



**MOUNT CARMEL COLLEGE, AUTONOMOUS  
No.58, PALACE ROAD, BENGALURU**

**DEPARTMENT OF  
FOOD SCIENCE & NUTRITION**

**PG FOOD SCIENCE & NUTRITION**

**TWO YEAR POST GRADUATE COURSE**

**CBCS SEMESTER SCHEME**

**SEMESTER – I to IV**

## **PROGRAM OUTCOMES**

- Build a core competency in various field of nutrition to make students employable in food industry, health care sectors, hospitals and public health sectors
- Equip students with knowledge and understanding of emerging areas of nutrition science to confidently pursue higher studies, research and develop to be entrepreneur
- Designing and development of nutrition intervention programs to address societal and national nutritional and health issues

## **PROGRAM SPECIFIC OUTCOMES**

1. Demonstrate coherent understanding and application of comprehensive knowledge in food science and nutrition with professional competencies, harness research skills to promote evidence-based practice with recognition of core values, ethical integrity to contributing towards improving quality of life.
2. Understand nutritional assessment, identify malnutrition and monitor individuals and communities with application of appropriate evaluation and integration of epidemiological literature in relation to addressing public health nutrition and diseases
3. Assess, plan and execute nutrient needs across lifespan, therapeutic conditions and special needs during sports and emergency, application of nutrition care process to make decisions and identify nutrition-related problems, determine and evaluate appropriate nutrition interventions with counseling skills to facilitate nutrition behavior change
4. Gain fundamental understanding of relationship between environment, microorganisms, food borne illness, food safety and learn scientific basis of food preservation techniques with application of food safety principles to be used in food industry
5. Exploration of interests and translation of knowledge within the broad aspects of food science and nutrition to design novel food products and processing methods , plan program/educational strategy for a target population to match their interests with potential career opportunities in food industry, hospitals, healthcare sectors and public health organization

## **I SEMESTER**

### **CORE COURSE: APPLIED PHYSIOLOGY**

#### **Course Outcomes:**

- CO1: Describe the cellular components, role of blood and its components and the lymphatic system
- CO2: Understand the role of the cardiovascular system and respiratory system and it's relation with exercise.
- CO3: Describe briefly the functions and selected disease conditions of the digestive and renal system.
- CO4: Demonstrate competency in understanding the functions of the of the nervous system and skeletal system.
- CO5: Discuss in depth the physiology of the immune, reproductive and endocrine systems and selected disorders associated with them.

## **I SEMESTER**

### **CORE COURSE: RECENT ADVANCES IN NUTRITION-MACRO-NUTRIENTS**

#### **Course Outcomes:**

- CO1: To prepare the students to understand what happens to the ingested nutrients at the cellular level and the nutrient interactions
- CO2: To discuss methods of determining nutrient requirements for humans and discuss the current figures of nutritional requirements
- CO3: To integrate the knowledge into practice guidelines for dietary needs of human at different stages of life.
- CO4: To make inferences on the therapeutic importance of macronutrients
- CO5: To understand the importance of water in relation to physiological variations for optimal nutriti

## **I SEMESTER**

### **NUTRITIONAL BIOCHEMISTRY**

#### **Course Outcomes:**

- CO1: Capable of describing biochemical pathways relevant in nutrient metabolism, understand the process of digestion, absorption and transport of carbohydrates.
- CO2: Illustrate the metabolism of lipids through various anabolic and catabolic pathways
- CO3: Learn how amino acids and proteins are metabolized, emphasizing the role of few intermediates of their metabolism, monitoring the deficiency and abundance disorders of amino acid metabolisms

- CO4: Describe structure, functions and the mechanism of action of enzymes. Learning kinetics of enzyme catalysed reactions and enzyme inhibitions and regulatory process, Enzyme activity, Enzyme Units, Specific activity
- CO5: Relate the structure of DNA with its function in Replication and gene expression that include both transcription and translation.

## **I SEMESTER**

### **ALLIED COURSE: FOOD SAFETY AND QUALITY ASSURANCE**

#### **Course Outcomes:**

- CO1: To gain knowledge about good hygiene practices, under which the important pathogens and spoilage microorganisms are commonly inactivated, killed or made harmless in foods.
- CO2: To understand principles of food safety and sanitation to make a food product safe for consumption
- CO3: To gain competence in food safety management system and quality assurance in order to apply good manufacture practices.

