

Table 1: Division of General and Skill Components Semester wise

S.N.	Semester	Hours	Credits
Semester 1			
1.	General Component	225-300	12
2.	Skill Component	350-450	18
	Sub Total	600-725	30
Semester 2			
1	General Component	225-300	12
2	Skill Component	350-450	18
	Sub Total	600-725	30
Semester 3			
1	General Component	225-300	12
2	Skill Component	350-450	18
	Sub Total	600-725	30
Semester 4			
1	General Component	225-300	12
2	Skill Component	350-450	18
	Sub Total	600-725	30
Semester 5			
1	General Component	225-300	12
2	Skill Component	350-450	18
	Sub Total	600-725	30
Semester 6			
1	General Component	225-300	12
2	Skill Component	350-450	18
	Sub Total	600-725	30
	Grand Total of all Semesters	3600 - 4100	180
NB	Basis for calculation of credits		
	1. 1hr Theory classes and 2 hr practical classes/outreach activities including skill training in industry or industrial visit/ self study for an average 15 weeks account for 1 credit i.e. Minimum 15 hours per credit is needed for theory classes and this would be 30 hours for practical classes. 2. The above table describes the overall distribution of General Component and Skill Component in a broad sense for all the proposed courses. Details of the papers to be taught in the specific programme appears separately as below		

Course Curriculum of B.Voc. (Food Processing and Technology)

Semester	Component	Course Code	Name of Papers	Credits	Hours	Remarks
Semester I	Skill Component	BVFTS 101	Fundamentals of Food Science	5(3+2)	105	
		BVFTS 102	Basic Cereal Technology	5(3+2)	105	
		BVFTS 103	Food Chemistry	5(3+2)	105	
		BVFTS 104	Work Integrated Learning- I	6(2+4)	90	Elective as per Skill Level 4 of FICSI
			Sub Total	18(9+9)	405	
	General Component	BVFTG 101	Communication Hindi	3(2+1)	60	
		BVFTG 102	Fundamentals of Computers	3(2+1)	60	
		BVFTG 103	Paper -I of Gen Elective	6(4+2)	120	Elective of chosen General Stream*
			Sub Total	12(8+4)	240	
			Total of 1st Semester	30(17+13)	645	
Semester II	Skill Component	BVFTS 105	Fruits and Vegetable Processing	6(4+2)	120	Main Vocational Contents Elective as per Skill Level 4 of FICSI
		BVFTS 106	Dairy Technology	6(4+2)	120	
		BVFTS 107	Work Integrated Learning -II	6(2+4)	180	
			Sub Total	18(8+10)	420	
	General Component	BVFTG 104	Communication English	4(2+2)	90	Compulsory Papers
		BVFTG 105	Values and Social Responsibility (VSR)	2(1+1)	50	
		BVFTG 106	Paper- I of Subject II	6(4+2)	120	Electives of the chosen General stream*
			Sub Total	12(7+5)	260	
			Total of 2nd Semester	30(15+15)	680	
Semester III	Skill Component	BVFTS 201	Food Standards, Safety and GMP	5(3+2)	105	
		BVFTS 202	Food Quality	5 (3+2)	105	
		BVFTS 203	Food Plant Sanitation	5 (3+2)	105	
		BVFTS 204	Work Integrated Learning -III	6(2+4)	90	Elective as per Skill Level 5 of FICSI
			Sub Total	18(9+9)	405	

