**Refer to Generic Components Common to all B.Voc. Courses**

** Summer Industrial Training of 4-6 weeks in a relevant Industry after 2nd Semester Examinations during summer break. Training report by the student to be submitted within in one week of start of 3rd Semester. Viva-Voce examination to be held within 3-weeks of the start of 3rd semester.**

<table>
<thead>
<tr>
<th>Paper Code</th>
<th>Title</th>
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<th>Theory/ Practical</th>
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<tr>
<td>*GEN -101</td>
<td>Communication Skills</td>
<td>Generic</td>
<td>Theory</td>
<td>20</td>
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<td>*GEN -102</td>
<td>Fundamentals of Information Technology</td>
<td>Generic</td>
<td>Theory</td>
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<tr>
<td>FPP-103</td>
<td>Bakery and Confectionary</td>
<td>Skill</td>
<td>Theory and Practical</td>
<td>10</td>
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<tr>
<td>FPP -104</td>
<td>Dairy Science &amp; Technology</td>
<td>Skill</td>
<td>Theory and Practical</td>
<td>10</td>
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<tr>
<td>FPP -105</td>
<td>Food Quality Assurance</td>
<td>Skill</td>
<td>Theory and Practical</td>
<td>10</td>
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<tr>
<td>**SIT-201</td>
<td>Summer Industrial Training</td>
<td>Skill</td>
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**SEMESTER II**

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<tr>
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<th>Title</th>
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<th>Theory/ Practical</th>
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<tr>
<td>*GEN 201</td>
<td>Soft Skills and Personality Development</td>
<td>Generic</td>
<td>Theory</td>
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<td>*GEN 202</td>
<td>Business Ethics</td>
<td>Generic</td>
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<tr>
<td>FPP-203</td>
<td>Food Packaging Technology</td>
<td>Skill</td>
<td>Theory and Practical</td>
<td>10</td>
<td>40</td>
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<tr>
<td>FPP-204</td>
<td>Industrial Safety, Hazards &amp; Prevention</td>
<td>Skill</td>
<td>Theory and Practical</td>
<td>10</td>
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<tr>
<td>FPP-205</td>
<td>Food Plant Layout</td>
<td>Skill</td>
<td>Theory and Practical</td>
<td>10</td>
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### Semester I

<table>
<thead>
<tr>
<th>Code</th>
<th>Skill Component</th>
<th>Job Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FPP103</td>
<td>Bakery and Confectionary</td>
<td><strong>Baking Technician:</strong> Responsible for baking of products and maintaining their quality</td>
</tr>
<tr>
<td>FPP 104</td>
<td>Dairy Science &amp; Technology</td>
<td><strong>Dairy Technologist:</strong> To work with dairy products like milk, butter, yogurt, cheese. To prepare and preserve high quality dairy products</td>
</tr>
<tr>
<td>FPP105</td>
<td>Food Quality Assurance</td>
<td><strong>Food quality assurance manager:</strong> To determine and establish procedures and standards for food production, preservation and quality management. Is responsible for implementing and ensuring that food products produced meet standards set by both the organisation and regulatory authorities.</td>
</tr>
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</table>

### Semester II

<table>
<thead>
<tr>
<th>Code</th>
<th>Skill Component</th>
<th>Job Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>FPP 203</td>
<td>Food Packaging Technology</td>
<td><strong>Food Packaging technician:</strong> performs various packaging functions and handles all categories of packaging such as primary, secondary and tertiary packaging for food products.</td>
</tr>
<tr>
<td>FPP 204</td>
<td>Industrial Safety, Hazards &amp; Prevention</td>
<td>To evaluate values of industrial safety and hygiene. Is responsible for monitoring and assessing hazardous hazardous and unsafe situations and developing measures to assure workers safety</td>
</tr>
<tr>
<td>FPP 205</td>
<td>Food Plant Layout</td>
<td><strong>Food Plant layout officer:</strong> Managing and updating food plant layout time to time as per business policies and safety standards.</td>
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</table>
### Semester III