## **I SEMESTER**

### **ALLIED COURSE - TECHNIQUES IN FOOD ANALYSIS**

#### **Course Outcomes:**

- CO1: To understand and familiarize with the analytical techniques in food samples.
- CO2: Analyze and evaluate food components in different food products using suitable analytical methods.
- CO3: Demonstrate a practical understanding the physical properties of food

## **II SEMESTER**

### **CORE COURSE: RECENT ADVANCES IN NUTRITION: MICRO-NUTRIENTS**

#### **Course Outcomes:**

- CO1: To differentiate the recent advances in the study of vitamins and minerals
- CO2: To discriminate the nutritional disorders at the individual and population levels
- CO3: To distinguish the concepts related to bioavailability, absorption and adequacy related to therapeutic conditions
- CO4: To analyse, evaluate and accurately interpret research literature
- CO5: To apply the principles to promote optimal nutrition care

## **II SEMESTER**

### **CORE COURSE: CLINICAL AND THERAPEUTIC NUTRITION II**

#### **Course Outcomes:**

- CO1: To implement evidence based updated knowledge in practice
- CO2: To facilitate understanding of medical nutrition therapy in disease category.
- CO3: To gain essential skills and critical thinking to impart holistic nutrition approach to improve the well-being and in relation to diagnosis.
- CO4: To assess the relationship between nutrition and genes
- CO5: To develop capacity and aptitude for taking up dietetics as a profession.

## **II SEMESTER**

### **CORE COURSE – PRINCIPLES OF FOOD SCIENCE**

#### **Course Outcomes:**

- CO1: To expose students develop the scientific skills in food science and apply the scientific method to food science problems.
- CO2: To develop students' focus and depth in the alternate sugar and sugar products and its processing.
- CO3: The student gains knowledge about processing of cereals and fat and their impact on food preparation.
- CO4: To make students understand the processing and spoilage of flesh food, eggs , and milk and products and methods to control deterioration and spoilage.
- CO5: To make students understand the structure , texture and pigments of fruits and vegetables and to gain the knowledge about methods to control its deterioration.

## **II SEMESTER**

## **CORE COURSE - RESEARCH METHODS IN FOOD SCIENCE AND NUTRITION**

### **Course Outcomes:**

- CO1: To understand the types of research and apply the skills of literature review, building aims, objectives and hypotheses
- CO2: To familiarize with the sampling techniques, tool development in food science and nutrition.
- CO3: To understand the popular study designs used in food science and nutrition
- CO4: To learn about different statistical tests and their applications.
- CO5: To get acquainted with scientific writing, plagiarism and ethics in research

## **II SEMESTER**

### **ALLIED COURSE - FOOD ADDITIVES**

### **Course Outcomes:**

- CO1: To understand the principle and the use of food additives in the food preparation
- CO2: Understand the functions and apply knowledge for usage of different leavening agents and understand the role of preservatives in increasing the shelf life, palatability and retain the originality of food.
- CO3: Acquire broad knowledge of the gamete sweetening agents

## **II SEMESTER**

### **ALLIED COURSE - NUTRITION PSYCHOLOGY & DIET ADHERENCE**

### **Course Outcomes:**

- CO1: To develop skills in professional practice, nutrition care process
- CO2: To familiarize, identify, understand and practice components of food psychology
- CO3: To demonstrate dietary adherence with application of nutrition psychology

### **III SEMESTER**

#### **ELECTIVE COURSE - ADVANCES IN FOOD MICROBIOLOGY AND PRESERVATION**

##### **Course Outcomes:**

- CO1: To describe the intrinsic and extrinsic factors affecting the growth of microorganisms in food
- CO2: To know the various sources of contamination and principles of food spoilage
- CO3: To understand the principles and methods of food preservation.
- CO4: To discuss the various Food borne Outbreaks
- CO5: To know the therapeutic value of fermented foods and different techniques used for microbial examination of food

### **III SEMESTER**

#### **ELECTIVE COURSE**

#### **PROGRAM PLANNING AND NUTRITION EDUCATION IN COMMUNITY**

##### **Course Outcomes:**

- CO1: To familiarize with the assessment of the health and nutrition needs of the community.
- CO2: To understand the process of planning, implementation and evaluation of public Health nutrition programmes.
- CO3: To enable designing an action plan for addressing a public health nutrition problem in the community
- CO4: To learn the principle and designing nutrition education plan across the life span.
- CO5: To develop communication skills to impart effective nutrition education to community

### **III SEMESTER**

#### **ELECTIVE COURSE**

#### **NUTRACEUTICALS AND FUNCTIONAL FOODS**

##### **Course Outcomes:**

- CO1: To recognize the growing importance of functional foods and nutraceuticals.
- CO2: To interpret health benefits related to probiotics and prebiotics
- CO3: To know implications of functional foods with respect to ethical, social issues
- CO4: To discuss the current guidelines and regulations in Indian context
- CO5 : To understand the basis of nanotechnology and its application in food industry

**III SEMESTER**  
**ELECTIVE COURSE - PEDIATRIC & GERIATRIC NUTRITION**

**Course Outcomes:**

- CO1: To learn and apply the skills of nutritional assessment and counseling in pediatric scenario
- CO2: To understand the nutritional problems and management of LBW/premature infants
- CO3: To have a thorough understanding of eating disorders in children/adolescents and the role of nutrition and counseling in their management
- CO4: To understand the aging process and the role of various stakeholders engaged in elderly care
- CO5: To apply the nutrition principles in managing selected age-related conditions in the elderly

