Rayat Shikshan Santha's

Annasaheb Awate College, Manchar

Tal-Ambegaon, Dist- Pune.

Syllabus structure B.VOC (Food Processing and Quality Management)

Second Year (2020-21)

Revised Syllabus

S. Y. B.VOC (Advanced Diploma) Semester- III					
Course Code	**Theory**	**Credits**	**Total Marks**	**Distribution marks**	
General Component				**Internal**	**Theory**
FG- 31	Fundamentals of Financial accounting I	04	**100**	25	75
FG- 32	Food Biochemistry	04	**100**	25	75
FG- 33	Snack Food Technology	04	**100**	25	75
FG- 34	Environmental Science	Grade	**-**	-	-
Total		**12**			
Skill Component				**Practical**	
FSC- 31	Spices and Plantation Crops	06	**150**	75	75
FSC- 32	Bakery and Confectionary	06	**150**	75	75
FSC- 33	Industrial Training	06	**150**	75	75
Total		**18**			
Grand Total		**30**	**750**	**450**	**300**

S. Y. B.VOC (Advanced Diploma) Semester- IV					
Course Code	**Theory**	**Credits**	**Total Marks**	**Distribution marks**	
General Component				**Internal**	**Theory**
FG- 41	Fundamentals of Financial accounting II	04	**100**	25	75
FG- 42	Plant Hygiene and Sanitation	04	**100**	25	75
FG- 43	Food Laws and Regulations	04	**100**	25	75
Total		**12**			
Skill Component				**Practical**	
FSC- 41	Meat, Fish and Poultry Processing	06	**150**	75	75
FSC- 42	Dairy Technology	06	**150**	75	75
FSC- 43	Industrial Training	06	**150**	75	75
Total		**18**			
Grand Total		**30**	**750**	**450**	**300**

Rayat Shikshan Santha's

Annasaheb Awate College, Manchar, Tal- Ambegaon, Dist- Pune 410503.

Department of

B. Voc. Food Processing and Quality Management

Second Year (2020-21)
Revised Syllabus

Semester III

Semester III

B. Voc. Part – II
Food Processing and Quality Management
Second Year (2020-21) Revised Syllabus

Fundamentals of Financial Accounting I (FG 31)

Credits Prescribed for Theory: 03 Credits (75 Marks)

Credits Prescribed for Internal: 01Credit (25 Marks)

Total Credits = 04

Objectives:

1. To impart basic accounting knowledge as applicable to business.
2. To develop right understanding regarding role and importance of monetary and financial transaction in business

Outcomes:

1. State the uses and users of accounting information;
2. Explain and apply accounting concepts, principles and conventions;
3. Record basic accounting transactions and prepare annual financial statements; and
4. Analyses, interpret and communicate the information contained in basic financial statements and explain the limitations of such statements

Credit 1

Unit-I: Introduction **05 L**

- Financial Accounting, Definition and Scope, Objective of Financial Accounting, Accounting vs Book keeping, Terms used in accounting, Users of Accounting
- Information and Limitations of financial accounting.

Unit-II: Conceptual frame work **10 L**

- Accounting concepts, Principles and conventions, Accounting Standards-
- Concept, Objectives, Benefits, Brief Review of accounting standards in India,
- Accounting Policies, Accounting as a measurement discipline, Valuation

- Principles, Accounting Estimates.

Credit 2

Unit-III: Journal and Ledger **10 L**

- Preparation of Journal entries and Ledger accounts – Subsidiary Books - Purchase Book, Purchase Return Book, Sales Book, Sales Return Book, Cash Book, Bills Receivable Book, Bills Payable Book, Journal Proper

Credit 3

Unit-IV: **Depreciation** **10 L**

- Meaning, Methods: Straight Line Method: Reducing Balance Method, Change in Depreciation Method.

Unit-V: Final Accounts **10 L**

- Preparation of Trial Balance, Preparation of Final Accounts of Sole Traders and partnership firms

Credit 4

Practical: 25 Marks **(1 Credit)** **15 L**

1) Preparation of Journal entries and Ledger accounts
2) Preparation of subsidiary books
3) Preparation of Trial Balance
4) Practical problems on Final Accounts of sole traders and partnership firms
5) Practical problems on methods of depreciation

References:

1) Advanced Accountancy – M.C. Shukla and T.S. Garewal.
2) Advanced Accountancy – S.C. Jain and K. L. Narang
3) Advanced Accountancy – S.M.Shukla.
4) Advanced Accountancy – S. N.Maheshwari.
5) Advanced Accountancy – R. L. Gupta.