<table>
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<tr>
<th>Paper Code</th>
<th>Title</th>
<th>Generic/ Skill Component</th>
<th>Theory/ Practical</th>
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<td>Value Education And Human Rights</td>
<td>Generic</td>
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<td>*GEN 302</td>
<td>Project Management</td>
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<tr>
<td>FPP-303</td>
<td>Introduction to food microbiology</td>
<td>Skill</td>
<td>Theory and Practical</td>
<td>10</td>
<td>40</td>
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<tr>
<td>FPP-304</td>
<td>Food analysis: Tools and Techniques</td>
<td>Skill</td>
<td>Theory and Practical</td>
<td>10</td>
<td>40</td>
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<tr>
<td>FPP-305</td>
<td>Documentation and record keeping in food industry</td>
<td>Skill</td>
<td>Theory and Practical</td>
<td>10</td>
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### SEMESTER IV

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<th>Paper Code</th>
<th>Title</th>
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<td>Environmental Studies</td>
<td>Generic</td>
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<td>*GEN 402</td>
<td>E- Commerce</td>
<td>Generic</td>
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<tr>
<td>FPP-403</td>
<td>Essentials of food hygiene</td>
<td>Skill</td>
<td>Theory and Practical</td>
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<tr>
<td>FPP-404</td>
<td>Food Pathogens</td>
<td>Skill</td>
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<tr>
<td>FPP-405</td>
<td>Food Safety Standards and regulations</td>
<td>Skill</td>
<td>Practical</td>
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<td>**SIT-401</td>
<td>Summer Industrial Training</td>
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*Refer to Generic Components Common to all B.Voc. Courses*

** Summer Industrial Training of 4-6 weeks in a relevant Industry after 4th Semester Examinations during summer break. Training report by the student to be submitted within in one week of start of 5th Semester. Viva-Voce examination to be held within 3-weeks of the start of 5th semester.
Job Role:-----

Semester III

<table>
<thead>
<tr>
<th>Code</th>
<th>Skill Component</th>
<th>Job role</th>
</tr>
</thead>
<tbody>
<tr>
<td>FPP-T- 303</td>
<td>Food Fermentation &amp; Beverage Technology</td>
<td><strong>Fermentation microbiologists</strong> work in academic, basic and applied research laboratories, where they study the fermentation processes of microorganisms like bacteria, yeasts, fungi and mold. Develop and improve processes for making beer, wine, cheese and other products</td>
</tr>
<tr>
<td>FPP-T- 305</td>
<td>Nutraceuticals and probiotics</td>
<td>Working with specific strains of microorganisms and developing new supplements and drinks to improve the overall health of human beings especially digestive system</td>
</tr>
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</table>

Semester IV

<table>
<thead>
<tr>
<th>Code</th>
<th>Skill Component</th>
<th>Job role</th>
</tr>
</thead>
<tbody>
<tr>
<td>FPP-T- 303</td>
<td>Meat, Poultry &amp; Fish Processing</td>
<td>To work in an abattoir, wholesale meat factories and meat processing plants. A meat processor is involved with the production of meat and poultry products.</td>
</tr>
<tr>
<td>FPP –T-304</td>
<td>Food Engineering</td>
<td><strong>Food engineers</strong> utilize the latest innovative technology to process, package, preserve and improve food products. This type of engineer works in combination with the agricultural and food processing industry to ensure food safety, supply, nutrition and value. To develop and design new food equipments.</td>
</tr>
<tr>
<td>FPP-T- 305</td>
<td>Seminars</td>
<td>To improve the communicating and presentation skills of the individual.</td>
</tr>
</tbody>
</table>
Semester I

FPP 103: BAKERY AND CONFECTIONERY

Job Role:-Baking Technician: Responsible for baking of products and maintaining their quality

Course Objectives:

1. To understand the composition of different ingredients used in Baking Industry.
2. To know the methods of processing and preservation of foods.
3. To identify the microorganisms of food commodities of plant and animal origin.
4. To learn about Food borne diseases and microorganisms.

