord), changes and impact on health and nutritional status.

Unit II Common Molecular Theories of Ageing and Nutritional Interventions

a. Factors influencing ageing : Endogenous and Exogenous.

b. Benefits of calorie restriction and exercise.

c. Nutritional requirements for senior citizens.

d. Promoting successful ageing - traditional and modern method.

Unit III Nutritional and Helath Status of Elderly

a. Factors influceing food consumption and nutritional status of elderly

b. Under nutrition in the elderly, gastrointestinal disturbances, cardiac, renal, respiratory diseases, mental changes including depression, dementia, Parkinsons, Alzheimers, bone and muscle related abnormalities.

c. Role of Nutrition in prevention of age related diseases.

Unit IV Assessment of Nutritional Status

a. Mini-nutrition index, Assessment of frailty.

b. Policies and programmes of government pertaining to the elderly.

c. Promoting fitness and well bieing - Use of various modern and traditional approches.

References:

1. Ronald E, Kleinmal MD, Frank R, Grur. Pediatric Nutrition, American Academy of Pediatrics. 2020.
2. American Academy of Pediatrics. Pediatric Nutrition Handbook (6 Ed.). 2009.

Syllabus developed

According to NATIONAL EDUCATION POLICY 2020

C.B.C.S.

for

SUBJECT : HOME SCIENCE

MASTER OF SCIENCE [HOME SC. (GENERAL]

FOOD & NUTRITION

Semester : IX

Paper : Fourth

Subject- Nutritional Biochemistry

Course : Major (Compulsory) **Credit - 4 (Theory)**

Objectives:

1. Familiarising the students about the chemistry of macro and micro nutrients, energy transfer and detoxification
2. To understand the importance of Biochemical estimation in food composition, analysis and nutritional assessment

Unit I Introduction and Biomolecules in their celluler Environment

a. Introduction and Historical Background of Biochemistry and Biomolcules classes.

b. Importance and Application of bio- chemistry.

c. The cellular basis of life, structure and functions of cells (eukaryotes and prokaryotes).

Unit II Carbohydrates and Lipids

a. Introduction, functions and classification of carbohydrates.

b. Carbohydrate - metabolism, carbohydrate digestion major pathways of CHO metabolism glycolysis TCA cycle and Glyconeogenesis.

c. Lipid- introduction and classification of Lipids.

d. Metabolism- Fatty acid oxidation, B- oxidation and omega oxidation, Bio synthesis of unsaturated fatty acids, Bio synthesis of fatty acid.

e. Keton Bodies- ketosis Bio-synthesis and regulation of cholestrol and bile acid.

Unit III Protein and Enzymes

a. Protein- introduction, function and classification of protein, Metabolism of amino acid, Urea cycle, Plasma Protein and their funcations.

b. Enzymes- Introduction to enzymes and co-enzymes, Kinetis of enzymes reactions- effect of time, PH, velocity and Km. value, activesite and specificity, enzymes in clinical diagnosis.

Unit IV Nucleic acid and Hormones

a. Nucleic acid - Introduction, Mechanism of DNA and RNA nucleotides.

b. Hormones: Mode of action and Regulation of metabolism-Follicle stimulating and interstitial cell stimulating hormone adrenocortico tropic hormone, growth hormone Thyrotropic hormone, adreocortical hormone, sex hormone-testosteronc, estrogenic hormone.

References:

1. West, B.S, Todd, W.R. Neson, H.S. and Van Brugger, T.T. Test book of Biochemistry, Oxford L.B.H. Publishing Co., New Delhi.
2. Weite, A., Handler, P and Smith, E.L.: Principles of Biochemistry, McGraw Hill book Company.
3. Lehninger, A.L.: Biochemistry: North Publishing Inc. N.Y. Centeron. Abrahim and Schepartg:.
4. Biochemisrty: Bernard Students Philadelphia.
5. Harper, H.A.Rodweel. V.W. and Vayes, P.A. Jange marngen: Review of Physiological Chemistry.

