

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 I

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

A. Theory Papers	Title	Duration	Max Marks	Min. Pass Marks
Paper I	Basic Nutrition and Food Chemistry	3 Hours	34	11
Paper II	Food Commodities	3 Hours	33	11
Paper III	Food Microbiology and Sanitation	3 Hours	33	11
Practical	Food Chemistry & Food Microbiology	5 Hours	50	17

Signature of chairman

Signature of member (subject)

APPROVED BY THE BOARD OF STUDIES

Name	In the capacity of chairman	
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 Minj	2 Dr.Nanda Gurwara	3 Dr.Vasu Verma
4 Dr..Anubha Jha	5 Dr.A.Joglekar	6 Ms.M.Shrivastav
7 Dr.S.Banerjee	8 Mrs.A.Verma	9 Mrs.R.Diwan

GOVT.D.B.GIRLS'P.G.(AUTONOMOUS)COLLEGE,RAIPUR
DEPARTMENT OF HOME SCIENCE

CLASS: B.Sc.I

Food Science and Quality Control

NAME OF PAPER: Basic Nutrition and Food Chemistry
Paper I

MAXIMUM MARKS:34
MINIMUM MARKS: 11

NUMBER OF UNITS: V

The students are required to answer one question from each unit.

Unit I

1. Introduction to Nutrition –Food as a source of nutrients,functions of food,its relation to health,detinition of nutrition,nutrients,adequate optimum,good nutrition and malnutrition.
2. Food Guide- Characteristics of basic food groups and their contribution to the diet.
3. Concepts of balanced diet.
4. Use of food in body – Digestion,absorption,transport,utilization of nutrient in human body.

Unit II

5. Water as a source of nutrient,function,sources,requirement. Water balance,effect of dehydration,hydrogen bonding,bound water.
6. Carbohydrates – Composition,classification,food sources,function,daily requirement,structure,reaction and function of mono,oligo and polysaccharide.Other sweetening agents,changes on cooking and processing.

Signature of chairman


Signature of member(subject)

Unit III

- 7 Lipids- Composition,classification and properties,function and sources of lipids.Saturated and unsaturated and unsaturated fatty acids emulsion and emulsifiers.
- 8 Vitamins-Classification,unit of measurements,sources,functions requirement and deficiency of-
 - a. Water soluble vitamins- Ascorbic Acid,thiamin,riboflavin,niacin,B6,folic acid and B12.
 - b. Fat soluble vitamins-Vitamin A,D,E,K

Unit IV

- 9 Protein-Composition,sources,essential and non essential amino acids,sources of protein,functions,requirement and deficiency.
- 10 Enzymes – Nomenclature,definition,specificity.Catalysis regulation,controlling enzyme action,enzyme added to food during processing.

Signature of chairman


Signature of member(subject)

Unit V

- 11 Energy-Unit of energy.food as a source of energy value of food.Direct and indirect calorimetry
B.M.R.-Factors affecting B.M.R.,energy requirement for different activities.
- 12 Minerals-Functions,sources,bioavailability and deficiency of calcium,iron,sodium,potassium,fluorine and iodine.
- 13.Improving nutritional quality of foods-
Fermentation and germination
Fortification enrichment
Restoration of nutrients



APPROVED BY THE BOARD OF STUDIES

Name	In the capacity of chairman	
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 Minj	2 Dr.Nanda Gurwara	3 Dr.Vasu Verma
4 Dr..Anubha Jha	5 Dr.A.Joglekar	6 Ms.M.Shrivastav
7 Dr.S.Banerjee	8 Mrs.A.Verma	9 Mrs.R.Diwan

GOVT.D.B.GIRLS'P.G.(AUTONOMOUS)COLLEGE,RAIPUR
DEPARTMENT OF HOME SCIENCE
CLASS: B.Sc.I
Food Science and Quality Control

NAME OF PAPER: Food Commodities
Paper II

MAXIMUM MARKS:33
MINIMUM MARKS: 11

NUMBER OF UNITS: V

Unit I

1. Cereals- Structure of Rice and wheat, their composition,processing,uses in variety of preparation,nutritional aspect,breakfast cereals,fast foods,storage of cereals.
2. Pulses:-Variety, structure ,composition , nutritional aspect,processing,uses in variety of preparation,storage.
3. Vegetables:-Variety, selection , composition,nutritional aspect,uses,storage,processing of vegetables.
4. Fruits:-Variety, composition ,nutritional Aspect
Uses,storage,processing of fruits.

Unit II

5. Egg:- Composition,nutritional aspect,quality,grading,storage,spoilage.
6. Fish,Poultry and Meat:-Nutritional aspect,selection,storage,uses,
7. Milk:-Composition,classification,nutritional aspect,processing,spoilage,uses.
8. Milk Products:-Curd,Butter,Cheese,Butter milk,Panner,Khoa,Ic and various types of processed milk-their composition,nutritional as manufacture.

Signature of chairman

Signature of member(subject)

Unit III

- 9 Fats and Oils:- Sources,types,processing,nutritional aspect,stor
- 10 Sugar and Sugar Products:-Different forms of sugar,Jaggery manufacture,storage,uses.
- 11 Salt:- Types and uses in food preparation.
- 12 Raising Agent:-Types,composition,uses in cooking and bake

Unit IV

- 13.Spices and Condiments:-Types,composition,uses,storage.
- 14.Food Colours and Pigments:-Types,origin,uses,Pigments structure,physical and chemical properties.
- 15.Food Flavours:-Vegetables,fruits,spices and sea food flavours.
- 16.Tea,coffee,cocoa and chocolate:-Cultivation,processing,nutritional aspect and composition.