Instructions for paper setters

1. The syllabus of this paper has been divided into four units.
2. Examiner will set a total of nine questions comprising two questions from each unit, and one compulsory question of short answer type covering the whole syllabus.
3. The students are required to attempt one question from each.
4. All questions carry equal marks.

Unit I


Unit II


Unit III


Unit IV

Bread Diseases: Rope and Mould, Factors responsible for it and preventive measures. Faults and Remedies: Basic reasons and suggested remedies: Bread, Cake and Biscuits.
Text books/ References:

4. Ornamental Confectionary and the Art of Baking in all its Branches by Herman Hueg
6. A professional Text to bakery and confectionary by John Kingslee

Practical based on FPP103

1. Preparation of White Bread.
2. Principle and preparation of Fruit cake.
3. Studying the effect of temperature on process of biscuit making.
4. To make garlic bread and sensory analysis.
5. To do icing on the cake.
6. Isolation of microbes from spoiled bread.
7. To study effect of pasteurization on milk
8. Methylene blue reduction test in milk
FPP 104: DAIRY SCIENCE & TECHNOLOGY

Job Role: Dairy Technologist: To work with dairy products like milk, butter, yogurt, cheese. To prepare and preserve high quality dairy products

Course Objectives:

1. To create interest among students about different aspects of dairy industry.
2. To study quality standards and production of various types of milk and milk products.
3. To study the role of dairy farming in Indian economy

Instructions for paper setters

1. The syllabus of this paper has been divided into four units.
2. Examiner will set a total of nine questions comprising two questions from each unit, and one compulsory question of short answer type covering the whole syllabus.
3. The students are required to attempt one question from each.
4. All questions carry equal marks.

Unit I


Unit II

Dairy Animals: Care and management of different dairy animals. New borns, milkch, pregnant animals, bull and sick animals. Feed formulation; Nutrient requirement of different dairy animals

Common diseases: bacterial, viral, fungal, prevention and their control (Vaccination, deworming). Development of transgenic dairy animals.

Unit III

Composition, standards, manufacturing: Process, equipments and defects during manufacturing and storage of dairy products and by products (Cream, paneer, yogurt, milk powder- skimmed milk and whitener, casein, whey concentrate, lactose, ghee residue).

Unit IV

Dairy development in India: Present dairying- Present status, future prospective and its role in Indian economy. Important government initiative (operation Blood). Role of dairy development organizations (NDRI, IVRI, Amul) in dairy development

Text books/ References:

1. A textbook of animal husbandry, G.C. Banerjee, IBH Publication
2. Farm animal management and poultry production, Shastri Thomas and Singh, Vikas Publishers
3. Indian Dairy products, K.T. Acharya

**Practical based on FPP 104**

1. Gerber fat test for milk.
2. Sampling of milk and milk products for microbiological analysis
3. Platform test for milk analysis.
4. Proximate analysis of feed: Dry matter, nitrogen, crude fiber and total ash.
5. Visit and study a nearby milk union/dairy and prepare a checklist of problems in procurement and milk distribution
6. Listing of quality control agencies at national and international levels.
7. Preparation of flavored milk: TM and DTM
FPP105: FOOD QUALITY ASSURANCE

Job Role: Food quality assurance manager: To determine and establish procedures and standards for food production, preservation and quality management. Is responsible for implementing and ensuring that food products produced meet standards set by both the organization and regulatory authorities.

Course Objectives:

1. To understand the different principles of food quality control.
2. To assess the food quality assurance of bakery products.

Instructions for paper setters

1. The syllabus of this paper has been divided into four units.
2. Examiner will set a total of nine questions comprising two questions from each unit, and one compulsory question of short answer type covering the whole syllabus.
3. The students are required to attempt one question from each.
4. All questions carry equal marks.

Unit I

Objectives, importance and functions of quality control. Principles of food quality control and quality assurance, quality control and assessment in food materials used in baking industry and finished bakery products.