Syllabus developed
According to NATIONAL EDUCATION POLICY 2020
C.B.C.S.
for
SUBJECT : HOME SCIENCE
MASTER OF SCIENCE [HOME SC. (GENERAL]
FOOD & NUTRITION
Semester : IX

Subject- Nutritional Biochemistry

Course : Major (Compulsory) **Credit - 4 (Practical)**

1. Estimation of Calcium and Protein in food.
2. Colorimetric and flurometric: Iron, total and free cholesterol, Vit. A & C, riboflavin.
3. Chromatography: Paper Separation of amino acids, Column Separation of lipids (only demonstration).
4. Blood analysis: Blood count, DLC, I- hemoglobin – blood indices and Urine analysis.

Syllabus developed
According to NATIONAL EDUCATION POLICY 2020
C.B.C.S.
for
SUBJECT : HOME SCIENCE
MASTER OF SCIENCE [HOME SC. (GENERAL]
FOOD & NUTRITION
Semester : X

Paper : First

Subject- Food Processing and Preservation

Course : Major (Compulsory) **Credit - 4 (Theory)**

Objectives:

1. To impart systematic konowldge of basic and applied aspects in food processing.
2. To enable the students to understand food composition and its physico Chemical, Nutritional sensory aspects.

Unit I Cereal and Cereal product technology

a. Cereal- Wheat, rice, maize, barey oat, structure, culivation, harvesting, properties, composition and milling process.

b. Baking tecnology- Printable of baking, method of preparations,.

Unit II Meat , and its products technology

a. Comosition, variety, hanling, grading, ageing, tenderizing of meat and colour change.

Unit III Milk and Milk products tecnology

a. Milk- Coposition, factors afffecting milk quality, physical and chemical products, milk processing BIS standards, packaging and distribution.

Unit IV Fruits and vegetable technology

a. Principles of fruita and vegetables preservation, processing technology- Freezing, dehydration, during canning, preserves jam, jelly, marmalade, pickal sauce, squash and chatni.

Syllabus developed

According to NATIONAL EDUCATION POLICY 2020

C.B.C.S.

for

SUBJECT : HOME SCIENCE

MASTER OF SCIENCE [HOME SC. (GENERAL]

FOOD & NUTRITION

Semester : X

Paper : Second

Subject : Peadiatric Nutrition

Course : Major (Compulsory) **Credit - 4 (Theory)**

Objective :- On successful completion of the course students will be able to:

1. Demonstrate a thorough knowledge of the theory of human nutrition and dietetics as it applies to paediatrics
2. Demonstrate understanding of the aetiology, pathophysiology and clinical features of paediatric diseases and conditions that require dietary modification
3. Apply knowledge of food, nutrition, dietetics and health to the nutritional care of child

Unit I **Introduction to Peadiatrics:**

a. Define overview of Peadiatric Nutrition.

b. Normal pattern of growth in children, failure to thrive and understand short stature.

c. Factors affecting growth of child.

Unit II **Physiology of Infant Nutrition:**

a. Influence of Nutrition on growth & development.

b. Nutritional requirements in the different periods of childhood.

c. Preventional Assessment in children.

Unit III **Artificial Nutrition in Peadiatrics:**

a. Concept of Nutritional Therapy, Evaluation of patients in need of Nutritional support.

b. Dietary products used for sick children or children with special needs.

c. Artificial Nutrition at Home and Nutritional Supplements to support the concentional diet.

d. Role of Probiotic and prebiotic in Child Nutrition.

Unit IV **Feeding Patterns:**

a. Breast Feeding / Formula feeding (Birth 6 month)

b. Complementarty and Early Diet (6 month- 2 years of age)

REFERENCES

1. Ronald E, Kleinmal MD, Frank R, Grur. Pediatric Nutrition, American Academy of Pediatrics. 2020.
2. American Academy of Pediatrics. Pediatric Nutrition Handbook (6 Ed.). 2009.

Syllabus developed
According to NATIONAL EDUCATION POLICY 2020
C.B.C.S.
for
SUBJECT : HOME SCIENCE
MASTER OF SCIENCE [HOME SC. (GENERAL]
FOOD & NUTRITION
Semester : X

Paper : Third

Subject : Functional Foods, Biodynamic Principles and Nutraceuticals

Course : Major (Compulsory) **Credit - 4 (Theory)**

Objectives: This course is designed tom enable students to :

a. Gain knowledge about functional foods, biodynamic principles & nutraceuticals

b. Have thorough understanding about the health effects

Unit I

a. Introduction, History and Classification- Probiatics prebiotic, symbiotic, nutrients and non nutrient)

Unit II **Potential health benefits of the following biodynamic principles**

a. Definition, Chemistry, Sources, Metabolism and bioavailability, effect of processing, physiological effects, effects on human health and potential applications in risk redaction of diseases.

