Department of Higher Education, Govt. of M.P.
Semester wise syllabus for Postgraduates

As recommended by Central board of Studies and Approved by HE the Governor of M.P.

M.Sc. (Home Science)
Food and Nutrition

SEMESTER-III
PAPER-III
Food Science & Current Trends

Objectives : **M.M. 50**

This course is designed to:

- Provide an understanding of composition of various foods stuffs.
- Familiarize students with changes occurring in various foodstuffs as a result of processing and cooking.
- Enable students to use the theoretical knowledge in various application and food preparations.
- Create awareness regarding current trends, issues and researches in various aspects of food and nutrition.

UNIT-I

(a) **Introduction of Food Science:** Development of Food Science as a discipline.

(b) **Water and Food Dispersions:** Physical properties of water and ice chemical nature, structure of the water molecule.

- Absorption phenomena, types of water
- Free and bound water

UNIT-II

- Physico chemical properties of food.
- Colloidal salts, stabilization of colloidal systems.
- Gels structure, formation and stabilization
- Emulsions; formation, stability surfactants and emulsifier.

UNIT-III

- Starch: Structure, gelatinization, methods for following gelatinization changes. Characteristics of some food starches. Effect of ingredients and conditions on gelatinization. Modified food starches.
- Non-starch Polysaccharides: Cellulose, Hemicelluloses, Pectin's gums, animal polysaccharide.
- Sugar and Sweeteners: Sugars, syrups alcohols, potent sweeteners, sugar products. Alternative sweeteners. Browning
- Reactions of sugar: Caramelization, Hydrolysis, Crystallization, Indian Confectionery.

UNIT-IV

Cereals and Cereal Products:

Cereal grains: Structure and Composition.

Cereal products

Flours and flour quality

Extruded foods breakfast cereals wheat germ, bulgur, puffed and flaked cereals.

UNIT-V

(a) **Milk and Milk Product:** Composition, Physical and functional properties. Denaturation, effects of processing and storage and Diary Products: Cultured milk, yogurt, butter, whey cheese concentrated and dried products Frozen desserts , daily product substitute.

(b) **Pulses and Legumes:** Classification, composition, denaturation non-enzymatic browning and other

Practicals: **M.M. 50**

1. Effect of solutes of boiling point and freezing point of water.
2. **Sugar and Jaggery Cookery:** Caramelization, crystallization, factors affecting crystal formation. Preparationof standardized chikky, laddos gulabjammin, jalebi, Shakarparas, chocolates.
3. **Starches, vegetable Gums and cereals:** Gelatinization properties of staches, Factors affecting Gelatinization formation. To see the effect of soaking time of the quality of rice. To study the formation of gluten.
4. **Jams and Jtllies:** Pectin content of fruits, role of acid, pectin and sugar in jam and jelly formation.
5. **Fat and Oils:** Flash point, melting point and smoking point. Role of fats and oils in cookery, plasticity of fats. Permanent and semi permanent emulsions.

To study the effects of various factors affecting the fat absorption. Use of various types of fats (unsaturated & saturated) in cookery.