Unit II

Total quality management (TQM) - good manufacturing practices, good hygienic practices, good lab practices, general awareness and role of management practices in quality control.

Microbial quality control: determination of microorganisms in foods by cultural, microscopic, physical, chemical, immunological and bioassay methods.

Unit III

Food regulations, grade and standards, concepts of Codex Almentarious, HACCP, USFDA, ISO 9000 series etc. Food laws and standards, Food standards and safety Act: salient provisions and prospects, role of various national and international agencies.

Unit IV

Food adulteration, nature of adulteration, methods of evaluation of food adulterants and toxic constituents of bakery products.

Sensory quality evaluation: Introduction, methods, panel screening, selection methods, Sensory and instrumental analysis in quality control,
Practical based on FPP 105

1. Techniques of quality assessment of different natural and processed foods.
2. Identification and ranking of food product attributes
3. Identification and ranking of food product attributes.
4. Sensory methods for measuring food quality assessment of raw materials used and processed bakery products
5. Instrumental methods for measuring food quality assessment of raw materials used and processed bakery products
6. Study of cleaning and sanitizers used in pre and post-operative processes in bakery industry
7. Documentation of details of baking ingredients, process and finished products used in baking industry.

Text books/References:

Semester II  
FPP 203: FOOD PACKAGING TECHNOLOGY

**Job Role:** Food Packaging technician: performs various packaging functions and handles all categories of packaging such as primary, secondary and tertiary packaging for food products.

**Course Objective:**

- To enable the students to understand about packaging and packaging materials, interaction of food items with packaging materials

**Instructions for paper setters**

1. The syllabus of this paper has been divided into four units.
2. Examiner will set a total of nine questions comprising two questions from each unit, and one compulsory question of short answer type covering the whole syllabus.
3. The students are required to attempt one question from each.
4. All questions carry equal marks.

**Unit I**

Introduction to Food Packaging: Functions of packaging, Effect of environmental factors on quality of food.

Estimation of shelf life, analysis of storage requirement, accelerated storage studies: Vacuum and Inert Gas Packaging: Tests on packaging materials, Mechanical strength (Tension, notch and tearing strengths), Gas and water vapor transmission rates.

**Unit II**

Metal Cans as Packaging material: Types of Metallic Cans - Tin cans and Aluminum cans. Specialty of Open top sanitary cans, Lacquers and their use, three piece cans and two piece cans, Aerosol Cans.

Introduction to Canning operations – Can Reformer, Flanger, Seaming, Can closures, Glass jars and Bottles in food packaging, Design features and applications, Sterilization of jars and bottles.

**Unit III**

Flexible Films Packaging: Formation of Films and pouches, Plastics used and their Specific applications.


**Unit IV**
Filling And Sealing Operations For Various Types of Packages: Closing and sealing of rigid plastic containers. Filling and sealing of Flexible plastic containers, Seal types, hot wire sealing, hot bar sealing and impulse sealing.

Active packaging, Moisture control, CO₂ and Oxygen scavenging, modified atmosphere packaging –principles, applications. Permeability of gases in packs.

Text Books/ References.


Practical based on FPP 203

1. Demonstration of filling process.
2. To study quality and strength of packaging materials.
3. Demonstration. of measurement of cartons’ dimensions as per organizational standards.
4. Demonstration of measurement of dimensions of bottle mouth, cans and their caps.
5. Demonstration of sealing processes used in food industry.
FPP204: INDUSTRIAL SAFETY, HAZARDS & PREVENTION

Job Role:- To evaluate values of industrial safety and hygiene.

Is responsible for monitoring and assessing hazardous and unsafe situations and developing measures to assure workers safety

Course Objectives:

1. To create awareness about health hazards of industrial substances.
2. To evaluate the threshold value of industrial hygiene and safety.