B. Voc. Part – II
Food Processing and Quality Management
Semester III

Food Biochemistry (FG 32)

Credits Prescribed for Theory: **03 Credits (75 Marks)**

Credits Prescribed for Internal: **01Credit (25 Marks)**

Total Credits = 04

Objectives:

1. By the end of the course, the students should be able to demonstrate advanced knowledge and understanding in the Aspects of protein structure, Enzyme kinetic behavior and mechanisms, Protein synthesis and translational control
2. To provide an advanced understanding of the core principles and topics of Biochemistry and their experimental basis, and to enable students to acquire a specialized knowledge and understanding of selected aspects by means of a stem/branch lecture series and a research project.

Outcomes:

1. Identification of cell compartments and macromolecules in foods as well as their roles in biochemical process,
2. Biochemical process in ATP generating and role of foods,
3. Basic genetics in relation with food biotechnology.

Credit 1

Unit I: Enzymes **10 L**

- Introduction of Enzyme - Definition, Importance, Classification and nomenclature, Coenzymes and Cofactors, Enzyme specificity, Enzyme activators and inhibitors
- Enzymes in food processing and their applications

Unit II: Metabolism of Carbohydrates **10 L**

- Digestion and absorption of carbohydrates, Glycolysis, Tricarboxylic acid (TCA) cycle Hexose monophosphate shunt, Glycogenesis, Glycogenolysis, Gluconeogenesis

Credit 2

Unit III: Metabolism of Lipids **10 L**

- Physicochemical and metabolic functions; Biological role of lipids; classification and biosynthesis; Biological role of lipids; breakdown of triglycerides and phospholipids; β-oxidation of long chain fatty acids, ketosis,

Credit 3

Unit IV: Metabolism of Proteins **08 L**

- Physicochemical & Metabolic functions; Metabolism of proteins -Breakdown of proteins, transamination, de-amination, decarboxylation, nitrogen fixation, urea cycle.

Unit V: Nucleic Acid **7 L**

- Classification, structure & biosynthesis of nucleic acid; Metabolism RNA and DNA metabolism.

Credit 4

Internal assessment (Seminars, Assignments) **15 L**

Reference Books

1. M.A.Siddiqi, A.Q.Siddiqi **Handbook of Biochemistry** Unique offset press, Patna
2. A.Lehninger **Text book of Biochemistry**
3. Eric E. Conn **Outlines of Biochemistry** John Wiley and Sons (Asia) Pte Ltd., Singapore
4. Sinosh Skariyachan **Introduction of Food Biotechnology** CBS Pub.2012

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B. Voc. Part – II
Food Processing and Quality Management
Semester III

Snack Food Technology (FG 33)

Credits Prescribed for Theory: **03 Credits (75 Marks)**

Credits Prescribed for Internal: **01Credit (25 Marks)**

Total Credits = 04

Objectives:

1. This course is about knowledge and gets to know about savory flavors.
2. Introduce students to methods of frying, baking, drying, heat processing, flaking, blending, coating & chipping.
3. Inform students on technical mechanism of extrusion.
4. Introduce students to various types of traditional and industrial snacks food.

Outcomes:

1. An ability to apply knowledge for production of safe food and shelf-life extension of snack food products
2. An ability to identify, formulates, and solves food science and technology problems related to snack food.
3. An ability to extract information pertinent to unfamiliar problems through literature survey and experiments, apply appropriate research methodologies, techniques and tools, design, conduct experiments, analyze and interpret data

Credit 1

UNIT I: Introduction **5 L**

- Introduction Importance and scope of snack food technology. Present status of snack foods industries

UNIT II: Grain based snack **10 L**

- Various types of snack food Technology for grain-based snacks: whole grains – roasted, toasted, puffed, popped and flakes, coated grains-salted, spiced and sweetened;

- flour based– batter and dough based products;
- Formulated chips and wafers, papads, instant premixes of traditional Indian snack foods.