	General Component	BVFTG 201	Computer Applications	3(1+2)	75	Compulsory Papers
		BVFTG 202	Environmental Studies	3(2+1)	60	
		BVFTG 203	Paper- II of Subject I	6(4+2)	120	Electives of the chosen General stream*
			Sub Total	12(7+5)	255	
			Total of 3rd Semester	30(16+14)	660	
Semester IV	Skill Component	BVFTS 205	Milling Technology	6(4+2)	120	
		BVFTS 206	Fermented Food Products	6(4+2)	120	
		BVFTS 207	Work Integrated Learning -IV	6(2+4)	180	Elective as per Skill Level 5 of FICSI
			Sub Total	18(8+10)	420	
	General Component	BVFTG 204	Entrepreneurship Development	4(2+2)	90	Compulsory papers
		BVFTG 205	Values and Social Responsibility (VSR)	2(1+1)	50	
		BVFTG 206	Paper- II of Subject II	6(4+2)	120	Electives of the chosen General stream*
			Sub Total	12(7+5)	260	
			Total of 4th Semester	30(15+15)	680	
Semester V	Skill Component	BVFTS 301	Process Plant Design	3(2+1)	60	
		BVFTS 302	Confectionery Technology	3(2+1)	60	
		BVFTS 303	Elective-I	6(4+2)	120	
		BVFTS 304	Work Integrated Learning -V	6(2+4)	180	Elective as per Skill Level 6 of FICSI
			Sub Total	18(8+10)	420	
	General Component	BVFTG 301	Reasoning and Analytical Ability	2(1+1)	50	Compulsory Papers
		BVFTG 302	Management Information System	4(2+2)	90	
		BVFTG 303	Paper-III of Subject I	6(4+2)	120	Electives of the chosen General stream*
			Sub Total	12(7+5)	260	
			Total of 5th Semester	30(15+15)	680	
Semester VI	Skill Component	BVFTS 305	Packaging	4(3+1)	75	
		BVFTS 306	Elective -II	6(4+2)	120	
		BVFTS	Project Work	8(0+8)	240	

		307				
			Sub Total	18(7+11)	435	
	General Component	BVFTS 308	Values and Social Responsibility (VSR)	2(1+1)	50	
		BVFTG 304	Paper - III of Subject II	6(4+2)	120	Electives of the chosen General stream*
		BVFTG 305	Minor Project Work	4(0+4)	120	in any General Subject*
			Sub Total	12(5+7)	290	
			Total of 6th Semester	30(12+18)	725	
			Grand Total (Sem I to VI)	180(89+91)	3510	
Electives						
	Skill Component		Fermented Food products	6(4+2)	120	
			Food Beverages	6(4+2)	120	
			Processing of Spices and Aromatic Plants	6(4+2)	120	
			Advanced Processing of Fruits and Vegetable	6(4+2)	120	
			Bakery and Extruded Products	6(4+2)	120	
			Food Packaging	6(4+2)	120	
			Food Auditing	6(4+2)	120	
			Food Chain Management	6(4+2)	120	
*General Component	*Any two subjects From Science/ Arts / Commerce Streams depending upon the subjects in Intermediate. One paper each of the two papers is required to be completed in each year. The syllabi of the General component will be, as discussed above, as per the unified syllabus of the Department of Higher Education, Govt. of M.P. One paper each of the 1 st 3 semesters of the unified syllabi ha to be cleared in each year of the B.Voc. programme in order to complete it. Students desirous of clearing Papers of all the 6 semesters of the unified syllabi may register for other 3 papers additionally. Students wanting to switch from Vocational to General B.A./ B.Sc./ B. Com. After completing Diploma/ Adv. Diploma have to clear the remaining papers of 2 subjects.					Students who had not Mathematics in their Inter have to pass in a non credit Foundation Course in Mathematics
Work Integrated Learning	Work Integrated Learning of even semesters will essentially be carried out in some industry in a project mode and reports have to be submitted for evaluation thereof. Work Integrated Learning of odd semesters may be completed in the faculty itself, in addition to industrial visits, by directing the students to undertake the production and marketing of the products combined together with market and consumer survey.					

Detailed Syllabus

General component:

Students have to choose 2 subjects from General Streams Viz. Science / Arts / Commerce. The syllabus of the General Subjects will be as per the unified syllabus of the Department of Higher Education, Govt.

of M.P. with slight modifications, wherever necessary, considering application part of the specific subject. Students have to essentially clear 18 credits of the two chosen subjects in order to complete B.Voc. They may register and pass for 18 more credits (optional) in the chosen subjects if they want full equivalence of general graduation course in case of switching over from B.Voc. to B.A./B.Com./B.Sc.

