FOOD SCIENCE AND NUTRITION

Unit 1.

Macro/macro nutrients and trace element:- Food sources – general and specific sources. Relevance and essentiality – involvement in biochemical reactions and nutritional implications. Assessment of nutriture and analysis in food materials. Toxicity and deficiency - levels, symptoms, health consequences and their management.

Unit 2.

A. Body composition – Methods of study, compositional changes during life cycle, nutritional disorders, and their effect on body composition.

B. Body fluids and water balance – Body water compartments, regulation of water balance, disorders of water balance.

C. Energy metabolism- Basal and resting metabolism – influencing factors, methods to determine energy requirements & expenditure, thermogenesis, adaptation to altered energy intake. Regulation of food intake.

D. Basis for computation of nutrient requirements, latest concepts in dietary recommendations, RDA – ICMR and WHO their uses & limitations.

Unit 3. Nutrition during life span -

a. Pregnancy – Physiological adjustments, nutritional requirements, nutritional status of Indian Pregnant women, effect of malnutrition on outcome of pregnancy, complications of pregnancy.

b. Lactation – Physiology of lactation, factors affecting lactation, nutritional requirements, effect of lactation on maternal malnutrition and fertility.

c. Infancy – Growth and development, nutritional requirements, feeding pattern, compositional differences between human milk and milk substitute and their suitability for infant feeding. Weaning practices, weaning and supplementary foods.

d. Preschool age - Growth and development, nutritional requirements, special care in feeding preschoolers, nutritional problems specific to this age.

e. School age and adolescent children – Growth and development, nutritional requirements, factors affecting their eating habits, nutritional problems specific to this age.

f. Young adults – Nutritional requirements, nutritional status of Indian adult population, nutritional problems common to this age.

g. Elderly – Nutritional requirements, special needs, nutritional problems.

Unit 4.

a. Public Health Nutrition: Aims and scope, primary prevention, nutritional epidemiology, public health and health promotion.
b. Nutrition related non-communicable diseases (Indian Perspective) – Demographic, developmental and nutrition transition and its impact on chronic diseases, prevalence and determinants, nutritional management and prevention strategies.

Unit 5. Dietary Management of diseases

a. Medical Nutrition therapy- Febrile conditions, gastro-intestinal disorders, liver diseases, renal disorders.
b. Nutrition in critical care- nutrition support systems and associated complications.

Unit 6. Nutrition care and Assessment

A. Assessment methods for research and practice – Dietary, anthropometric, clinical, functional, biochemical tests, body composition, as applicable in individuals, populations and specific situations, Integrating assessment data – subjective global assessments.
B. Nutrition in health care – Illness and nutrition status, health professionals and nutrition care, nutrition screening, nutrition care process, ethical issues in nutrition care.

Unit 7.
Processing of foods: Wheat, rice, millets, legumes, fruits and vegetables, fats and oils, sugar and confectionaries, beverages, milk and milk products, eggs, meat and fish.

Unit 8.

A. Concept and meaning of food quality and food Safety. National and international food laws, food standards and Governing bodies. Hazard analysis and critical control points in processing of foods. Quality control in Food industry.

B: Product development and sensory evaluation.

Unit 9.

A:Food spoilage and its control. Contamination and spoilage of cereal, pulses, vegetables, fruits, flesh foods, eggs, poultry, marine products, milk & milk products.

B: Preservation of foods: Principles and techniques of preservation - Food dehydration and concentration, heat processing, cold preservation, chemicals and irradiation.

Unit 10.

Recent concepts in food science and nutrition: Nutrigenomics, metabolomics, nutrition for space travelers, neutraceuticals, functional foods, genetically modified foods, fat substitutes, emerging food processing technologies {nanotechnology, microencapsulation, biopolymers for packaging, active packaging, edible gums and coatings, pulsed electric fields, supercritical extraction, membrane filtration}.