

BHARATHIAR UNIVERSITY, COIMBATORE:641 046
M.Sc. FOOD AND NUTRITION
(revised paper with effect from 2015-16 onwards)

Note: The revised syllabus for the following papers furnished below be followed and there is no change in the existing scheme of examination and syllabi of remaining papers.

SEMESTER - II
PAPER - V
FOOD PROCESSING
Hours of instruction / week :5

Objectives

To enable students to learn different food processing and preservation techniques.

UNIT I

Magnitude, Division and Interdependent activities of the food industry, unit operations of the food industry. Food processing sector –vision and mission, opportunities, strategies and constraints in the Indian food processing sector. Post harvest priority requirements, Strengths, weakness, opportunities and threats (SWOT) of food sector.

UNIT II

Rice Technology - Production, processing, milling of rice, parboiling, processes, by products of rice milling and their utilization. Nutrient loss during processing.

Wheat Technology - Production, processing, manufacture of breakfast cereals

Millets - Production, processing.

UNIT III

Pulses - Production, types of processing of different pulse products - Soyabean Processing.

Technology of oil seeds - Processing ,meal concentrates and isolates.

Rice bran oil, membrane processing of vegetable oils, vanaspathi with low trans fatty acids, bakery fats with low trans fatty acids, low-fat spreads, hydrogenation of fats.

UNIT IV

Mushroom - Production, processing, utilization.

Meat - Production, processing, smoking and curing of meat, grading.

Poultry - Production, preparing poultry for consumption, packaging.

Fish - Production, effect of handling practices, storage of eggs, manufacturing and packaging of egg products.

UNIT V

Vegetables - Drying and dehydration techniques –drum drying, vacuum puffing, foam mat drying, freeze drying, accelerated freeze drying.

Processing of potato grits, potato granules, Potato flour, dehydrated garlic and dehydrated green peas.

Fruits- Sun drying of banana and grapes; Mechanical dehydration – use of kiln drier and tunnel drier.

Canning -steps, spoilage of canned foods, advantages, disadvantages.
Bottling –steps, advantages, disadvantages.

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2. G.C. Banerjee, Poultiy, Oxford and IBH Publishing CODUB Ltd., New Delhi.
3. Giridhari Lal,G.S.Sidhappa and G.L.Tandon-Preservation of fruits and vegetables,ICAR,New Delhi,1998
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PAPER - IX
NEUTRACEUTICALS AND FUNCTIONAL FOODS
Hours of instruction / week: 4

Unit -I

Introduction to Nutraceuticals as Science:

Nutraceutical- Definition, Classification - Dietary supplements, Functional foods, Historical perspective, scope & future prospects. Applied aspects of the Nutraceutical Science. Sources of Nutraceuticals. Relation of Nutraceutical Science with other Sciences: Medicine, Human physiology, genetics, food technology, chemistry and nutrition (brief description).

Unit -II

Classification, Properties and structure of various Nutraceuticals:

Alkaloids, Terpenoids, Glycosides, Natural phenols, Isoprenoid derivatives, Glucosamine, Octacosanol, flavonoids, carotenoids, polyunsaturated fatty acids, lecithin, choline and spingolipids, Lycopene, Carnitine, Melatonin and Ornithine alpha ketoglutarate as nutraceuticals. Use of proanthocyanidins, grape products, flaxseed oil as Nutraceuticals.

Unit -III

Nutraceuticals of plant and animal origin:

Plant metabolites – Functions, sources - Alkaloids, phenols, Terpenoids. Applications with specific examples with reference to skin, hair, eye, bone, muscle, heart, brain, liver, kidney, general health and stimulants. Concept of cosmoceuticals and aquaceuticals.

Animal metabolites – Functions, Sources - chitin, chitosan, glucosamine, chondroitin sulphate and other polysaccharides of animal origin. Uses and applications in preventive medicine and treatment.

Unit -IV

Functional Foods :

Definition. Applications of herbs to functional foods. Concept of free radicals and antioxidants; Nutritive and Non-nutritive food components with potential health effects. Soy proteins and soy isoflavones in human health; Role of nuts in cardiovascular disease prevention. Functional foods from wheat and rice and their health effects. Role of Dietary fibers in disease prevention. Vegetables, Cereals, milk and dairy products as Functional foods. Health effects of common beans, Capsicum annum, mustards, Ginseng, garlic, citrus fruits, fish oils, and sea foods.

