

## NUTRACEUTICALS AND NUTRIGENOMICS

Sem	Subject Code	Category	Lecture		Theory		Practical	Credits
VI	19CNF6E	Elective IV	Hrs/sem	Hrs/Per week	Hrs/sem	Hrs/Per week	-----	3
			60	4	60	4		

### OBJECTIVES

To enable the students to

1. Gain knowledge on Nutraceutical and Nutrigenomics
2. Study the applications of Nutrigenomics in health and disease.

### COURSE OUTCOMES

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

CO Number	CO Statement	Knowledge Level (K1-K4)
CO1	General guidelines on Nutraceuticals and functional foods	K1,K2,
CO2	Nutraceuticals in promoting health and prevention of disease	K2, K3, K4
CO3	Probiotics and Prebiotics in Gastro-intestinal disorder	K2, K3, K4
CO4	General guidelines on Nutrigenomics	K2, K3, K4
CO5	Nutrition and gene expression	K1,K2, K3

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

### MAPPING WITH PO

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

S-Strong; M-Medium, L- Low

**UNIT -I****12 Hours**

**NUTRACEUTICALS AND FUNCTIONAL FOODS** - Definition of functional and traditional foods, nutraceuticals, designer foods and pharma foods, history of functional foods, components of functional foods, foods containing nutraceuticals and classification of nutraceuticals – based on plant sources, mechanism of action and chemical nature.

**UNIT –II****12 Hours**

**ROLE OF DIETARY SUPPLEMENTS AND NUTRACEUTICALS IN HEALTH AND DISEASE**

Concept of dietary supplements, sources and functions of phytochemicals with suitable examples, FOSHU foods – concepts, regulatory aspects

**UNIT –III****12 Hours**

**PROBIOTICS AND PREBIOTICS**

Human gastrointestinal tract and its microbiota, functions, concept of probiotic, prebiotics and symbiotics; applications of probiotics in human nutrition

**UNIT- IV****NUTRIGENOMICS****12 Hours**

Definition of nutrigenomics, gene expression – transcription, translation, post translational modification, nutrition in the omics era- elementary concepts on epigenetics, transcriptomics, proteomics, metabolomics; genetic variation and nutritional implications

**UNIT- V****12 Hours**

**NUTRITION AND GENE EXPRESSION AND NUTRIGENOMICS AND COMPLEX DISEASES**

Nutrient control of gene expression – amino acids, nucleotides, basic concepts of nutrigenomics and complex diseases – diabetes, cancer and obesity

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

**TEXT BOOKS:**

S.NO	AUTHORS	TITLE	PUBLISHERS	YEAR OF PUBLICATION
1	Mahtab, S, Bamji, Kamala Krishnasamy, G.N.V. Brahmam	Text Book of Human Nutrition	Oxford and IBH Publishing Co. P. Ltd.	2009
2	Srilakshmi, B	Food Science	New Age International (P) Limited Publishers	2010

**REFERENCE BOOKS:**

S.NO	AUTHORS	TITLE	PUBLISHERS	YEAR OF PUBLICATION
1	Watson, David, H.	Performance Functional Foods	CRC Press, Wood Head Publishing Ltd.	2003
2	Tamine, A.	Probiotic Dairy Products	Blackwell Publishing Ltd.	2005
3	Simopoulus, A.P. and Ordovas, K.J.M.	Nutrigenetics and Nutrigenomics, Vol. 93	Karger	2004
4	Tai, E.S. and Gillies, P.J.	Nutrigenomics – Opportunities in Asia,	Karger	2007

**WEB SOURCES:**

Link:<http://www.bisep.karnataka.gov.in/images/pdf/neutraceutical-food-processing.pdf>

**TEACHING METHODOLOGY**

- Chalk and board teaching
- Study Assignment method
- Active learning method
- Group discussions
- PPT
- Seminars
- Other Group activity
- Hospital Visit

**SYLLABUS DESIGNER:**

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