

GOVT. D.B. GIRLS' P.G. AUTONOMOUS COLLEGE  
RAIPUR (CHHATTISGARH)

**FACULTY OF HOME SCIENCE**

SYLLABUS

OF

B.Sc

Food science

2020-2021

## Food Science and Quality Control Syllabus for B.Sc. Part III

There shall be three papers and one practical for this course.

A. Theory Papers	Title	Duration	Max Marks	Min. Pass Marks
Paper I	Introduction to Food Manufacture	3 Hours	34	11
Paper II	Food Toxicology	3 Hours	33	11
Paper III	Analysis of Food & Testing of Food Adulteration	3 Hours	33	11
B. Practical	Analysis of Food & Testing of Food Adulteration	5 Hours	50	17

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Signature of member(subject)

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Chairman Dr.J.R.Tiwari		
Subject Expert (VC nominee)		
1 Dr. Rekha Lilhare	2 Dr.Aruna Palta	3 Dr.Minakshi Saxena
Subject Expert (Principal nominee)		
1 Dr.Varsha Rahuwanshi	2 Dr.S.Sen	3 Dr.Abha Tiwari
Member of the Department		
1 Dr.Rashmi Mini	2 Dr.Nanda Gurwara	3 Dr.Vasu Verma
4 Dr..Anubha Jha	5 Dr.A.Joglekar	6 Ms.M.Shrivastav
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**DEPARTMENT OF HOME SCIENCE**  
**CLASS: B.Sc.III**

**Food Science and Quality Control**

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**NAME OF PAPER: Introduction to Food Manufacture**

**PAPER:I**

**MAXIMUM MARKS:34**

**NUMBER OF UNITS: V**

**Objectives: To enable students-**

1. To develop new food products which are marketable and nutritionally and economically viable.
2. To develop entrepreneurial abilities for small scale food industries.

**Unit I**

- Market Research – Concept of market, types of market, scope of market research, importance of market research, procedure of market research.
- Consumer research – Consumer – Meaning and definition, consumers responsibility, consumer products, consumer behaviour, importance of consumer research.
- Food consumption pattern and the various factors affecting this pattern economical, social, psychological and physiological.

**Unit II**

- Trends in social change and its role in diet pattern, food pattern for the future, food situation in India and outside, using social trend as a framework in new product innovation.

**Unit III**

- Tapping the unconventional post harvest losses. Prospects of food processing for export. Traditional food status and need for revival in the context of westernized untraditional foods.
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#### Unit IV

- Product development: Primary processing, secondary processing, types of food products e.g. quick cooking, fast foods, fabricated foods, convenience foods.

#### Unit V

- Additives and preservatives: Types, quality, test for safety.
- Standardization- Method and types of standardization.
- Large scale preparation of consumer products.

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**NAME OF PAPER: Food Toxicology**

**PAPER:II**

**MAXIMUM MARKS:33**

**NUMBER OF UNITS: V**

**Unit I**

1. Toxicology – Introduction, importance and scope of Toxicology
2. (i) Food Contamination – A brief review  
(ii) Naturally occurring toxins in various food substances
  - (a) Toxicants in animal foods -  
Shell fish toxins, Sea food toxins and Biogenic amines
  - (b) Toxicant in plant foods -  
Toxic amino acids, toxic alkaloids, cyanogenic alkaloids, toxic mushrooms.
3. Substances intentionally added to foods-  
Antioxidants, colour, stabilizers

**Unit II**

4. Residual chemicals utilized in food productions and processing-
  - (i) Chemical preservatives – Sulphur dioxide, bisulphite and sulphites, nitrate and nitrites, benzoic acid and salts, ascorbic acid and its salts.
  - (ii) Pesticides- Organochlorines, organophosphates, pyrethrins or pyrethroids, inorganic.
  - (iii) Heavy metals – Arsenic, lead, mercury
  - (iv) Hormones in foods

**Unit III**

5. Food borne illness – Food poisoning and food infections
  - (i) Bacterial intoxication – Staphylococcal, botulism
  - (ii) Bacterial infections – Salmonellosis, clostridium, penfringes illness Coli, infection.
  - (iii) Non bacterial – Mycotoxins – Aflatoxin, patulin
  - (iv) Parasites – Trichinosis, Amoebic-dysentery, tapeworm.