Unit -V

Food as remedies:

Nutraceuticals bridging the gap between food and drug, Nutraceuticals in treatment for cognitive decline, Nutraceutical remedies for common disorders like Arthritis, Bronchitis, circulatory problems, hypoglycemia, Nephrological disorders, Liver disorders, Osteoporosis, Psoriasis and Ulcers etc. Brief idea about some Nutraceutical rich supplements e.g. Bee pollen, Caffeine, Green tea, Lecithin, Mushroom extract, Chlorophyll, Kelp and Spirulina etc.

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4. Swaminathan M., Essentials of Food and Nutrition, 2 nd Ed, 1985, Ganesh and Co.
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11. Understanding Nutrition, 8th Edition, by Whitney, E.N. & Rolfes, S.R.. (1999): WesV Wadsworth, An International Thomson Publishing Co.
12. Nutrition in Exercise and Sports, 3rd Edition by Ira Wolinsky (Ed) (1998): CRC Press.
13. Modern Nutrition in Health & Disease, 9th Edition by Shils, M.E., Olson, J.A., Shike, N. and Ross, A.C. (Ed) (1999):, Williams & Wilkins.
14. Human Nutrition and dietetics by Davidson, S. Passmore, R. Brock. J.F. and Turswella.S.
15. Modern Nutrition in health and disease by Goodhearth R., S. Shills. Nelson and Cox, 2000, Lehninger's Principles of Biochemistry, Worth Publishers.
16. Nutrition in Health and Disease 17th Edition; Anderson, Dibble, Turkki, Mitchell, Rynbergen J.B.Lippincott Company, 1982
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18. Nutritional Evaluation of Food Processing Third Edition; E. Karmas and R.S. Harris AVI Boon, New York, 1988
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20. Nutritional Quality Index of Foods; R.G.Hansen, B.W. Wyse, A.W. Sorenson AVI Publishing Co., Inc., 1979.
21. Handbook of Nutraceuticals and Functional Foods Edited by Robert E.C. Wildman, Routledge Publishers.
22. Nutraceuticals by L. Rapport and B. Lockwood, Pharmaceutical Press.
23. Methods of Analysis for Functional Foods and Nutraceuticals Edited by W. Jeffrey, Hursts, Routledge Publishers.
24. Food is Medicine by P.J Cousion; Duncan Baired Publishers, London.
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26. Nutraceutical beverages Chemistry, Nutrition and health Effects, Shahidi and Weerasinghe (Ed.), AmericanChemical Society, 2004.
27. Dietary Fiber: Handbook of Dietary Fiber, Susan Sungsoo Cho, Mark L. Dreher.
28. Bioprocesses and Biotechnology for Functional Foods and Nutraceuticals, Jean - Richard Neeser & J. Bruce German, Marcel Dekker, Inc., 2004.
29. Herbal Products -Timotht S.Tracy, Richard L. Kingston.
30. Ayurveda Aahar (Food / Diet)-Prof. P.H.Kulkarni.
31. Dietary Supplements and Alternative Medicines -W. Marvin Davis.

32. Flavour in Food-Andree' Voilley, Patrick Etievant.
33. Dietary Supplements and Functional Foods -Geoffrey P. Webb.
34. A Guide to Understanding Dietary Supplements-Shawn M. Talbott.
35. Introduction to the Chemical Analysis of Foods-S. Suzanne Nielsen.
36. An Evidence - Based Approach to Dietary Phytochemicals -Jane Higdon.
37. Herbal beauty products with formulation & processes-H. Panda.
38. Herbal Drugs & its plant Sources-H. Panda.
39. Herbal Drugs: Potential Antimalarial Herbal Drugs from South Asia-CCRUM.
40. Herbal Medicine & Botanical Medical Fads-Frank Hoffmann, Martin Manning.
41. Herbal Medicines-H. Panda.
42. Medicinal HERBS with uses-H. Panda.
43. Medicinal Plants (Cultivation & their uses)-H. Panda.
44. Medicinal Plants (Traditional Knowledge)-P C Trivedi.
45. Medicinal Plants of the World-Ben-Erik, Van Wyk, Michael Wimk
46. Medicinal Plants Of the World Vol-3 -Ivan A Ross
47. Medicinal Plants: Chemistry of Medicinal Plants Part - I-CCRUM
48. Dietary Supplements labeling-compliance review (third edition), James L. Summers
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