Weight age and Evaluation Criteria

Theory/ Practical	CFA	ESE	Evaluation Criteria
Theory	40%	60%	CFA : Attendance 25%, Class performance & Assignment 25% , Test and Viva 50% ESE : Test 60%
Practical	60%	40%	CFA & ESE : Practical and record 50% , Test 25%, Viva 25%

Semester 1

FP1S01

FUNDAMENTALS OF FOOD SCIENCE

05 (03 + 02)

Theory

UNIT-1

Present scenario of food processing in India, Status of food processing industry in India, Introduction of FSSAI & other statutory regulations, APEDA & Ministry of Food Processing, Various schemes in food processing industries

UNIT-2

Microbiology - Definition and its scope, Microscopy- types and details of bright field microscopy, Basics of smear preparation, Staining, Gram staining, Types and preparation of nutrient medium, Classification and nomenclature system for microbes

UNIT-3

Food spoilage, factors affecting food spoilage, Types of micro-organisms, Morphology of various micro-organisms and detection of temperature & structure of micro-organisms, Bacteria, fungus, virus, & spores - their characteristics and methods of control

UNIT-4

Concept of thermal death time & control of micro-organisms in canned products, fermented products - identification of food borne illness & their control, Introduction of pro-biotic & pre-biotic and their role in Food Technology

UNIT-5

Methods of measuring growth of micro-organism in food products, Preparation of growth & gram negative Bacteria, Preparation of culture, media & production, Introduction of Laminar, Incubator, Water bath

PRACTICALS

- To study working principle of Autoclave and Microscope.
- To prepare the culture media for microbial cultivation.
- Isolation of pure culture by pour plate method.
- Identification of micro-organisms by using Gram-staining method.
- To study the microbial count by using Haemocytometer.
- To perform Coli form test in the given sample.
- To study the standard plate count of given sample.

UNIT 1: Introduction to Food Chemistry

Definition and composition of food, Significance of food chemistry in food processing and preservation, Role of water in food, Structure of water and ice, Types of water (Free and bound water), Interaction of water with solutes, Water activity and packaging, Water activity and spoilage.

UNIT 2: Lipids /Fats

Definition of lipid ,Classification of lipids, Characteristics, Physical properties- (melting point, softening point, specific gravity, smoke, flash and fire point,). Chemical properties-(Reichert Meissel value, Polenske value, Iodine value, Peroxide value, Saponification value, Effect of frying on fats, Changes in fats and oils- Rancidity, Lipolysis, Flavor reversion, Auto-oxidation and its prevention, Technology of edible fats and oils- Refining and Hydrogenation.

UNIT 3: Proteins

Definition of Protein, Classification and Structure , Essential amino acid and their role in human diet, Nature of food proteins(plant and animal proteins), Properties of proteins (electrophoresis, sedimentation, amphoterism and denaturation,), Functional properties of proteins eg. organoleptic, solubility, viscosity ,binding gelation / texturization , emulsification , foaming.

UNIT 4: Carbohydrates

Definition of Carbohydrates, Classification (mono, oligo and poly saccharides), Structure of important polysaccharides (starch, glycogen, cellulose, pectin, hemicellulose, gums), Chemical reactions of carbohydrates, Modified celluloses and starches, Browning Reactions: Enzymatic browning, Non – Enzymatic browning, Maillard reaction, Caramelization reaction, Ascorbic acid oxidation

UNIT 5. Vitamins and Minerals

Structure, Classification of vitamins; function, diseases due to deficiency of vitamins; requirements and recommended dietary allowances, Definition and classification of metal, function, diseases due to deficiency of minerals, requirements and recommended dietary allowances.

Enzymes and Flavour: Introduction, classification General characteristics, Enzymes in food processing, Industrial Uses of Enzymes - definition and basic tastes, Chemical structure and taste, Description of food flavours, Flavour enhancers

PRACTICALS :

1. Preparation of primary and secondary solutions
2. Estimation of moisture content
3. Estimation of total ash
4. Determination of refractive index and specific gravity of fats and oils.
5. Soxhlet extraction of fat
6. Protein estimation by Kjeldhal method
7. Estimation of iodine value
- 8 . Estimation of peroxide value
9. Determination of percent free fatty acids
10. Estimation of saponification value

Theory

UNIT 1- Definition of cereals and millets, Difference between cereal & millets, Importance of cereals as food commodity, General introduction, production and utilization trends of cereals; Main cereal crops grown in country, Structure and composition of common cereals (wheat ,rice and maize).