Unit V

- 17.Convenience Foods- Types,advantages,uses,cost and contribution to diet.
- 18.Additives and Preservatives:-Types and their uses.
- 19.Beverages:-Types,processing,composition,nutritional aspect.
- 20.Nuts:-Types,composition, uses,storage.

References :-

- 1. Food facts and principles,N.Shakuntala
Manay,M.Shadaksharaswamy,Wiley Eastern Ltd.
- 2. Food Science,B.Srilaksmi,New Age International Pvt.Ltd.
- 3. Principles of Food and Nutrition-N.Swaminathan.
- 4th आहार एवं पोषण के आधार- डॉ अरुणा पल्ला,शिवा प्रकाशन,इंदौर.

APPROVED BY THE BOARD OF STUDIES

Name	In the capacity of chairman	
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 Minj 	2 Dr..Nanda Gurwara 	3 Dr.Vasu Verma 
4 Dr..Anubha Jha 	5 Dr.A.Joglekar 	6 Ms.M.Shrivastav 
7 Dr.S.Banerjee 	8 Mrs.A.Verma 	9 Mrs.R.Diwan 

GOVT.D.B.GIRLS'P.G.(AUTONOMOUS)COLLEGE,RAIPUR
DEPARTMENT OF HOME SCIENCE
CLASS: B.Sc.I
Food Science and Quality Control

NAME OF PAPER: Food Microbiology and Sanitation

Paper III

MAXIMUM MARKS:33

NUMBER OF UNITS: V

Unit I

1. Introduction to microbiology and its relevance to everyday life. General characteristics of bacteria, fungi, virus, protozoa, algae.
2. Growth of micro-organisms-Growth curve, effect of environmental factors on growth of micro-organisms-pH, oxygen availability, temperature, water activity and others.
3. Control measures-Heat, chemical, radiation, pressure (physical and chemical measures)
4. Microbiology of air, water, soil and sewage.

Unit II

5. Sources of food contamination.
6. Food spoilage-Factors responsible for food spoilage, Physio-chemical changes due to spoilage.

Signature of chairman

Signature of member(subject)

Spoilage of different foods-

- a. Cereals and cereal products.
- b. Sugar and sugar products.
- c. Vegetables and fruits.
- d. Meat and meat products.
- e. Fish and other sea foods.
- f. Eggs and Poultry
- g. Milk and Milk products.
- h. Canned foods.

Unit III

- 7. Food borne diseases-Bacterial,viral,molds,yeast,parasites.
- 8. Food borne intoxication or poisoning – Toxins,their physiological action.
- 9. Food borne infections.
- 10.Mycotoxins
- 11.Food contamination-
 - A Naturally occurring toxicants – Toxicants in animal foods,toxicants in plant foods,anti-nutritional factors in food.
 - B Environmental contaminants-Biological,pesticide residues,veterinary drug residues,heavy metals.
 - C.Miscellaneous contaminants.

Unit IV

- 13 Beneficial effects of micro-organisms
- 14 Impotance of personal hygiene of food handler,habits,clothes,illness,education of food handler in handling and serving food.

Signature of chairman

Signature of member(subject)

Food safety measures-Premises,equipment and utensils,kitchen layout,storage,transportation, Sanitary facilities.

Unit V

15 Sanitation-

A Cleaning agents:

B Disinfectants or sanitizer-Chemicals,heat radiations.

16 Waste product handling-Planning for solid and liquid waste disposal and left over food.

17 Pests and rodent control.

18 Food sanitation control and inspections-Planning and implementation of training programmes for healthy personnel.

APPROVED BY THE BOARD OF STUDIES

Name	In the capacity of chairman	
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 Minj	2 Dr.Nanda Gurwara	3 Dr.Vasu Verma
4 Dr..Anubha Jha	5 Dr.A.Joglekar	6 Ms.M.Shrivastav
7 Dr.S.Banerjee	8 Mrs.A.Verma	9 Mrs.R.Diwan

B.Sc Part-I
Syllabus for Food Science and Quality Control
Practical

Duration: 4 hours

Max.Marks:50

- | | | | | |
|----|--------------------------------|---|-----------|-----------|
| 1. | Practical on Food Chemistry | - | 2 hrs. | :15 Marks |
| 2. | Practical on Food Microbiology | - | 2 hours | :15 Marks |
| | | | Viva | :10 Marks |
| | | | Sessional | :10 Marks |

Food Chemistry Practical

Total Periods:48

1. Water Analysis-Hardness of water,determination of pH,determination of dissolved oxygen.
2. Qualitative analysis of glucose,fructose,sucrose and starch.
3. Quantitative estimation of glucose and ascorbic acid.
4. Acid-base titrations.

Food Microbiology Practical Total Periods :48

1. Sterilization techniques.
2. Preparation of culture media.
3. Isolation and identification of microorganism from air.
4. Isolation and identification of microorganisms from water.
5. Isolation and identification of microorganisms from soil.
6. Staining of bacteria – Simple,negative and Gram staining.
7. Staining of fungi-Lactophenol cotton blue.
8. Enzymatic test of milk by mounting methylene blue reductase test method.
9. Test for antibiotic sensitivity by disc method

APPROVED BY THE BOARD OF STUDIES

Name	In the capacity of chairman	
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 Minj	2 Dr.Nanda Gurwara	3 Dr.Vasu Verma
4 Dr..Anubha Jha	5 Dr.A.Joglekar	6 Ms.M.Shrivastav
7 Dr.S.Banerjee	8 Mrs.A.Verma	9 Mrs.R.Diwan