

## NUTRIGENOMICS

Sem	Subject Code	Category	Lecture		Theory		Practical	Credits
III	19CPFN3D	Elective paper III	Hrs/sem	Hrs/Per week	Hrs/sem	Hrs/Per week	-----	3
			75	5	75	5		

### COURSE OBJECTIVES:

The students will be able to

1. Gain knowledge in recent updates on food and health
2. Understand the uses of functional foods
3. Develop skills on dietary supplements in Health and Disease

### COURSE OUTCOME:

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level (K1-K4)
CO1	Comprehend the recent updates on food and health	K1
CO2	Identify functional foods and pharmaceutical foods	K2,K3
CO3	Apply the concepts of nutraceuticals in dietary supplements	K2,K3
CO4	Translating the knowledge of functional foods in the management of health and diseases	K2,K3
CO5	Understand and apply the guidelines of National and International regulatory bodies	K1,K2

Knowledge level: K1 – Remember, K2-Understand, K3- Apply, K4-Analyse.

### MAPPING WITH PO

COS	PO1	PO2	PO3	PO4	PO5
CO1	S	S	M	M	M
CO2	S	S	S	S	M
CO3	S	S	S	S	S
CO4	S	S	M	M	M
CO5	M	M	S	S	S

S-Strong; M-Medium, L- Low

**UNIT-I****15 Hours****FOOD AND HEALTH**

Functions of food. Inter relationship of food, nutrients and health. An overview of nutraceuticals and Nutrigenomics, Nutraceutical foods and Recent trends in food market

**UNIT-II****15 Hours****FUNCTIONAL FOODS**

Functional foods, traditional foods - designer foods and pharma foods, history of functional foods, components of functional foods, stages involved in development of functional foods. Designer foods in market. Development of Functional foods - Uses of bioactive compounds: Protective substances and activators; Development of biomarkers to indicate efficacy of functional ingredients; Clinical testing of nutraceuticals and health foods; interactions of prescription drugs and nutraceuticals; adverse effects and toxicity of nutraceuticals; **Nutrigenomics** – an introduction and its relation to nutraceuticals.

**UNIT-III****15 Hours****NUTRACEUTICALS**

Categorization of Nutraceuticals Classification - Based on food source, mechanism of action and chemical nature isoprenoid, phenolic substances, fatty acids and structural lipids, terpenoids – saponins, tocotrienols and simple terpenes, carbohydrates and amino acid based derivatives, isoflavones. Nutraceuticals and dietary supplements

**UNIT-IV****15 Hours****FOODS IN HEALTH AND DISEASE**

Role of functional foods and concept of dietary supplements, phytochemicals, phytosterols, omega 3 and 6 fatty acids, dietary fiber, role of Nutraceuticals in health and disease management – obese, diabetes mellitus, hypertension, CVD, cancer. Non essential nutrients as dietary supplements **Nutrigenomic** links to chronic diseases

**UNIT-V****15 Hours****REGULATORY ASPECTS OF FUNCTIONAL FOODS AND NUTRACEUTICALS**

International and national regulatory aspects of functional foods in India, ICMR guidelines for Pro biotics, Development of biomarkers to indicate the efficacy of functional ingredients Research frontiers in functional foods.

**Distribution of Marks:** Theory – 25 (IA) + 75 (univ. exam) = 100 Marks

**TEXT BOOKS:**

S.NO	AUTHORS	TITLE	PUBLISHERS	YEAR OF PUBLICATION
1	Shi, J	Functional Food Ingredients and Nutraceuticals: Processing Technologies.	Taylor & Francis Publ. CRC Press.	2007
2	Yashwant Vishnupant Pathak	Handbook of Nutraceuticals Volume I:Ingredients, Formulations, and Applications	CRC Press – Taylor and Francis Group, USA.	2009
3	Brigelius-Flohe, J and Joost, HG	Nutritional Genomics: Impact on Health and Disease	Wiley-VCH	2006
4	Semih Otles	Probiotics and Prebiotics in Food, Nutrition and Health	CRC Press – Taylor and Francis Group, USA.	2013

**REFERENCE BOOKS:**

S.NO	AUTHORS	TITLE	PUBLISHERS	YEAR OF PUBLICATION
1	Srilakshmi.B	Nutrition Science, 4th edition	New Age International Pvt Ltd.	(2015)
2	Bamji	Textbook of Human Nutrition, 3rd edition	Oxford & IBH Publishing Co Pvt Ltd, New Delhi	2003
3	Linden G.	Analytical Techniques for Foods and Agricultural Products	VCH	1996
4	Pomeranz Yesrajahu and Elton E. Melton	Food analysis -Theory and practices 3rd edition	Springer	2000

<b>5</b>	Ranganna	Handbook of Analysis and Quality Control for Fruit and Vegetable Products, 2nd Ed	TataMcGraw-Hill Publ	2001
<b>6</b>	Nielsonn .S.Suzanne	Food analysis 3rd edition	Spinger	2003

#### **WEB SOURCES:**

1. Link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2137135/>
2. Link: <https://www.ncbi.nlm.nih.gov/books/NBK518614/>
3. Link: <https://www.nap.edu/read/25147/chapter/8>
4. Link: <http://www.actamedicainternational.com/article.asp?issn=2349-0578;year=2014;volume=1;issue=2;spage=124;epage=130;aulast=Garg>

#### **TEACHING METHODOLOGY**

- Chalk and board teaching
- Assignments
- Group discussions
- PPT
- Seminars
- Other Group activity

#### **SYLLABUS DESIGNER:**

- Ms. R. TAMILSELVI, Head and Assistant Professor, Department of Foods and Nutrition