UNIT 2- Rice: Classification, physicochemical characteristics; cooking quality; rice milling technology sheller/ hullers; by- products of rice milling and their utilization; Parboiling of rice-technology and effect on quality characteristics; processed products based on rice.

UNIT 3- Wheat, Types and physicochemical characteristics; wheat milling - products and byproducts; Cleaning, washing and drying, Operation flow charts of domestic and commercial atta chakies, mini flour mills & roller flour mills, Modern flour mill: Corn, Types and physicochemical characteristics, Methods of corn milling and their by-products of corn milling and their uses.

UNIT- 4 Bakery: Basic ingredients of bakery products, wheat flour, veg.oil, sugar, flour improver& bleaching agents, Physical & chemical tests of ingredients and its importance, Classification of biscuits : short dough biscuits, hard dough biscuits & fermented dough biscuits, Process flow chart of all different types of biscuits, Types of bread (straight dough and sponge dough), Manufacture of other cereal products (pasta, macron), various processed cereal-based foods; manufacture of whole wheat *atta*, blended flour and fortified flour, manufacture of value-added products;

UNIT 5- Extruder cooking: Definition of extrusion, mechanism of extrusion, types of extruder their working and function. Theory and mechanics of extruder products, Confectionary products: types of sugar process of making confection: hard boiled and soft boiled confection, candy, chewing gum.

Practical

1. Physical-tests on wheat and rice; (equivalent diameter, sphericity, angle of repose, terminal velocity, moisture content)
2. Determination of gluten content in wheat flour;
3. Determination of water absorption power (WAP).
4. Physicochemical and rheological properties of dough.
5. Preparation of bakery products-cake,
6. Preparation of plain biscuit,
7. Preparation of short dough biscuits& hard dough biscuits.
8. Preparation of cookies.
9. Preparation of wafers.
10. Preparation of doughnut.
11. Visit to related processing industries.

FP1S04

WORK INTEGRATED LEARNING

03(00+03)

A student has to choose any course approved by FICSI (Food Industry council skill initiation) for level 4. Some of the suggested courses are

Students have to undertake production work in the campus. Marketing of the products is to be done and students have to maintain the records properly. In addition to this, market/ consumer survey of the products along with visit to industrial units. Proper record has to be maintained.

FP1G01

FUNDAMENTALS OF COMPUTER

04(02+02)

UNIT-I

Introduction: Characteristics of Computers, Evolution of computers, Capabilities and limitations of computers, Generations of computers, Types of computers (micro, mini, main frame, supercomputers), Block diagram of computer, Basic components of a computer system-Input unit, output unit, Arithmetic logic Unit, Control unit, Central Processing Unit, Instruction set, processor speed, type of processors, Flowchart & algorithms and their applications

UNIT-II

Memory- main memory organization, main memory capacity, Types of RAM & ROM, cache memory, Secondary Storage Devices: Magnetic Tape, Magnetic Disks-Hard Disk, Floppy Disks, Optical Disks: CD, VCD, CD-R, CD-RW, DVD, Blue ray etc. Solid State Storage: Flash Memory: Different types of Pen drives & SD cards, USB Drives, PCs specifications and technological revolutions

UNIT-III

Input devices: different types of Keyboards, Pointing Devices- different types of mouse, Touch Screens, Joystick, Electronic pen, Trackball, Scanning Devices-Optical Scanners, OCR, OMR, Bar Code Readers, MICR, Digitizer, Electronic card reader, Image Capturing Devices-Digital Cameras. Output devices: Monitors, CRT/LCD/TFT, Printers, Dot matrix, Inkjet, Laser, Plotters, Drum, Flatbed, Screen image projector, ATMs

UNIT-IV

Computer Software - Software's its Need, Different types of software - System software, Application software, System software-operating system, utility program, Introduction to operation system for PCs-DOS, windows, Linux, file allocation table (FAT & FAT32), files & directory structure and its naming rules.

