Objectives

The course is designed to:

- Provide in depth knowledge of the physiological and metabolic role of various nutrients and their interactions in human nutrition.
- Enable students to understand the basis of human nutritional requirements and recommendations through the life cycle.
- Familiarize students with the recent advances in nutrition.

UNIT-I


UNIT-II

Carbohydrates: Digestion and transport review-dietary fibre fructooligosaccharides, resistant starch-chemical composition and physiological effects, Glycemic index of foods. Sweeteners-nutritive and non-nutritive.

Non-nutritive food components with potential health effects: Polyphenols, tannis, phylate, phytoestrogens. Cyanogenic compounds, lectins and saponins.
UNIT-III

(a) **Proteins**: Digestion, absorption transport-review, Metabolism of proteins, Role of muscle, liver and gastrointestinal tract.
Protein quality; methods of evaluation proteins needs. Therapeutic application of specific amino acids: Branched chain, glutamine arginine homocysteine, cysteine.

(b) Nutritional regulation of gene expression

(c) Inborn errors of metabolism: Sickle cell Anaemia, Thalassemia, Cystinuria, Phenylketouria, Hereditary Lectose intolerance, crout.

UNIT-IV

**Lipids**: Digestion, absorption transport review.
Functions of essential fatty acids. Role of n-3, n-6 fatty acids. Prostaglandins. Fat requirements.

**Minerals**: Note: For each nutrient sources bioavailability, metabolism, function, determination of requirement RDI/ESADDI, deficiency and toxicity, interactions with nutrients are to be discussed.

Marco minerals: Calcium, phosphorus, Magnesium sodium, potassium and chloride.

Micro minerals: Selenium, cobalt, Chromium, vanadium, silicon, boron, nickel.

UNIT-V

(A) **Vitamins**: Historical Background, structure food sources, absorption and transport, metabolism, biochemical function, assessment of needs, interaction with other nutrients Physiological, pharmacological and therapeutic effect toxicity and deficiency with respect to following:

(i) Fat soluble: Vitamin A, D, E & K

References:
1. Annual Reviews of Nutrition. Annual Review Inc. California, USA
4. World Reviews of Nutrition and Dietetics.
6. Indian Council of Medical Research, Recommended Dietary Intakes for Indians - Latest Recommendations.
Journals:

1. Nutrition Reviews.
M.Sc. (Home Science)
Food and Nutrition

SEMESTER-III
PAPER-II
Clinical and Therapeutic Nutrition

Objectives
The course will be enable the students to:

- Understand the etiology, physiologic and metabolic anomalies of acute and chronic diseases and patient needs.
- Know the effect of various diseases on nutritional status and nutritional and dietary requirements.
- Be able to recommended and provide appropriate nutritional care for prevention and treatment of various diseases.
- Orient the students with all the important state of the art methodology applied in nutritional assessment and surveillance of human groups.
- Develop specific skill to apply the most widely used method.

UNIT-I

(A) Role of dietitian
   (a) Responsibilities of nutritional counselor.
   (b) Communication of dietary advice, skills of communication.
   (c) Motivation of patients.
   (d) Teaching and used in dietary advice.

(B) Principles of nutritional care
   (i) Nutritional care process
       (a) Assessment
       (b) Objectives of nutritional care
       (c) Implementation of nutritional care
       (d) Evaluation of nutritional care.
Semester Wise Syllabus for Postgraduates
Recommended by Home Science Board of Studies
Jiwaji University, Gwalior

(C) Nutritional Intervention
(1) Current methodologies of assessments of nutritional status in clinical situation
their implementation and comparative application for the following:
(a) Food consumption
(b) Anthropometry
(c) Clinical assessment
(d) Laboratory tests
(2) Assessment of patients nutritional needs
(a) Dietary calculations
(b) Meal exchange system
(c) Diet prescription
(3) Diet Modification
(a) Adequate normal diet as bases for therapeutic diet.

Unit-II

(A) Nutritional care of hospitalized patients
(1) Identification of high risk patients.
(2) Assessment of patients need based on interpretation of patient data clinical
biochemical, biophysical etc.
(3) Hospital food service.
(4) Routine hospital diets (a) Regular (b) Light (c) Soft, (d) Fluid
(5) Modes of feeding
(6) External - tube feeding
(7) Parenteral (i) Peripheral vein feeding (ii) Total parenteral nutrition
(8) Psychological factor in feeding the sick person
(9) Effect of food, nutrients and nutritional status on drug dosage and efficiency.

Unit-III

(A) Overweight and obesity
(1) Definition
(a) Classification
(b) Assessment
(c) Causes, Physiology of obesity, mathematics of weight reduction.
(2) Treatment of obesity
(a) Dietary management and calorie restriction plan
(b) Exercise
(c) Other approaches of weight reduction
Semester Wise Syllabus for Postgraduates
Recommended by Home Science Board of Studies
Jiwaji University, Gwalior

(B) Underweight
(1) Definition
   (a) Criterion
   (b) Etiology
(2) Treatment
   (a) High calorie diet

(C) Injection and fever
(1) Metabolism, effect on body mechanism and classification
(2) Etiology, Pathology symptoms and treatment of a
   (a) Acute fever - viral fever
   (b) Chronic fever - typhoid and TB

UNIT-IV

(A) Diseases of gastro intestinal tract causes, Pathogenesis, Symptoms and Dietary management of
(1) Diseases of esophagus
   (a) Achalasia
   (b) Oesophagitis
(2) Disease of stomach
   (a) Indigestion
   (b) Gastritis
   (c) Peptic ulcer
   (d) Esophagitis
(3) Disease of intestine
   (a) Constipation
   (b) Diarrhea
   (c) Hemorrhoids
   (d) Steatorrhoea
(4) Inflammatory diseases of bowel
   (a) Diverticular disease
   (b) Ulcerative Colitis
(5) Malabsorption syndrome
   (a) Sprue
   (b) G-IT enzyme deficiency
UNIT-V