Unit III **Perspective for food application for -**

a. Polyphones: flavonoids, catechins, Tannin curcumin

b. Phytoestrogens/ Isoflavones.

c. Phylosterols.

d. Glucosinolates.

e. Pigments- Lycopence, Carotenoids.

f. Other components-phytates, protease inhibitors saponins, amylase inibitors, haemagglutinins.

Unit VI **Non-nutrient effect of specific nutrients**

a. Proteins, peptides and nucleotides, conjugated linoleic acid and n-3 fatty acids, vitamins and minerals

b. Active biodynamic principles in spices, condiments and other plant materials

References:

1. Cho S.S. and Dreher, M.L. (2001) Handbook Dietary Fibre,Marcel Dekker Inc Newyork

2. Yurawecz, M.P., M.M. Mossoba, J.K.G Kramer, M.W. Pariza and G.J. Nelson eds 1999 Advance in Conjugated Linoleic Acid Research, Vol.1. AOCS Press Champaign

Syllabus developed

According to NATIONAL EDUCATION POLICY 2020

C.B.C.S.

for

SUBJECT : HOME SCIENCE

MASTER OF SCIENCE [HOME SC. (GENERAL]

FOOD & NUTRITION

Semester : X

Paper : Fourth

Subject- Therapeautic Nutrition

Course : Major (Compulsory) **Credit - 4 (Theory)**

Objectives:

1. To understand causative factors and metabolic changes in various diseases
2. To gain knowledge of the principles of Therapeautic Nutrition

Unit I Basic concept of Therapeautic Nutrition

a. Therapeautic adaptions of normal diet, principles and classifcation of the diets.

b. Different types of diets- Regular, light, soft, liquid, parenteral and enteral feeding.

Unit II Diet for fibrile conditions, infections and surgical conditions

Unit III Etiology, Symptoms and Dietary Management in Anemia and Metabolic Diseases

a. Anemia-Pathogenesis and dietary Management-Nutritional anemias, sickle cell anenias, thalassemia, resulting from acute haemorrhage.

b. Metabolic Diseases- Discuss in detail about Metabolic Diseases and their dietary Managment.

Unit IV Disease of liver and Gallbladder

a. Liver-Liver function test and and nutritional care in liver disease, dietary management in- Jaundice, viral hepatitis, cirrhosis of liver and hepatic coma.

b. Gallbladder- Dietary care and management in disease of Gallbladder- Cholelithiasis, cholecystitis and cholecystectomy.

Reference:

1. Mahan, L.K. and Escott-Stump, S. (2000): Krause's food Nutrition and Diet Therapy“10 Edition. W.B. Saunders Ltd
2. Williams, S.R. (1993): Nutrition and Diet Therapy, 7' Edition, Times Mirror/Mosby“College Publishing.
3. Davis, J. and Sherer, K. (1994): Applied Nutrition and Diet Therapy for Nurses,“Edition,“W.B“2nd.

Syllabus developed
According to NATIONAL EDUCATION POLICY 2020
C.B.C.S.
for
SUBJECT : HOME SCIENCE
MASTER OF SCIENCE [HOME SC. (GENERAL]
FOOD & NUTRITION
Semester : X

Subject- Therapeautic Nutrition

Course : Major (Compulsory) **Credit - 4 (Practical)**

1. Planning and Preparation of Hospital diets -
   a. Normal Diet b. Soft Diet
   c. Clear Liquid Diet d. Full Liquid Diet
2. Planning, Preparation and Calculation of whole day menu for Fiver, Fibrile Conditions, Infections and Surgical Conditions.
3. Planning, Preparation and Calculation of whole day menu for Nutritional Anemia and Metabolic diseases.
4. Planning, Preparation and Calculation of menu for liver and Gallbladder diseases.