**III SEMESTER**  
**ELECTIVE COURSE - COMMUNITY NUTRITION & PUBLIC HEALTH**

**Course Outcomes:**

- CO1: To introduce students to current issues and recent research in public health nutrition and health promotion, with particular emphasis on nutrition-related policy.
- CO 2: To enhance students' critical thinking skills and learn the strategies to combat public health problems and develop the ability to become future health professionals .
- CO3: To develop skills in epidemiology of non communicable diseases and to learn its prevention and control
- CO4: To develop skills in epidemiology of communicable diseases and to learn its prevention and control
- CO5: To exhibit knowledge and skills required to design nutrition education programme

**III SEMESTER**  
**ELECTIVE COURSE - SPORTS NUTRITION**

**Course Outcomes:**

- CO1: To associate the physiological and biochemical events which occur in a variety of exercise and nutrition
- CO2: To analyse training adaptations and its implications
- CO3: To identify and distinguish the recommendations for nutrition and diet for athletes in the activities of constituting sports
- CO4: To get acquainted with the interrelationship between micronutrients and water for sports
- CO5: To criticize the implications of the use of ergogenic aids in improving sports performance



### **III SEMESTER**

#### **ALLIED COURSE - NUTRITION COUNSELING**

##### **Course Outcomes**

- CO1: To develop counseling competencies in professional practice, nutrition care and management in Dietetic Education and Practice
- CO2: To familiarize, identify, understand and practice components of counseling in the practice of dietetics with nutrition care process
- CO3: To demonstrate counseling techniques to facilitate nutrition behavior change for individuals and groups

### **III SEMESTER**

#### **OPEN ELECTIVE**

#### **NUTRITION FOR WOMEN**

##### **Course Outcome:**

- CO1: To apply knowledge to maintain health and nutrition to improve quality of life

## **IV SEMESTER**

### **ELECTIVE COURSE - FOOD PRODUCT DEVELOPMENT**

#### **Course Outcomes:**

- CO1: To understand aspects of food processing and certifications involved in food product development
- CO2: To develop a new product which is marketable, nutritional and economically viable
- CO3: To interpret the laws regulating the commercial food industry with regard to manufacture, storage and other aspects
- CO4: To build competency in reading and understanding nutrition labeling and packaging laws governing regulations
- CO5: To acquaint the students with the process involved in setting up a food processing or food manufacturing unit

## **IV SEMESTER**

### **ELECTIVE COURSE - NUTRITION DURING EMERGENCY**

#### **Course Outcomes:**

- CO1: To identify public health practices for disease control and prevention
- CO2: To identify and address individual, organizational and community concerns
- CO2: To understand assessment, surveillance and outbreak investigation in humanitarian emergency situations
- CO4: To understand and apply food technology to combat malnutrition
- CO5 : To analyse resources and develop nutrition intervention in humanitarian emergencies

## **IV SEMESTER**

### **ELECTIVE COURSE - FOOD PROCESSING AND FUNCTIONAL QUALITY**

#### **Course Outcome**

- CO1: To understand the basic concepts in food processes and different methods in food processing and engineering.
- CO2: To understand the advanced concepts in food processing and will get knowledge of the different instruments used in food processing for food preservation.
- CO3: They will acquire the knowledge of different parameters during rice processing.
- CO4: To learn methods of processing of nuts and oil seeds and its characteristics .
- CO5: To learn the harvesting and processing techniques for perishable foods.

**IV SEMESTER**  
**ELECTIVE COURSE - NUTRITIONAL EPIDEMIOLOGY**

**Course Outcomes:**

- CO1: Describe the utility and limitations of different epidemiological study designs for research in nutritional epidemiology.
- CO2: Describe the strengths and limitations of different methods of measuring diet and identify when specific dietary methods may be most appropriate.
- CO3 To understand and learn about the basic concepts in functioning of national policies and advocacy.
- CO4: To analyse the use of epidemiological research in strengthening nutritional interventions
- CO5: To understand functioning of health care system in the country.

**IV SEMESTER**  
**ELECTIVE COURSE - RECENT ADVANCES IN NUTRITION DURING LIFE CYCLE**

**Course Outcomes:**

- CO1: To understand the significance of nutrition in maternal and child health and the role of government in health and nutrition promotion
- CO2: To upgrade the understanding of importance of nutrition in pregnancy and lactation
- CO3: To get acquainted with the recent advances in nutrition needs and concerns during infancy, childhood and adolescence
- CO4: To learn about the aging process and role of nutrition in healthy aging
- CO5: To appraise the understanding of nutrition in mental health and cognition