UNIT-V

Programming languages - Machine, Assembly & high level Languages, 4GL, Merits and demerits of different computer languages, assemblers, compilers and interpreter, Application software and its types, Word-processing, Spreadsheet, Presentation graphics, Uses and examples and Area of application of each of them, Computer security, File security, Virus working, feature, types of viruses, virus detection, prevention and cure.

सैद्धान्तिक

इकाई 1

व्याकरण में कारक का महत्व, वाक्य संयोजन, वाक्यों की सामान्य अ गुणधियां,

इकाई 2

मुहावरे व कहावतें, प्रत्यय व उपसर्ग का प्रयोग, समानार्थक व भिन्नार्थक भाब्द, कई भाब्दों के बदले एक भाब्द

इकाई 3

संप्रशण— अर्थ व महत्व, प्रभावी संप्रशण के आव यक तत्व, संप्रशण के तरीके—बोलकर, लिखकर, चित्र व अन्य माध्यम, पत्र लेखन— पत्रों के विभिन्न प्रकार, औपचारिक व अनौपचारिक पत्र, कार्यालयीन व व्यापारिक पत्र

इकाई 4

सारां ि लेखन, निबन्ध लेखन

इकाई 5

विशिष्ट अवसरों के लिए लेखन— नारा लेखन, कविता, नाटक, संवाद लेखन, चित्रों की व्याख्या व्यावहारिक

संवाद अदायगी

भाषण

बॉयोडेटा लेखन

साक्षात्कार

सोशल मीडिया व सूचना प्रौद्योगिकी का प्रयोग

SEMESTER 2

FP2S01

FRUITS AND VEGETABLE PRESERVATION

06(04+02)

UNIT-1

Principle of preservation, Methods of preservation, High temperature preservation; Canning- Introduction and application & steps involved: Blanching, pasteurization and Sterilization

UNIT-2

Low temperature preservation, Cooling, Chilling and Freezing, Storage of Food, Freezing point of Food, Ice Crystals formation, quick and slow freezing

UNIT-3

Radiation preservation – Types of radiation, importance of radiation on fruits, physical and chemical changes by radiation, effects of radiation on cost, shelf life and nutrition

UNIT -4

Preservation by drying and dehydration, Treatment prior to drying, Drying procedures, Sun and Mechanical drying in fruits & vegetables, reconstitution and cooking, storage of dried foods

UNIT-5.

Definitions and classifications of chemical preservative, bacteriostatic agents, fungistatic agents, germicidal agents, antioxidants, neutralizers, stabilizers and firming agents, use of sulphur dioxide and benzoic acid, tolerance of chemical preservative, use of antibiotics, sugars and salts

PRACTICAL-

1. To study preservation by high temperature
2. To study the effects of preservation by low temperature
3. Preservation of fruits by sugar (Preparation of Morabba)
4. To study the effect of drying and dehydration on preservation (dehydration of spinach and coriander leaves)
5. To study the effects of chemical preservatives on fruit juices
6. Canning of fruits and vegetables

UNIT -1

Market milk - Definition, composition, factors, affecting composition, physic- chemical properties of milk and other dairy products, milk reception and storage, Microbiology of milk. Problems of milk collection, Cow's and buffalo's milk – composition of milk

UNIT -2

Liquid milk processing- pasteurization, sterilization, homogenization, standardization. Fortification of milk and milk products, different types of packaging e.g. bottling, filling in pouches, Sterilised milk, Manufacture of skim milk powder, whole milk powder, condensed milk. Infant Foods

UNIT -3

Production and preservation of cream, butter, ghee, butter oil and flavoured milk, Skim milk, toned milk, whole milk. Manufacture of cream, butter, ghee.