Instructions for paper setters

1. The syllabus of this paper has been divided into four units.
2. Examiner will set a total of nine questions comprising two questions from each unit, and one compulsory question of short answer type covering the whole syllabus.
3. The students are required to attempt one question from each.
4. All questions carry equal marks.

UNIT-I

Origin of process hazards, Law Codes, Standards, Properties of Chemicals, and Health hazards of industrial substances.

UNIT-II

Microbial Contaminants associated with food–Bacteria, viruses, fungus, molds and yeast. Factors affecting the growth of microbes in food. General Microbiological Methods of enumeration and isolation of food related microbes. Methods of Preservation: Pasteurization, sterilization and appertization

UNIT-III

Toxicology: Toxic materials and their properties, effect of dose and exposure time, relationship and predictive models for response, Threshold value and its definitions, material safety data sheets, industrial hygiene evaluation.

UNIT-IV

Propagation of fire and effect of environmental factors, ventilation, dispersion, purifying and sprinkling, safety and relief valves.

Text books/ References:

Practical based on FPP 204

Time: 3 hours

1. Study of morphology of bacteria, yeast and fungi
2. Methods of sterilization and preparation of media
3. Gram staining, negative and lactophenol staining
4. Methods of pure culture techniques for bacteria
5. Enumeration and isolation of bacteria and fungi from water/milk and contaminated food
6. Demonstration of different safety aspects and maintenance of material safety data sheets followed in food industry.
FPP205: FOOD PLANT LAYOUT

Job Role: Food Plant layout officer: Managing and updating food plant layout time to time as per business policies and safety standards.

Course objective:

1. Exposure of the students to the basic setup of a Food industry
2. To make them conversant with the machinery and equipments in a food industry

Instructions for paper setters

1. The syllabus of this paper has been divided into four units.
2. Examiner will set a total of nine questions comprising two questions from each unit, and one compulsory question of short answer type covering the whole syllabus.
3. The students are required to attempt one question from each.
4. All questions carry equal marks.

Unit I

Basic concepts of industrial plant layout and design with special reference to food packaging industries. Application of HACCP concept, ISO, FPO & MPO requirements in food plant layout and design.

Unit II

Design consideration for location of food plants. Basic understanding of equipment layout and ventilation in food processing plants. Preparation of flow sheets for material movement and utility consumption in food plants.

Unit III

Plant layout and design of bakery and biscuit industries. Plant layout and design of fruits and vegetables processing industries including beverages.

Unit IV

Plant layout and design of milk and milk products. Miscellaneous aspects of plant layout and design like provision for waste disposal, safety arrangements etc.

Text Books/References.


Practical based on FPP 205

Time: 3 hours

1. Industrial visit and report making.
Objective: The objective of this paper is to provide fundamental knowledge to the students about ECommerce so that they can better perform in any area of operation and can excel in the field of commerce.

Instructions for paper setters:

1. The syllabus of this paper has been divided into FOUR units.
2. Examiner will set a total of NINE questions comprising Two questions from each unit, including Question No. 1 (compulsory) of short answer type covering the whole syllabus.
3. The students are required to attempt one question from each unit and the entire Compulsory Question No. 1. 4. All questions carry equal marks.

UNIT I


UNIT II


UNIT III


UNIT IV


Suggested Resources for Reading:

Latest Editions of the following books may be used:
2. ‘Frontiers of Electronic Commerce’ by Ravi Kalakota, and Andrew B. Shinston, Addison Wesley.
4. ‘Electronic Commerce’ by Gray P. Schneider, Course Technology, Delhi.
FPP -303: Introduction to Food Microbiology

Total Marks: 50
Theory: 40
Internal: 10

Job Role: Fermentation microbiologists work in academic, basic and applied research laboratories, where they study the fermentation processes of microorganisms like bacteria, yeasts, fungi and mold. Develop and improve processes for making beer, wine, cheese and other products.

Course Objectives:

1. To understand the different types of microbes in food, concept of cleanliness, sterilization, maintenance of lab equipments, microbial growth, food spoilage and beneficial role of microbes in food.