Credit 2

UNIT III: Technology for coated nuts and fruit – vegetable based snacks 10 L

- Technology for fruit and vegetable based snacks Technology for fruit and vegetable based snacks: Chips, wafers.
- Technology for coated nuts – salted, spiced and sweetened; chikkis.

UNIT IV: Extruded snack foods 10 L

- Formulation and processing technology, coloring, flavoring and packaging, Raw materials & their role.

Credit 3

UNIT V: Equipments 10 L

- Equipments for frying, Baking and drying, toasting, roasting and flaking, popping, blending, Coating and chipping.

Credit 4

Internal assessment (Seminars, Assignments) **15 L**

Reference Books

1. Snack foods processing. Edmund WL. AVI Publ.
2. The Technology of Extrusion Cooking. Frame ND .1994. Blackie Academic.
3. Snack Food. Gordon BR. AVI Publ.
4. Snack Food Technology. Samuel AM.1976. AVI Publ.
5. Extruded foods. Matz.
6. New protein foods, vol.I,II, A.L. Altschul.
7. Extrusion of Food, Vol 2; Harper JM; 1981, CRC Press.

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B. Voc. Part – II

Food Processing and Quality Management
Semester III

Environmental Science (FG 34)

Total Marks **= 100 (75 Theory paper + 25 Internal)**

Evaluation **= Grade points**

Objectives:

1. To acquaint the students with the ethics involve in environmental protection, IPR and safe guarding health of consumer
2. To developed environmental awareness to society.
3. To maintain relation between food industry and surroundings.

Outcomes:

1. In Environmental Studies major will be able to recognize the physical, chemical, and biological components of the earth's systems and show how they function.
2. An Environmental Studies major will be able to apply lessons from various courses through field experiences. These experiences will allow students to develop a better sense of not only individual organisms, but of the systems in which these organisms live. Students will also see how natural systems and human-designed systems work together, as well as in conflict with each other.
3. An Environmental Studies major will be able to do independent research on human interactions with the environment.

Credit 1

UNIT I Introduction **08 L**

- Environment, Ecology and Ecosystems: Introduction, Definition, Interrelationship amongst and between them, components of environment,
- Relationship between different environment components, Man-environment relationship, Impact of Technology of the Environment, Environmental Degradation

UNIT II Ecosystems **10 L**

- Concept of an Ecosystem, Structure and Functions of an Ecosystem, Energy Flow in the Ecosystem: Water Cycle, Carbon Cycle, Oxygen Cycle, Nitrogen Cycle, Phosphorus Cycle, Sulphur Cycle,
- The Energy Flow, Integration of Cycles in Nature, Food Chains, Food Webs and Ecological Pyramids.

Credit 2

UNIT III Biodiversity **05 L**

- Biodiversity at Global, National and Local Levels, India as a Mega-Diversity Nation, And Conservation of Biodiversity: In Situ and Ex Situ.

UNIT IV Pollution: **11 L**

- Pollution: Definition, Air Pollution, Water Pollution, Soil Pollution, Marine Pollution, Noise Pollution, Solid Waste Management: Causes, Effects and Control Measures of Urban and Industrial Waste, Social Issues and the Environment from Unsustainable to Sustainable Development,
- Urban Problems Related to Energy, Water Conservation, Rainwater Harvesting, Watershed Management, Consumerism and Waster Products. Climate Change,
- Global Warming, Acid Rain, Ozone Layer Depletion, Nuclear Accidents and Holocaust.

Credit 3

UNIT V: Environmental (Protection) Act **11 L**

- The Environmental (Protection) Act- The Air (Prevention and Control of Pollution) Act, The Water (Prevention and Control of Pollution) Act Value Education
- Environmental Values, Valuing Nature, Valuing Cultures, Social Justice, Human Heritage, Ecological Degradation.