UNIT -4

Technology and process calculations for dried, evaporated and condensed milk products

UNIT -5

Technology and chemistry of cheese, Ice-cream and Indian dairy products- Dahi, Srikhand, Panir, Chhena
Cleaning, Sanitation and corrosion control in Dairy plants

Practical

1 Platform test

- (a) COB Test,
- (b) Fat Test,
- (c) SNF Test,
- (d) Specific Gravity Test,
- (e) MBRT Test

2 Pasteurization, Study of HTST and LTLT, Pasrturizer

3 Study about Cream separator- manual and power operated

4 Preparation of flavoured milk, Curd, Paneer, Cheese and to check the effect of various constituents on Product Quality

5 Analysis of cost of Production and a visit to milk collection centre and milk processing plant

A student has to choose any course approved by FICSI (Food Industry council skill Initiative) for level 5. Some of the suggested courses are Students have to undergo industrial training/ production work for a minimum of 180 hours or 1 month. Proper record has to be maintained and presented for evaluation.

THEORY**UNIT – I**

Spotting the errors pertaining to Nouns, Pronouns, Adjective and Adverbs, Concord (Grammatical Concord, National Concord) and the Principal of Proximity between Subject and Verb, Precis writing

UNIT II

Changing the Voice: From Active to Passive and vice-versa, Lexis: Idioms and phrases: Words Often Confused, One-word Substitutes, Formation of Words (Suffixes, Prefixes and Derivatives).

UNIT – III

Communication - its meaning and its importance, one way and two way communication, Essentials of good Communication, Methods of communication - oral, written and non verbal, Different forms of letter writing – Formal and Informal letters, Official Letters, Business Letters

UNIT – IV

Introduction to principal components of spoken English- Transcription, Word-Accent, Intonation, Weak Forms in English, Developing Reading and Writing Skills through tasks/ activities as Developing Outlines,

UNIT –V

Key Expressions, Situation, Slogan Writing and Theme Building Exercises, Dialogue Writing, Interpreting Pictures/Caroons

PRACTICALS

Developing, Listening, Speaking and communicating Skills through Various activities such as

(a) Role play Activities (b) Practicing Short Dialogues (c) Debates (d) Speeches (e) Listening to News Bulletins (f) Viewing and Reviewing of TV Programmes (g) Mock Interview (h) Using IT and Social media – Profile generation, Blog Writing (i) Resume writing (j) E-mail

SEMESTER 3

FP3S01

BASIC CONCEPTS OF PROCESS PLANT DESIGN

05(03+02)

UNIT -I

Composition, structure and characteristics of fruits and vegetables, Post harvest changes, storage, handling and preservation of fresh fruits & vegetables, controlled and modified atmosphere storage, fruits & vegetable industry in India the present scenario.

UNIT -II

Canning : Machinery and equipment, process, Defects, spoilage, canning of fruits (Guava, Mango, Pineapple, Banana etc) & vegetables (Peas, Mushroom, Potato, Spinach, Cauliflower etc.)

Unit-III

Equipment for fruit juice extraction training, filtration and clarification, Different methods of juice preservation.

UNIT -IV

Non-fermented fruit beverages : squash, cordials, nectar, syrups, fruit juice concentrate and powder, carbonated beverages.

UNIT -V

Other fruits and vegetable products : Jam, Jellies & Marmalades, candied & crystallized, Tomato products, Chutneys, Pickles, Dried fruits & vegetables, sauces, introduction to FPO.

References :

1. Preservation of fruits & Vegetables by G. Lal & Sidhappaa published ICAR

Quality attributes : Appearance, Texture, Flavorus, Nutritive value and other hidden attributes of foods.

UNIT -II

Physical, Mechanical, Chemical and Sensory evaluation of foods and food quality.

UNIT -III

Microbiological quality of foods, browning reactions & changes in quality of foods as a result of processing, preservation and storage.

UNIT -IV

Quality control and quality assurance in food industries, food plant hygiene sanitation standard, food laws & regulations,

UNIT-V

Safety of processed & preserved foods.

References:

Quality control for Food Industry, A. Kramer & B.A. Twig, publication AVI Westport.

Food Plant Design and Construction

Sanitary considerations of (a) Exterior aspects (b) Interior Aspects.

