

FOOD PRODUCT DESIGN AND DEVELOPMENT						
Prog. & Branch	M.Phil. Food Science, Technology and Nutrition	Sem.	L	T	P	Credit
Pre requisite	PG Degree in relevant discipline	I	2	1	2	4
Objectives This course provides an insight for design, development, standardization, regulatory aspects and commercialization of food products.						
UNIT – I						9
New product development: Introduction- new products, customers and consumers, value addition, and market. Marketing characteristics of new products-product life cycle and profit picture. Corporate avenues for growth and profitability, opportunities in the marketplace for new product development, technological advances driving new product development, government’s role in new product development.						
UNIT – II						16
Designing new products: New Food Product Development (NPD) process and activities, NPD success factors, design thinking process, new product design, food innovation case studies, market-oriented NPD methodologies, organization for successful NPD; Recipe development; use of traditional recipe and modification; involvement of consumers, chefs and recipe experts; selection of materials/ingredients for specific purposes; modifications for production on large scale, cost effectiveness, nutritional needs or uniqueness; use of novel food ingredients and novel processing technologies.						
UNIT – III						12
Standardization & Large scale production: Process and equipment design; manufacturing protocol, establishing process parameters for optimum quality; sensory evaluation; food testing lab requirements; different techniques and tests; statistical quality control; comparison of market samples; stages of the integration of market and sensory analysis.						
UNIT – IV						18
Quality, Safety & Regulatory aspects: Product stability; evaluation of shelf life; changes in sensory attributes and effects of environmental conditions; accelerated shelf life determination; developing packaging systems for maximum stability and cost effectiveness; regulatory aspects; approval for proprietary product, food safety management system and quality audits for a food product, regulatory aspects of FSSAI for a food product.						
UNIT – V						17
Advertisement, Marketing & Case studies: Product performance testing; market positioning, Marketing: developing test market strategies; various tools and methodologies to evaluate consumer attitudes, preferences and market acceptance factors; Case Studies - successes and failures, innovation, best practices, technological and marketing approaches to NPD; food choice models and new product trends.						
Lecture:72						
REFERENCES:						
1.	Brody, A. L., and John B. L., “Developing New Food Products for a Changing Marketplace”, 2 nd Edition, CRC press, Taylor and Francis Group, UK, 2008.					
2.	Gordon W Fuller, “New Food Product Development: From Concept to Marketplace”, 3 rd Edition, CRC press, Taylor and Francis Group, UK, 2016.					
3.	Catherine Side., “Food Product Development: Based on Experience”, 2 nd Edition, Iowa State Press, Blackwell publications, 2008					
4.	Macfie, H., “Consumer-led Food Product Development”, 1 st Edition CRC press ,Wood Head					

publications, 2007

MEDICAL NUTRITION THERAPY

Prog. & Branch	M.Phil. Food Science, Technology and Nutrition	Sem.	L	T	P	Credit
Pre requisite	PG Degree in relevant discipline	I	2	1	2	4

Objectives

This course provides intense learning on causes, pathophysiology, nutritional alterations and nutrition care process inculcating evidence based practice and practice based evidence.

UNIT – I 12

Nutrition Care Process (NCP): Historical and contextual perspectives on advanced medical nutrition therapy; NCP insights; steps in nutrition care process – nutrition assessment, nutrition diagnosis, nutrition intervention and nutrition monitoring and evaluation; case studies on nutrition care process and dietetic practice at global and national level; Role of IDA in nutrition care process model development, implementation and documentation.

UNIT – II 12

Diet, Nutrient and Drug Interaction: Effect of drug on ingestion, digestion, absorption and metabolism of nutrients; Effect of food, nutrients and nutritional status on drug dosage and efficiency.

Nutrition, Exercise and Immunity: Nutrients for immunity, immune modulation in nutritional deficiencies, Exercise and Yoga on immunity, psychological wellbeing and immunity; healthy gut vs immunity.

UNIT – III 15

From DNA to Personalised Diets: Basics of DNA and RNA, gene markers for nutrients, omics in nutrition diagnosis and MNT, systematic literature review and meta-analysis on nutrigenomics, epigenetics on prevention and management of nutrition disorders; a scientific perspectives of personalised gene based dietary recommendations; DNA testing and nutritional plans.

UNIT – IV 16

Medical Nutrition Therapy: Etiopathophysiology, metabolic and clinical aberrations, complications, prevention and recent advances in medical nutritional management of weight imbalances, cardiovascular disorders, diabetes mellitus and other metabolic disorders, genetic and immunodeficiency disorders.

UNIT – V 17

Medical Nutrition Therapy: Etiopathophysiology, metabolic and clinical aberrations, complications, prevention and recent advances in medical nutritional management of GI disorders, liver, gall bladder and pancreatic disorders, renal disorders, stress and trauma, cancer, neurological disorders, musculoskeletal disorders, respiratory problems, infections and AIDS.