Instructions for paper setters:

1. The syllabus of this paper has been divided into four units.
2. Examiner will set a total of nine questions comprising two questions from each unit, and one compulsory question of short answer type covering the whole syllabus.
3. The students are required to attempt one question from each.
4. All questions carry equal marks.

Unit-I


Concept of culture medium

Unit-II

Control of microorganisms: Concept of sterilization and pasteurization, physical and chemical agents, mechanical removal methods.

Microbial growth: phases of growth, generation time, specific growth rate, optimum growth. Chemostat, turbidostat.

Measurement of Microbial growth

Factors responsible for growth of microbes in food: temperature, water activity, pH, oxygen, pressure, radiation.
Sporulation, germination. Importance of spores in foods. Importance of stress adapted microbes in food

Unit III

Beneficial role of microbes in food: Fermentation- process( Batch, continuous and fed batch) types and Significance.

Fermented Food: vegetables, dairy products, meat, poultry and fish products. Cocoa, coffee, wine, beer and their health benefits. Concept and application of prebiotics and probiotics

Unit IV

Microbial Food Spoilage: Factors responsible for spoilage, spoilage of specific food types, spoilage bacteria in raw and pasteurized foods, canned foods, soft drinks and fruit juices, refrigerated foods. Indicators of microbial food spoilage. Food poisoning: concept, principle organisms and symptoms

Practicals

Total Marks:50
Practical: 40
Internal:10

1. Study of basic equipments: laminar flow, homogenizer, autoclave, biosafety systems
2. Sterilization of glasswares and other lab equipments
3. Preparation and sterilization of liquid and solid media for isolation of microbes
4. Isolation of bacteria and fungus from spoiled food.
5. Identification of isolated bacteria by simple, gram staining and negative staining
7. Methyl blue reductase test to check effect of pasteurization.
Course Objectives

To enable the students to understand the properties of food and detection of microorganisms using various basic and advance tools and techniques.

Instructions for paper setters

1. The syllabus of this paper has been divided into four units.
2. Examiner will set a total of nine questions comprising two questions from each unit, and one compulsory question of short answer type covering the whole syllabus.
3. The students are required to attempt one question from each.
4. All questions carry equal marks.

Unit-I

Physical and sensory properties: An introduction to rheological and thermal properties of foods and their measurements. Concept of moisture and water holding capacity of different food items and their significance. Analytical methods for estimation of moisture and ash content in foods. Color measurement in different food types and its nutritional importance.

Detection of microorganisms in food: Sampling plan & procedure for microbial analysis; Qualitative methods to isolate pathogenic microorganisms, test for bacterial toxins in foods; Quantitative methods for microbial enumeration: Direct and indirect methods.

Unit-II

Techniques in food analysis -1:

Paper and Thin Layer Chromatography: principle and applications.
Gel filtration and Ion exchange chromatography: principle and applications.
Microscopy: Theory and application of Bright Field, Dark Field, Fluorescent microscopy.
Basic concepts of SEM and TEM.
Unit-III

Techniques in food analysis -II:

Centrifugation, filtration, Electrophoresis, radiations: Principle and their role in detection of food constituents and contaminants in raw and packaged foods.

Unit-IV

Advanced lab equipments and their application in food analysis: Gas chromatography, HPLC, MS, GC-MS, LC-MS, Atomic absorption spectroscopy, ELISA, PCR and RT-PCR (Principle and applications only)

Practical based on FPP-304

Total marks: 50
Practical: 40
Internal: 10

1. To find moisture content of given food sample by lab oven method
2. To find out ash content in the given food sample
3. To estimate amount of protein content by kjeldahl method and lowry method
4. To perform estimation of total carbohydrates in given food sample
5. To find out the amount of crude fibre in given food sample
6. Demonstration of AAS and gas liquid chromatography instrumentation and their use in food analysis
7. To test different food samples for adulteration: milk, ghee, butter, honey
FPP-305: Documentation and Record Keeping

Total marks: 50
Theory: 40
Internal: 10

Job Role:- Working with specific strains of microorganisms and developing new supplements and drinks to improve the overall health of human beings especially digestive system

Course Objectives

1. To enable the students to understand the concepts of nutraceuticals and probiotics.
2. To enable the students to understand the importance of food for good health.