1. Exterior aspects - Site selection and plant location, Grounds, Exterior, Design, Layout, roof of a food industry.
2. Interior Aspects - Walls and priming, door & doorways, ceiling, floor, lighting, noise, elevators, stairwell and stairs, ventilation, paint/white washing of a food industry.

UNIT -II

Personal Hygiene -

Sanitary considerations of personal Hygiene in terms of

- (a) Physical examinations (b) Hand washing (c) Use of caps and gloves (d) Rest room facilities (e) Clothing (f) Jewelry (g) Eating and personal habits.

UNIT -III

Food Transport sanitation

Regulatory aspects, of transport sanitation, importance of inspection in receiving, loading, unloading, sanitary design considerations of transport vehicle, pest & rodent control by fumigation, spray.

UNIT -IV

Cleaning and sanitization

Differentiation between cleaning and sanitization, types of soil, cleaning agents. Soaps detergent, mechanism of cleaning criterion for selection of a cleaning agent, water for cleaning, cleaning system like CIP, sanitising agents for food industry, selection of a sanitising agent for a food industry, dry cleaning & vacuum cleaning.

UNIT -V

Water Sanitation

Water & Steam for food industry sanitation, source & quality of water treatment like chlorination, deionisation, coagulation/filtration.

References:

1. Sanitary design principles for food processing plants - Stinson W.S.
2. Food plant Sanitation - J.H. Litchfield, ME Parber,

FP3S05

WORK INTEGRATED LEARNING

03(02+01)

A student has to choose any course approved by FICSI (Food Industry council skill Initiative) for level 6. Some of the suggested courses are Students have to undertake industrial visit/ production work /industrial training in any industry for a minimum of 90 hours or 2 weeks

SEMESTER 4

FP4S01

MILING TECHNOLOGY

06(03+03)

UNIT -I :

Introduction - Definition and scope of Industrial Microbiology.

Fermentation Equipment and its use.

UNIT -II

Industrial costing - Classification of costs-direct labour direct material, overhead, prime cost,

Basis and Development of Industrial Fermentation Processes

Screening (i) Primary screening (ii) Secondary screening.

UNIT -III

Detection and Assay of fermentation products :

(i) Physical chemical analysis (ii) Biological assay

Stock cultures, Fermentation media -

(i) Media composition

(ii) Media sterilization and contamination

(ii) Inoculum media

(iv) Screening for fermentation media

UNIT -IV

Inoculum preparation

Scale up of fermentations

Alcoholic fermentations, production of industrial alcohol, mechanism of ethyl alcohol fermentation.

UNIT -V

Economic study patterns- Basic economic study patterns, steps in making economic studies of new Beer production : Medium preparation : Malting, mashing, separation of wort, wort boiling & hops addition, fermentation separation & maturation, carbonation, packaging.

Fermentation food - Cheese, sauerkraut, Soya sauce, yoghurt

Vitamin B12 & Riboflavin, Penicillin & Streptomycin

Vinegar and Acetic acid manufacture, its sprilase and prevention. Fulfillment

FP4S04

WORK INTEGRATED LEARNING

06(00+06)

A student has to choose any course approved by FICSI (Food Industry council skill Initiative) for level 7. Some of the suggested courses areStudents have to undergo industrial training/ production work for a minimum of 180 hours or 1 month.

SEMESTER 5

1. PROCESS PLANT DESIGN 03(02+01) Credits

CONFECTIONARY TECHNOLOGY 03(02+01) Credits
2. ELECTIVE 1 06(04+02) Credits

WORK INTEGRATED LEARNING

03(00+03) Credits

A student has to choose any course approved by FICSI (Food Industry council skill Initiative) for level 7. Some of the suggested courses are

SEMESTER 6

1. PACKAGING 04(03+01) Credits

UNIT -I

Basic concept of food packaging, function of food package, packaging materials- glass, metal, metal foils, papers, films and their composites, common packaging forms under rigid, semi rigid and flexible class of package, Retortable flexible package, Aseptic packaging.

