III SEMESTER
Course 05: FUNDAMENTALS OF FOOD SCIENCE & NUTRITION
Credits -3

Outcomes of the course

At the end of the course the student will be able to demonstrate the following:

A) Remembers and explains in a systemic way

- Understanding the concepts of nutrition and food and its relation to health.
- Acquiring knowledge about macro and micro nutrients and their functions.
- Knowing the consequences of deficiency of taking nutrients.
- Understanding importance of non-nutrients in human nutrition

B) Understands and Uses

- Planning recipes by selecting appropriate foods based on the macro and micro nutrient composition.
- Selection of foods based on the nutrient composition for healthy and disease people.

C) Critically explains, judges and solves

- Planning and calculating nutritive values for the foods and recipes.
- Identification of signs and symptoms of different nutrient disorders.
- Practical knowledge on availability of seasonal and other foods by doing market survey.
- Listing out the common foods and their names in scientific and local languages.

D) Working in out of prescribed area under a co-curricular activity

- Selection of foods based on seasonal availability and planning recipes on the nutrient composition to healthy and diseased conditions.

E) Practical skills

- Market survey on different foods available and learning local and scientific names.
- Learn to identify different food samples and to know their nutrient composition.
- Planning of recipes according to nutrient components.

UNIT-I Macro Nutrients

- Macro Nutrients – Classification, functions, digestion, absorption, dietary sources, RDA,

  Clinical manifestations of deficiency and excess and storage of the following in the body.

  - Carbohydrates
  - Lipids
  - Proteins

UNIT – II Micro nutrients- Vitamins & Minerals

- Vitamins – Classification, functions , dietary sources, RDA, clinical manifestations of deficiency and excess of the following
  - Fat soluble vitamins – A, D, E and K
  - Water soluble vitamins – B Complex Vitamins - Thiamine, Riboflavin, Niacin, Pyridoxine, Folic acid, Cyanocobalamin and Vitamin C.
- Minerals – classification, functions ,dietary sources, RDA, clinical manifestations of deficiency and excess of the following
  - Macro minerals – Calcium, Phosphorous, Magnesium, Sodium and Potassium
  - Micro minerals or Trace elements – Iron, Iodine, Fluorine and Zinc

UNIT - III Plant Foods

- Cereals and Millets–Structure, Composition and nutritive value, processing, selection, and use in cookery
- Pulses and Legumes– Composition and nutritive value, processing, selection, and use in cookery, Nuts and oil seeds– Nutritive value , use in cookery
- Vegetables and Fruits– Classification, Selection, Nutritional aspects, Pigments, Enzymatic and non-enzymatic browning.
- Spices and condiments – Nutritive value, use in cookery

UNIT - IV Animal Foods

- Milk and milk Products - nutritive value, use in cookery
- Egg -structure, nutritive value, methods to assess quality of eggs, changes during storage and use in cookery
- Meat, Poultry, Fish – Nutritive value, use in cooker

UNIT – V Food Processing

- Food Preservation – Methods, high temperature, low temperature, removal of moisture, irradiation and preservatives
- Food additives– Types and their role in food processing, Nutrient Enrichment– Germination, fermentation, fortification etc.
- Food Spoilage – Microorganisms causing spoilage – Factors responsible for spoilage and changes brought about in food by microorganisms.

PRACTICAL

Credits -1

1. List out the common foods and to learn their names in Telugu, English, Hindi and Urdu.
2. Learn to identify the different food samples and to know their nutrient composition.
3. Standardization of weights and measures of various food items.
4. Cereals, pulse and vegetable preparations and calculation of nutritive values of recipe.
5. Milk, meat, egg preparations and calculation of nutritive values of recipes.
6. Drying of foods using different methods ,
7. Fermentation process of foods.
8. Germination of cereals and legumes processing techniques.

REFERENCES

1. Bamji MS, Krishnaswamy K, Brahmam, (2016) Textbook of Human Nutrition, 4th edition. Oxford and IBH Publishing Co. Pvt. Ltd.
2. Longvah, T., Ananthan, R., Bhaskarachary, K. and Venkaiah, K. (2017). Indian Food Composition Tables, Published by NIN
3. Raheena Begum, (2013). Textbook of Food, Nutrition and Dietetics, 3rd edition, Sterling Publishers Pvt. Ltd.
4. RavinderChada and PulkitMathur, (2015). Nutrition – A Life Cycle Approach, 1st edition, Orient Black Swan Private Limited
5. Shubhangini A. Joshi, (2002). Nutrition and Dietetics, 2nd edition, Tata McGraw-Hill Publishing Company Ltd.
6. Srilakshmi, B., (2018). Nutrition Science, 6th edition, New Age International Publishers.
7. Swaminadhan S, (2005). Advanced Text book on foods & nutrition, Vol. I&II (2nd revised and enlarged) Bappco.
8. VijayaKhader, (2000). Food, nutrition & health, Kalyani Publishers.

CO-CURRICULAR ACTIVITIES

1. Student seminars on different nutrients.
2. Preparation of posters, charts, flashcards etc. related to different nutrients – Functions, RDA dietary sources, nutrient content of foods and deficiency symptoms.
3. Collections of food samples rich in particular vitamins and minerals like calcium, iron etc.
4. Visit to food stores, vegetable and fruit markets to study locally available foods.
5. Study projects to collect the data from people. Eg. Foods avoided or given in specific conditions.

6. Celebration of Important Days (National and International)
    - ➢ World's Breast Feeding Week(August 1st -7th)
    - ➢ Nutrition Week – September 1st - 7th
    - ➢ Nutrition Month – September month
    - ➢ Hand Washing Day – October 15th
    - ➢ World Food Day – October 16th