Instructions to paper setters

1. The syllabus of this paper has been divided into four units.
2. Examiner will set a total of nine questions comprising two questions from each unit, and one compulsory question of short answer type covering the whole syllabus.
3. The students are required to attempt one question from each.
4. All questions carry equal marks

UNIT I
Documents and records: Documents, records, General principles for document and record development and maintenance. Importance of documents and record keeping in food industry. Types of records maintained by food industry. Documentation system formats- essays, matrix, essay/matrix combination. Food safety records: Record maintenance by transporters and non-transporters of food.

UNIT II

UNIT III
Record keeping and hazard control: HACCP system, types of HACCP records, record keeping for food safety, retention time, disposal and retrieval of HACCP records, review of records. Importance of documentation and records in risk assessment and management in food industry.

UNIT IV
Data Protection: Confidentiality maintenance of records, Concerns related to data theft in food industry, Role of FDA and FSMA in protection of available food data, Role of ICT in data protection. General laws for record maintenance and protection.
Practical based on FPP-305

Total marks: 50
   Practical: 40
   Internal: 10

1. Maintain periodic record book of the laboratory work.
2. Electronic Record maintenance of lab instruments and their use.
3. Risk assessment in your laboratory and report maintenance
4. Report preparation for online ERP in the organization
5. Study of equipment manuals.
Objective: The objective of this paper is to provide knowledge to students about the essentials of undertaking projects in an organizational environment.

Instructions for paper setters:

1. The syllabus of this paper has been divided into FOUR units.
2. Examiner will set a total of NINE questions comprising Two questions from each unit, including Question No. 1 (compulsory) of short answer type covering the whole syllabus.
3. The students are required to attempt one question from each unit and the entire Compulsory Question No. 1.
4. All questions carry equal marks.

UNIT I


UNIT II


UNIT III

UNIT IV


Suggested Resources for Reading: Latest Editions of the following books may be used:


2. Project Management: The Managerial Process (Special Indian Edit.) -Clifford F Gray, Oregon State University.

FPP-403: Essentials of Food Hygiene

Course Objectives:

• To create awareness about food poisoning, Role of personal hygiene, pest control, Cleaning and disinfection and risk of food contamination during packaging, transport, labeling and waste disposal

Instructions for paper setters

1. The syllabus of this paper has been divided into four units.
2. Examiner will set a total of nine questions comprising two questions from each unit, and one compulsory question of short answer type covering the whole syllabus.
3. The students are required to attempt one question from each All questions carry equal marks

Unit I

Food hygiene: Food poisoning, contamination, sources of food poisoning

Hygiene control in industries: Direct and indirect factory environment, building structure and maintenance, manufacturing operation, food packaging.

Unit II

Personal Hygiene: Personal responsibilities, cleaning of hands, face, head and wounds.

Pest control: Types of pests, their control systems and prevention of assess

Unit III

Temperature control: Temperature and bacteria, chilled and frozen foods, refrigeration and freezing, storage of food

Cleaning and Disinfection: Cleaning of workplace, wet/dry cleaning, cleaning out of place, cleaning in place, cleaning and disinfectants, cleaning implements and portable equipments

Unit IV

Packaging, Labeling and Transportation: General hygiene rules during labeling, packaging and transportation

Waste disposal: Methods for waste disposals, cleaning schedules,

Practical based on FPP 403
FPP-404: Food Pathogens

Course Objectives:

• To create awareness about the food pathogens, sources of food and water borne diseases, their causative agents, characteristics, pathogenesis, isolation of foodborne pathogens and their detection

• Instructions to paper setters
  1. The syllabus of this paper has been divided into four units.
  2. Examiner will set a total of nine questions comprising two questions from each unit, and one compulsory question of short answer type covering the whole syllabus.
  3. The students are required to attempt one question from each. All questions carry equal marks

Unit I


Unit II

Bacterial agents of food borne illness: Characteristics, pathogenesis, clinical symptoms, isolation and detection methods of Bacillus species, Clostridium botulinum, Clostridium perfringens, Escherichia coli, Listeria monocytogenes, Salmonella, Shigella, Staphylococcus aureus, Vibrio.