UNIT -II

Selection of material, Machinery and method of packaging, package printing and labeling standards and their requirements.

UNIT -III

Development of package, evaluation of packaging materials and package performance.

Unit-IV

Product characteristics viz-a-viz package requirement for dairy industry, Bakery and confectionery, fresh fruits and vegetables.

UNIT -V

Product characteristics viz-a-viz package requirement for frozen fruits and vegetables, processed fruits and vegetables, snack foods.

2. ELECTIVE II 06(04+02) Credits
3. PROJECT WORK 08(00+08) Credits

5. Fundamentals of Food Science:

03 credits (01 +02)

UNIT-1

Present scenario of food processing in India. Status of food processing industry in India. Status of food processing industry in India. Introduction of fssai & regulation, APEDA & ministry of food processing & various schemes in food processing industries.

UNIT-2

Microbiology - Definition and its scope, Microscopy types and details of bright field microscopy, Basics of smear preparation, Staining, Gram staining, Types and preparation of nutrient medium. Introduction to classification and nomenclature system for microbes.

UNIT-3

Introduction of food spoilage, factor affecting food spoilage. Types of micro-organisms. Morphology of various micro-organism & detection of temperature & structure of micro-organism, introduction of bacteria, fungus, virus, & spores, and their characteristics and method of control.

UNIT-4

Concept of thermal death time & control of micro-organism in canned products, fermented products identification of food borne illness products & their control. Introduction of pro-biotics and pre-biotics and their role in food Technology.

UNIT-5

Method of measuring growth of micro-organism in food products. Preparation of growth & gram negative Bacteria. Preparation of culture, media & production. Introduction Laminar, Incubator, Water bath.

PRACTICALS

- To study working principle of Autoclave and Microscope.
- To prepare the culture media for microbial cultivation.
- Isolation of pure culture by pour plate method.
- Identification of microorganism by using Gram-staining method.
- To study the microbial count by using Haemocytometer.
- To perform coliform test in the given sample.
- To study the standard plate count of given sample.

IIIrd Semester
Computer Practices (IIIrd Semester)
Introduction to MS Word-2003/2007

UNIT-I

Working with Word document, Formatting Text, Creating Headers & Footers, Tables & Graphics, Mail Merge, Templates, Wizards & Printing Techniques, Printing Techniques, Viewing the Document before Printing, Introduction to spreadsheets, Introduction to excel, File management in excel, Formatting, Adding Formulate & Functions, Large Databases, Additional Facilities to Format Data, Charts & Maps, Work with Multiple Worksheets, Printing in Excel, Importing & Exporting of Data, Industrial application of MS-Word & PPT

UNIT-II

Applications of Power Point, Add Text and other Objects to Slides, Templates and Master Slides, Giving Animation effects, Links and Action buttons, Tuning up of Presentation, Introduction to MS-Access, Understanding Databases, Creating Databases, Creating Tables, Adding, Editing and Viewing Data, Sorting, Query, Creating Forms, Creating Reports, Industrial application of MS-Excel & MS-Access

Internet & E-mail Services

UNIT-III

Introduction to Internet : Website, Web pages, HTML, HTTP, Information Super Highway, Types of Network, Basic Uses of the Internet, Internet Administration, Client/Server Overview, Protocol used in different Generation, Concept of Network and IP address World Wide Web, Domain Name System, Domain & Address, Web Browsers, URLs, Protecting PCs from Internet Viruses, E-governance services & Industrial application of Internet

UNIT-IV

Introduction to Front Page Express: Entering the page's Title, Adding Color to Web Page, Formatting Text, Adding Graphics, Browsing Web Page, Exiting Front Page Express, Saving Page to a Web Server, Uploading File to an FTP Server, Link of Different Pages, Linking to Web Sites, Adding Sound to Web Pages, Creation of Moving Web Pages

Fundamentals of Web Elements

UNIT-V

Introduction, Elements of an HTML Document, Structural elements of HTML documents, Formatting HTML Documents, Managing images in HTML, tables in HTML documents, Hypertext and Link in HTML Documents, Special effects in HTML documents, managing forms