Credit 4 **15 L**

Internal assessment (Seminars, Assignments)

Field visit / Projects / Seminars

Reference Books

1. Principles of Environmental Studies: Chary Manohar and Jaya Ram Reddy BS Publishers, Hyderabad. 2004 Water and Waste Water Analysis: Kaul S N, Ashuthosh Gautam Days Publishing House, Delhi. 2002
2. Fundamentals of Environmental Biology: Agrawal KC Nidhi Publishers (India), Bikaner. 2001
3. Text Book of Environmental Studies for Undergraduate Courses: Bharucha Erach University Grants Commission, University Press, Hyderabad. 2005
4. Introduction to Environment Science: Sharma J P Lakshmi Publications. 2003
5. Methods in Environmental Analysis: Water Gupta P K Soil and Air. Agro bios, Jodhpur. 2004
6. Natural Disaster Sharma, R.K. & Sharma, G APH Publishing Corporation, New Delhi. 2005
7. Environment and Ecology: Biodiversity, Climate Change and Disaster Management Husain Majid Online book. 2013

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B. Voc. Part – II
Food Processing and Quality Management
Semester III

Processing of Spices and Plantation crops (FSC 31)

Credits Prescribed for Theory: **03 Credits (75 Marks)**

Credits Prescribed for Internal: **03 Credit (75 Marks)**

Total Credits = 06

Objectives:

1. Analyze Chemical composition of food.
2. Understand the chemistry of foods - composition of food, role of each component and their interactions

Outcomes:

1. To impart knowledge on the principles of horticulture, propagation and production techniques of tropical, sub tropical, temperate vegetable and spice crops.
2. Students will get to know about different processing techniques of fruits and vegetable crops and they make value added products like Masalas, Curry powder, Oils and Oleoresins etc.

Credit 1

Unit I: Introduction **4 L**

- Production and processing scenario of spice, flavor & plantation crops and its scope

Unit II: Major spices **12 L**

- Post harvest technology, composition, processed products of spices – ginger, chilli, turmeric, onion, garlic, pepper, cardamom.

Credit 2

Unit III: Minor spices **10 L**

- Post harvest technology, composition, processed products of spices : annie seed, sweet basil, caraway seed, cassia, cinnamon, clove, coriander, cumin, nutmeg, mint, saffron, etc

Unit IV: Plantation crop **10 L**

- Tea, Coffee, Cocoa, cashew nut, coconut: Processing and quality control

Credit 3

Unit V: Spice oil and Oleoresins **9 L**

- Spice oil and oleoresins: Extraction and processing
- Standards specification of spices and flavors
- Packaging of spices and spice products

Credit (4 to 6)

Practicals: **45 L**

1. Physicochemical properties of different spices
2. Study of standard specification of spices
3. Study on Curing of ginger
4. Detection of adulteration in spices
5. Extraction of oil/ oleoresins from spices
6. Determination of piperine content of black pepper
7. Steam distillation of spices for essential oil
8. Determination of curcumin content in turmeric
9. Preparation of curry powder
10. Preparation of Indian Masala for different foods
11. Visit to spice industry

Reference books

1. Spices and Plantation Crops, K.G. Shanmugavelu, Agrotech Publication, Delhi

2. Handbook on Spices and Condiments (cultivation, processing and extraction), Panda H. Asia Pacific Business Press Inc. 2010
3. The Book of Spices, Rosengarten F., Pyramid Books, 1973
4. Food Flavorings, P.R. Ashust, Springer, 2012

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B. Voc. Part – II
Food Processing and Quality Management
Semester III

Bakery and Confectionary (FSC 32)

Credits Prescribed for Theory: **03 Credits (75 Marks)**

Credits Prescribed for Internal: **03 Credit (75 Marks)**

Total Credits = 06

Objectives:

1. To familiarize the students with different form of bakery confectionary and the analysis equipment involved,
2. To acquire the knowledge of manufacturing process of bakery and confectionary products in range.

Outcomes:

1. Define and use the basic terminology and techniques of the professional baker and pastry chef;
2. Demonstrate proficiency in advanced techniques for specific baking & pastry applications;
3. Demonstrate the importance of local and seasonal products in professional baking;
4. Demonstrate station organization, purchasing, storage, menu writing, and sanitation principles as they apply to food handling;
5. Demonstrate responsibility and team skills for the food service industry;
6. Determine and appraise career opportunities within the baking industry;

Credit 1

UNIT I: Introduction **5 L**

- History; Bakery and Confectionery industry
- Raw materials and quality parameters
- Dough development Traditional confectionary goods
- Types of confectionary; Classification of confectionery products.