Unit III

Foodborne Virus: Characteristics, pathogenesis, clinical symptoms, isolation and detection methods Polio, Gastroenteritis virus, Hepatitis A and Hepatitis C.
Protozoal agents for foodborne illness: Giardia lamblia and Entamoebahistolytica

Unit IV
Toxigenic Fungi and mycotoxins: Mycotoxins of Aspergillus, Penicillium, Fusarium and their association with various foods. Control of mycotoxins in food.

Bacterial toxins: Toxins of Enteric bacteria and their associated hazards.
Methods to control foodborne diseases outbreaks

Practical based on FPP 404

Total marks: 50
Practical: 40
Internal: 10

1. Analysis of mycotoxins in fungal-contaminated food materials.
2. Presumptive test for coliforms in butter.
3. Differential test of staphylococci through growth on agar plates.
4. Differentiation and identification of Streptococci.
5. Control of growth of pathogens in food samples.
FPP--405: Food Safety Standards and Regulations

Objective: -To make the students conversant with latest rules and regulation in Food safety as per FSSAI guidelines especially dealing with work place

Total Marks: 50
Theory: 40
Internal:10

UNIT I

Food safety: Importance of food safety, concerns related to food process hygiene and food products. Classification of microbiological quality, hygiene indicator organisms for various foods.

Overview of Food Safety and Standards Act, 2006: Salient features of Food Safety & Standards Act, 2006, Major aspects of the act, New provisions, The Major deviations from the existing regulations and the implications of Change, New Concepts and their legal implications

UNIT II

Food safety and Standards (Licensing and Registration of Food businesses) regulation, 2011:

Salient feature of schedule 1, 2, 3

Salient feature of schedule 4: General Hygienic and Sanitary practices to be followed by Food Business operators

Part – I: General Hygienic and Sanitary Practices to be followed by Petty Food Business Operators

Part-II: General Requirements on Hygienic and Sanitary Practices to be followed by all Food Business Operators

PART-III: Specific Hygienic and Sanitary Practices to be followed by Food Business Operators engaged in manufacture, processing, storing and selling of Milk and Milk Products

PART IV: Specific Hygienic and Sanitary Practices to be followed by Food Business Operators engaged in manufacture, processing, storing and selling of Meat and Meat Products

Part – V: Specific Hygienic and Sanitary Practices to be followed by Practices to be followed by Food Business Operators engaged in catering / food service establishments

Contaminants and food safety: General metal contaminants and their effects in food products- lead, copper, arsenic, tin, zinc, mercury. Pesticides and insecticides as food contaminants. General regulations specified for different contaminants in food in India.
UNIT III

Food Safety and Standards (Food product standards and Food Additives) Regulation, 2011 (part I):
Salient features of regulation

Food Safety and Standards (Food product standards and food additives) Regulation, 2011 (part II):
Salient features of Regulation

UNIT IV

Food Safety and Standards (Prohibition and Restriction on sales) Regulation, 2011: Salient features of regulation

Food Safety and Standards (Packaging and Labelling) Regulation, 2011: Salient features of regulation

Food Safety and Standards (contaminants, toxins and residues) Regulation, 2011: Salient features of regulation

Food Safety and Standards (Laboratory and sampling analysis) Regulation, 2011: Salient features of regulation

Practicals based on FPP-405

Total marks: 50
Practical: 40
Internal: 10

The student will study and prepare a report of Food Safety Standards and Regulation as per FSSAI pertaining to workplace especially health hazards, hygiene practices and disposal of waste etc.