

BHARATHIAR UNIVERSITY : COIMBATORE – 641 046

M.PHIL / PH.D – FOOD AND NUTRITION

(effective from the academic year 2006-07 & onwards)

PART-I SYLLABUS

Paper – I – Research Methods in Nutrition

Unit – I

Types of nutrition research and studies – longitudinal, cross sectional, epidemiological, surveillance, retrospective, in-vivo, in-vitro and experimental.

Animal nutrition experiments – principles, selection of animal, comparative feeding trials, design, applications and ethics.

Problem selection – factors to be considered.

Experimental designs – examples of nutrition research using the following experimental designs : single group, pre and post design, case study, cohort study, ex-post facto study, time series experiments and factorial designs.

Unit – II

Data collection – principles, definition and examples in nutrition and health for the following:

1. Quantitative tools
 - i. Direct parameters – Application of anthropometry, dietary survey, clinical, biochemical and growth monitoring tests, body composition tests and physical fitness tests.
 - ii. Indirect parameters – vital statistics, population tests, socio – economic indices, KAP surveys.
2. Qualitative research tools
 - i. Types of interviews
 - ii. Focus group discussions
 - iii. Free listing and pile sorting
 - iv. Narrative
 - v. Case studies
 - vi. Participatory methods
3. Integrating qualitative and quantitative methods.
4. Planning and implementation of a nutritional assessment survey.

Unit – III

Indices and methods to assess the requirement and quality of the following in body and food: proteins, carbohydrates, lipids, energy, vitamins, minerals, trace elements and water.

Product development – need, scope and methods.

Subjective and objective methods for evaluation of food products – principles, methods and recent trends.

Unit – IV

Sampling methods, testing hypothesis.

Data analysis – uses of the following with examples of nutrition and health data ;

1. Descriptive statistics – mean, median, mode and standard deviation percentile, T- test, chi-square test, F-test, correlation and regression.
2. Non – parametric statistics in nutrition research
3. Uncertainties in nutrition and health research – source, measurement (probability) and methods to minimize impact.
4. Organizing the results and report writing.

Unit – V

Introduction to nutrition and health management – definition, objectives and components of planning, implementation and evaluation.

Operations research and contribution to nutrition and health management.

Planning, implementation and evaluation of a nutrition project or programme from proposal development to report writing.

Critique of recent research studies – strengths and weaknesses, interdisciplinary perspectives.

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PART-I SYLLABUS

Paper II- Current Trends Nutrition

UNIT I

Food Science and Applications:

Anti – nutritional factors and active principles and changes of active principles during cooking and their nutritional implications for the following: cereals, pulses, vegetables and fruits, nuts and oilseeds, milk and milk products, tea, coffee, and cocoa, spices and condiments, meat fish, poultry and egg, fats and oils

Food adjuncts – Applications of natural and synthetic flavours and colors.

Functional foods- Latest trends in the concept of functional foods; their role in designer foods, nutraceuticals and food analogues and as phytochemicals and antioxidants.

Genetically modified foods – potential problems and solutions.

UNIT II

Biochemical Aspects Of Macro Nutrients:

Carbohydrate : Digestion, absorption and metabolism, effects of deficiency and toxicity.

Protein: Digestion, absorption and metabolism, effects of deficiency and toxicity.

Protein quality evaluation – methods and applications, Amino acids – Essential and non essential amino acids, role of amino acids in health and diseases.

Fat : Digestion, absorption and metabolism, types of fatty acids, their role in health and diseases.

Energy : Energy metabolism – BMR, SDA and energy requirement, respiratory quotient and metabolism in starvation, interrelationship between the nutrients.

UNIT III

Biochemical Aspects Of Micro Nutrients :

Vitamins : Functions, digestion, absorption and metabolism of fat soluble and water soluble vitamins, effects of deficiency and toxicity, bio assay of fat and water soluble vitamins, interrelationship.

Minerals and trace elements, functions, absorption, metabolism, effects of deficiency and toxicity, interrelationship.

Water and electrolyte balance.

UNIT IV

Nutrition through life cycle

RDA and nutritional importance during pregnancy – complications, foetal mal development related to nutrition. Weight management. Teenage pregnancy and its implications.

Lactation – special nutritional consideration during lactation.

Infancy & childhood years – Pre term infants and nutritional needs - vitamins & mineral needs, protein foods, obesity, changing nutritional needs of preschoolers.

Adolescents : Recent trends in growth and development and changing nutritional requirements. Eating disorders and changes in foods habits and their effects.

Adult -Nutritional importance, menstrual abnormalities and complications.

Nutrition in post menopausal women, complications and diet modifications.

Nutrition in Aging – Metabolic changes in aging, nutrition in aging process.

Nutritional problems in changing society – Psychosocial influences on food habits, food and gender, Religion, moral ethics, cultism and quackery. myths, taboos and superstition, physiological aspects of food choice and demographic choice. World food problem, food security in global & national level

Malnutrition in learning situation, global trends and policy approaches. Implications of new approaches for nutrition education.

UNIT V

Biochemical basis of health and diseases

Metabolic alterations in – obesity diabetes, cardiovascular disease, liver disorder, renal disorders, febrile conditions, cancer, AIDS and burns.

Nutrition in inborn errors of metabolism, nutrition and immunity, drug food-nutrient interaction, role of antioxidants in health and disease.

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