(A) Diseases of liver exocrine pancreas and biliary system: Physiology, Etiology, Pathogenesis, Symptoms and Management

(1) Physiology of liver
(2) Diet and liver disease
(3) Liver diseases
(a) Cirrhosis
(b) Viral hepatitis
(c) Hepatic coma
(d) Wilson's disease
(3) Disorder related to gall bladder
(a) Cholecystitis
(b) Gall stones
(4) Disorders related to pancreas
(a) Pancreatitis

Practical: M.M. 100

1. Calculating BMR using the Kymograph
2. Calculate the energy balance of an Individual
3. Calculate the energy expenditure using the Satyanarayan Method.
4. Calculation of percent energy supplied by carbohydrate in the diet.
5. To find out the high fibre products available in market and critically evaluate the content.
6. Evaluation of protein quality of food preparations
(a) To calculate the chemical score of food item using the SAAP, PAAP, reference protein.
(b) Calculation of NDP cal% of dishes.
7. To estimate the calcium content of feces and .............. and to assess the ................. balance of an individual.
8. To estimate the total nitrogen intake based on the protein intake and .................... the N2 balance of an individual.
11. Nutritional supplement, nutritional support substrats.
References:
1. Manual of Dietetics Practice - Brony Thomas
2. Nutrition in Health and Disease - Anderson
3. Normal and Therapeutic Nutrition - C.H. Robinson
4. Basic Nutrition and Diet Therapy - William 10/c
5. Nutritional and Diet Therapy - William 10/c
6. Food Nutrition and Dietetics - URVI
7. Nutrition and Diet Therapy - Stanfield
8. Modern Nutrition in Health and Disease - Robert S. Goodhart
9. Nutrition Principles and Clinical Practice - Sara M Hunt and James
10. Nutrition in Critical Care - Zaroga
12. Dietetics - Shrilaxmi
13. Nutrition and Dietetics - Shubhangini Joshi
14. Human Nutrition and Dietetics - Davidson Passmore
15. Clinical Dietetics and Nutritional - F.P. Antia
16. Textbook of Nutrition and Dietetics - Kumud Khanna et al
Semester Wise Syllabus for Postgraduates
Recommended by Home Science Board of Studies
Jiwaji University, Gwalior

M.Sc. (Home Science)
Food and Nutrition

SEMESTER-III
PAPER-III
Food science & Current Trends

Objectives
This course is designed to:

- Provide an understanding of composition of various food stuffs.
- Familiarize students with changes occurring in various foodstuffs as a result of processing and cooking.
- Enable students to use the theoretical knowledge in various application and food preparations.
- Create awareness regarding current trends, issues and researches in various aspects of food and nutrition.

UNIT-I

(a) Introduction of Food Science: Development of Food Science as a discipline.

(b) Water and Food Dispersions: Physical properties of water and ice chemical nature, structure of the water molecule.
   - Absorption phenomena, type of water
   - Free and bound water

UNIT-II

- Physico chemical properties of food.
- Chollidal salts, stabilization of colloidal systems.
- Gels structure, formation and stabilization
- Emulsions; formation, stability surfactants and emulsifier.
To study the effects of various factors affecting the fat absorption. Use of various types of fats (unsaturated & saturated) in cookery.

M.Sc. (Home Science)
Food and Nutrition

SEMESTER-III
PAPER-IV
Scientific Writing & Communication Technology

Objectives
- To be able to appreciate and understand importance of writing scientifically.
- To develop competence in writing and abstracting skills.
- To write either a draft research proposal or a chapter of dissertation.

CONTENTS

UNIT-I

1. Scientific writing as a means of communication
   - Different forms of scientific writing
     Articles in Journals, Research
     Notes Monographs
     Bibliographies

2. How to formulate outlines
   - The reasons for preparing outlines
   - As a guide for plan of writing
   - As skeleton for the manuscript
   - Kinds of outline
     Topic outlines
     Conceptual outline
     Sentence outline, combination of topic and sentence outlines.
SEMESTER WISE SYLLABUS FOR POSTGRADUATES  
RECOMMENDED BY HOME SCIENCE BOARD OF STUDIES  
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UNIT-II

3. **Drafting titles, sub title, tables, illustrations**
   - Tables as systematic means of presenting data in rows and lucid way of indicating relationships and results.
   - Formatting tables, title, body stab, stab column, column head, spanner head box, head
   - Appendices: Use and guidelines

UNIT-III

4. **The Writing process**
   Getting started
   Use of outline as a starting device
   Drafting
   Reflecting Re-recording
   - Checking organization
   - Checking headings
   - Checking content
   - Checking clarity
   - Checking grammar
   - Brevity and precision in writing drafting and re-drafting.

UNIT-IV

5. **Parts of dissertation/research report/article**
   - Introduction
   - Review of Literature
   - Method
   - Results and discussion
   - Ask questions related to content, continuity, clarity, validity, internal consistency and objectively during writing each of the above parts.
UNIT-V

Clearly state the question to be addressed
Rationale and importance of the question being addressed
Empirical and theoretical conceptualization
Presenting pilot study/data
Research proposal and tie frame
Clarity, specificity of method
Clear organisation
Outcome of study and its implications
Budgeting
Available infra structure and resources
Executive summary

References:

5. Locke, L.F. and others (1997) Proposals that Work: A guide Cor planning Dissertations & Grant proposal (2nd Ed.) Beverly Hills: Sage,