Government Degree College (Autonomous), Baramulla

SEMESTER- 8th **Major/Minor-I**

Subject: Food Science and Technology

Title: Food Additives & Toxicology Code: FSTC1822M
CREDITS: (4 + 2) THEORY: 04 PRACTICAL: 02 CONTACT HOURS: 64T + 64L

Part-1 THEORY (4 CREDITS)

Course Objectives:
To provide the student detailed knowledge of food additives, their classification and principles of use.
To explain the basics of toxicology.
Learning outcomes:
On completion of the course, the students shall be able to:
Identify and classify different food additives.
Understand the detrimental effects of various toxins and the necessary precautions.

UNIT- 1: Food additives- types, functions and safety considerations (16 HOURS)
Definition and classification of additives.
General principle for use of food additives.
Antioxidants: Sources, classification, mechanism of action, functions and toxicological aspects.
Antimicrobial agents: Classification, common food antimicrobial agents and their mode of action**.**

UNIT- 2: Acidulants, stabilizers, colorants and sweeteners (16 HOURS)
Acidulants: Classification, general functions, application in foods.
Stabilizers and thickeners: Overview, types and role in food processing.
Natural and synthetic colorants used in foods: properties, permissible limits and applications.
Prohibited colorants for food: usage and safety concerns.
Artificial sweeteners: Types, recommended levels and safety concerns.

UNIT- 3: Food texture and stability, additives and mimetics (16 HOURS)
Texturizers and emulsifiers: Types and application in food processing.
Carbohydrate and protein fat mimetics.
Synthetic fat substitutes.
Anticaking agents: Types and applications.

UNIT- 4 Food Toxicology- principles and safety evaluation (16 HOURS)
Basic concept of Toxicology: Dose response relationship.
Naturally occurring toxins and processing induced toxins.
Toxicological testing methods.
Biotransformation of xenobiotics.
Drug and pesticide residues.

Part- 2: Laboratory course (Credits: 02)

Detection of benzoic acid in food.

Determination of sorbic acid in dairy products.

Identification of oil soluble dyes in capsicum and turmeric.

Determination of antioxidants in locally available fruits and vegetables.

Books Recommended:

1. Food Additives by A. Larry Branen, P. Michael Davidson, Seppo Salminen, John Thorngate (2nd Edition, CRC Press).
2. Food Additive Toxicology by Neeraj and Devendra Kumar (1st Edition, CRC Press).
3. Food and Nutritional Toxicology by Stanley T. Omaye (1st Edition, CRC Press).
4. Foods Facts and Principles by N. Shakuntala Manay, M. Shadaksharaswamy (3rd Edition, New Age International Publishers).