Lecture:72

REFERENCES:

1. Esther Myers and Yiva Orrevall, (2020), Using the Nutrition Care Process, TBA, USA.
2. Paul Glasziou and Chris Del Mar (2007), Evidence based Practice Workbook, Second Edition, Blackwell Publishing.
3. Dietitians of Canada (2006-2011), Practice based Evidence : PEN Writers' Guide, pennutrition.com.
4. Kraus M. V. and L. K. Madan (2010), Food, Nutrition and Therapy, W. B. Saunders Company, London, 12th Edition.
5. Noland, Diana, Drisko, Jeanne A., Wagner, Leigh (Eds.), (2020), Integrative and Functional Medical Nutrition Therapy, Principles and Practices, Springer Publications.
6. Kelly Kane and Kathy Prelack (2019), Advanced Medical Nutrition Therapy, First edition, Jones and Bartlett

	Learning, LLC.
7.	Annalynn Skipper, (2009), Advanced Medical Nutrition Therapy Practice, Jones and Bartlett Learning, LLC.

PUBLIC HEALTH NUTRITION							
Prog. & Branch	M.Phil. Food Science, Technology and Nutrition	Sem.	L	T	P	Credit	
Pre requisite	PG Degree in relevant discipline	I	2	1	2	4	
Objectives							
This course will enable the students to develop an understanding on the nature of nutrition problems, its prevention and control through IEC programmes.							
UNIT – I							9
PHN Fundamentals: History of public health, determinants of public health, global health and epidemiological transition, sources of demographic and health data, evolution of public health initiatives – primary health care, MDGs and SDGs; nutrition transition in India, food security – factors affecting food security, economics of food security and community development, food security bills, national food security Act (2013), food security system in India – e-PDS and food security portal in India.							
UNIT – II							16
Nutrition Care Process of the Community: Demographic trends and epidemiological description of major nutritional problems, indicators of nutritional problems, village survey, household food security status, assessment of dietary diversity and food frequency, food budgeting and food equity; Assessment of nutritional status of the individual using ABCDEF as components.							
UNIT – III							12
Nutrition Intervention: Health based interventions, food based interventions including fortification and genetic improvement of foods, supplementary feeding, national nutrition programmes – National Nutrition Policy (1993), National Nutrition Strategy (2017), nutritious noon meal programme, ICDS, national nutritional anemia prophylaxis programme, national iodine deficiency disorders control programme, National Nutrition Mission - Poshan Abiyan, Anemia Mukh Vharat, Eat Right India Movement; International, national and voluntary organisations towards nutrition interventions; nutrition education programmes – importance of nutrition education, training workers in nutrition education programmes, methods of nutrition education and use of computers in nutrition education, planning and implementation of nutrition education programmes.							
UNIT – IV							18
Nutrition Monitoring and Evaluation: Introduction to nutrition monitoring and evaluation, programme logic models and theory of change models, Evaluation principles and approaches for field-based programs, Identifying evaluation questions and developing a learning agenda, Selecting an appropriate evaluation design, Collecting evaluation data, Developing Objectives and indicators for monitoring and evaluation : quantitative and qualitative indicators, Evaluation : types, evaluation question, Identifying program stakeholders and their information needs, Selecting appropriate communication tools for monitoring and evaluation.							
UNIT – V							17
Information, Education and Communication (IEC): Introduction, objectives, importance and relevance of IEC in public health nutrition, preparation of IEC materials, apps and softwares for the development of IEC materials for public health nutrition, refining of IEC messages, social mobilisation and social marketing of IEC, role and use of IEC by the community, IEC for different target groups - Policy makers, Managerial level and middle level officials from Government donor agencies and NGOs,							

Grassroots functionaries and community, case studies of various IEC programmes for public health nutrition.	
Lecture:72	
REFERENCES:	
1.	Vir S.C., (2015), Public Health Nutrition in Developing Countries (Part I and II), Woodhead Publishing India Pvt, Ltd.
2.	Mann, J. and Truswell, S. eds., (2017), Essentials of Human Nutrition. Oxford University Press.
3.	Park, K. (2020), Preventive and Social Medicine, 25 th Edition, Bansaridas Bhanot Publishing House.
4.	eGyanKosh, National Digital Repository on Nutrition for the Community, Designed and Maintained by Indira Gandhi Open University, New Delhi.
5.	Bhatt D.P (2008), Health Education, Khel Sahitya Kendra, New Delhi
6.	Suryatapa Das, (2016), Textbook of Community Nutrition, Second Edition, Academic Publishers.
7.	Food and Agricultural Organisations of the United Nations, (2016), Nutrition Education Needs and Capacity Analysis Package, http://www.fao.org/nutrition/education/professional-training/needs-assessment .