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Semester wise syllabus for Post Graduates
As recommended by board of studies
Govt. K.R.G. P.G. Autonomous College Gwalior M.P.
M.Sc. (Home Science)
Food and Nutrition
SEMESTER - III
PAPER-I
Advanced Nutrition
~~20-18-19~~ 2021-22

M.M. 100

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

Energy: Energy content of food. Physiological fuel value-review. Measurement of energy expenditure, BMR thermic effect feeding and physical activity. Methods of measurement. Estimating energy requirement of individual and groups. Regulation of energy metabolism: control of food intake, digestion absorption and body weight.

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.

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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, Thallasaemia, Cystinuria, Phenylketouria, Hereditary Lactose 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.

Macro 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
- (ii) Water soluble: Thiamine, riboflavin, niacin, biotin, pyridoxine, folic acid, panthothenic acid, ascorbic acid, cyanocobalmin, choline, Inositol.

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M.Sc. (Home Science)

Food and Nutrition

SEMESTER-III

PAPER-II

Clinical and Therapeutic Nutrition

~~20-18-19~~ 2021-22

M.M. 100

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.

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(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.

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.

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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

(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

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- (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)
 - (a) Physiology of liver
 - (b) Diet and liver disease
- (2) 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

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Govt. K.R.G. P.G. Autonomous College Gwalior M.P.**

**M.Sc. (Home Science)
Food and Nutrition
SEMESTER-III
PAPER-III
Food science & Current Trends
~~20-18-19~~ 2021-22**

M.M. 100

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.
- Colloidal salts, stabilization of colloidal systems.
- Gels structure, formation and stabilization
- Emulsions; formation, stability surfactants and emulsifier.

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UNIT-III

- Starch: Structure, gelatinization, methods of following gelatinization changes. Characteristics of some food starches. Effect of ingredient and conditions on gelatinization. Modified food starches.
- Non-starch Polysaccharides: Cellulose, Hemicelluloses, Pectin's gums, animal polysaccharide.
- Sugar and Sweeteners: Sugars, syrups alcohols, potent sweeteners, sugar products. Alternatives sweeteners. Browning.
- Reactions of sugar: Caramelization, Hydrolysis, Crystallization, Indian Confectionery.

UNIT-IV

Cereals and Cereals Products:

- Cereal grains: Structure and Composition
- Cereal products
- Flours and flour quality
- Extruded foods breakfast cereals wheat germ, bulgur, puffed and flaked cereals.

UNIT-V

- (a) **Milk and Milk Product:** Composition, Physical and functional properties. Denaturation, effects of processing and storage and Dairy Products: Cultured milk, yogurt, butter, whey cheese concentrated and dried products Frozen desserts, dairy product substitute.
- (b) **Pulses and Legumes:** Classification, composition, denaturation, non-enzymatic browning and other.

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Practicals:

1. Effect of solutes of boiling point and freezing point of water.
2. **Sugar and Jaggery Cookery:** Cararelization, crystallizatiion, factors affecting crystal formation. Preparation of standardized chikky, laddos gulabjammin, jalebi, Shakarparas, chocolates.
3. **Starches, vegetable Gums and cereals:** Gelatinization properties of starches, factors affecting Gelatinization formation. To see the effect of soaking time of the quality of rice. To study the formation of gluten.
4. **Jams and Jellies:** Pectin content of fruits, role of acid, pectin and sugar in jam and jelly formation.
5. **Fat and Oils:** Flash point, melting point and smoking point. Role of fats and oils in cookery, plasticity of fats. Permanent and semi permanent emulsions. To study the effects of various factors affecting the fat absorption. Use of various types of fats (unsaturated & saturated) in cookery.

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M.Sc. (Home Science)
Food and Nutrition
SEMESTER-III
PAPER-IV
Scientific Writing & Communication Technology
~~20-18-19~~ 2021-22

M.M. 100

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

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

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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 tab, tab column, column head, spanner head box, head
- Appendices: Use and guidelines

UNIT-III

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

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UNIT-V

- Clearly state the question to be addressed
- Rationale and importance of the question being addressed
- Emperical 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

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