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#### Unit IV

6. Physical treatment of food and health hazards
  - (i) Irradiation-
    - (a) Application of irradiation in food preservation.
    - (b) Effects of irradiation
  - (ii) Heat treatments-  
Changes during thermal processing and effects on food quality and nutrients.

#### Unit V

7. Carcinogens-
  - (i) Definition and classification of carcinogens
  - (ii) Dietary factors
8. Genetically engineered foods
  - (i) Definition and strategies of genetic engineering (in brief).
  - (ii) Applications of Gene technology.
  - (iii) Safety of genetically modified foods – Issues of concern.

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






#### Reference:

1. Nutritional and toxicological aspects of food processing  
Walker and E. Quattrucci Tayloss and Francis, New York, 1980.
2. Manuals of food Quality control, addition, contaminants techniques, 1980.
3. Toxicological aspects of foods – K. Lava Miller, Elsevier Applied Science,  
London and New York.
4. The chemical analysis of foods and food products  
Morris B. Jacobs, 3<sup>rd</sup> edition, Roberte Krieger.
5. ISI publications
6. Prevention of food adulteration act, 1985.
7. Pearsons chemical analysis of food – Egan, Kiv, Sawyer
8. Methods in food analysis – Joslyn
9. Standard methods for examination of dairy products – E.M. Mater
10. Handbook of Analysis and Quality Control for fruits and vegetable products.

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**NAME OF PAPER:** Analysis of Food and Testing of Adulteration in Food

**PAPER:III**

**MAXIMUM MARKS:**33

**NUMBER OF UNITS:** V

**Unit I**

Food Composition: Carbohydrates, proteins, fats and oils, natural emulsifiers, organic acids, oxidants and antioxidants, enzymes, pigments and colours, flavours, vitamins and Minerals, natural toxicants and water. Factor affecting food composition.

Sampling Techniques – Preparation of sample. Physical methods – Lactometry, Refractometry, Ploarimetry, Viscosity, Surface tension.

**Unit II**

General chemical methods of analysis: Total fat and different types of lipids.

- Total carbohydrate – mono and disaccharides, Starch and gum.
- Crude fibre and dietary fibre
- Total protein (Micro Kjeldahl method, Biuret method, Lawry's Method u-v absorption method), non-protein and specific protein.
- Macronutrients – Ns, K, P, Ca, Mg, Fe, Zn, Vitamins, trace elements.

**Unit III**

Food Laws-

Federal foods, drug and Cosmetic act 1938, Federal meat inspection Act of 1906, Federal poultry products inspection Act of 1957, Federal Trade Commission Act (Amended for food in 1938), Infant Formula Act of 1980, Nutrition labelling and Education Act of 1990 and State and Municipal Laws.

Voluntary, mandatory national and International – Role of voluntary agencies and legal aspects of consumer protection.

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#### Unit IV

Food Standards – Indian and International:

Food adulteration – Composition and quality criteria for the following – Cann  
foods, Beverages – alcoholic (wine, beer, distilled spirits), Non alcoholic ( )  
Sugar and preserves.

#### Unit V

Composition and quality criteria for the following –



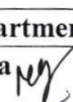







Milk and Milk products – Composition , properties, effect of heat on Milk  
nutritional importance of milk, milk microorganisms, milk processing, cheese,  
gee, ice-cream, indigenous milk products, milk substitutes.

Oils and fats, spices and condiments, food grains, flours, fruits and vegetable  
products, flesh food.

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**NAME OF PAPER:** Analysis of Food and Testing of Adulteration in Food  
**Practical**

**FOOD ANALYSIS-**

1. To analyse proteins, minerals and vitamins by colorimeter.
2. To analyse proteins by electrophoresis.
3. To analyse fats and vitamins by paper and thin layer chromatography.
4. To analyse fats gravimetrically.
5. To analyse fats by volumetric method.

**TESTING OF FOOD ADULTERATIONS-**

To test the food adulterations in –

- (i) Milk and milk products
- (ii) Oils and fats
- (iii) Flours
- (iv) Canned foods
- (v) Fruits and vegetable products
- (vi) Spices and condiments
- (vii) Preservatives.

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