UNIT II: Role of ingredients **10 L**

- Types of flour, Ingredients used in bakery and confectionary products and its role.

Credit 2

UNIT III: Bakery Products- Bread, Biscuits, cake **10 L**

- Technology for the manufacture of bakery products
- Detailed description of unit operations for the manufacturing of bread, biscuits, cakes and the effect of variations in formulation.

UNIT IV: Confectionary products **10 L**

- Characteristics and processing of raw material used for confectionary products
- Technology of Manufacturing of toffee, chocolate, hard boiled candies, bars, chewing gums, bubble gums
- Characteristics of finished products.

Credit 3

UNIT V: Equipment used in bakery and confectionary industry **10 L**

- Equipment used in bakery and confectionary industry: Construction and working of various equipment's like Mixers, proofing chambers, dough dividers, molder and sheeter, baking ovens, cooling chamber, sealing and packaging machines, Rolling and cutting machines.

Credit (4 to 6)

Practicals **45 L**

1. Extraction of gluten content from wheat sample
2. Quality testing of wheat flour by sedimentation test
3. Preparation and quality evaluation of bread
4. Preparation and quality evaluation of cakes
5. Preparation and quality evaluation of biscuits
6. Preparation and quality evaluation of nan khatai

7. Preparation and quality evaluation of cookies
8. Preparation and quality evaluation of chocolate
9. Production of invert sugar
10. Preparation of groundnut *chikki*
11. Preparation of traditional Indian confectionary
12. Preparation of flour based confectionery
13. Preparation of milk chocolate
14. Preparation of fondant
15. Visit to confectionary industry
16. Visit to bakery industry

Reference Books:

1. Industrial Chocolate Manufactory and Use, Springer, 2012, ISBN: 9781461521112
2. Chocolate, Cocoa and Confectionery: Science and Technology, Bernard W. Minifie, Springer, 1999, ISBN: 9780834213012
3. Basic Baking. Dubey SC. 2002. The Society of Indian Bakers, New Delhi.
4. Wiley Encyclopedia of Food Science & Technology. John Wiley & Sons.Francis FJ. 2000.
5. Manley D. 2000. Technology of Biscuits, Crackers & Cookies. 2nd Ed. CRC Press.
6. Bakery Science and Cereal Technology, Khetarpaul. And Daya Books, New Delhi 2005
7. Bakery Products Science and Technology, Zhou and Hui, John Wiley and Sons, 2014

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B. Voc. Part – II
Food Processing and Quality Management
Semester III

Industrial Training (FSC 33)

Credits Prescribed for Theory: **03 Credits (75 Marks)**

Credits Prescribed for Internal: **03 Credit (75 Marks)**

Total Credits = 06

General Objectives:

1. Develop understanding of various field activities in which students are going to play a role as food technologists after completing diploma.
2. Develop understanding of subject based knowledge given in the class room in the context of its application at work places
3. Gain firsthand experience and confidence amongst the students to enable them to use and apply knowledge and skills to solve practical problems in the field
4. Develop of special skills and abilities like interpersonal skills communication skills, attitudes and values
5. Develop perfect knowledge about the theoretical part in syllabus.
6. Know about hygiene and sanitation in industry.
7. Set the goal for personal development.
8. Solve problems with confidence.

Outcomes:

1. Explore career alternatives prior to graduation.
2. Integrate theory and practice.
3. Assess interests and abilities in their field of study.
4. Learn to appreciate work and its function in the economy.
5. Develop work habits and attitudes necessary for job success.
6. Develop communication, interpersonal and other critical skills in the job interview process.

7. Build a record of work experience.
8. Acquire employment contacts leading directly to a full-time job following graduation from college.
9. Identify, write down, and carry out performance objectives (mutually agreed upon by the employer, the MCC experiential learning supervisor, and the student) related to their job assignment.

Contents of the Report:

1. Acknowledgment
2. In-plant training certificate
3. Introduction of industry
4. Raw material and processing
5. Processing equipments
6. Industry lay- out
7. Process flow charts
8. Packaging
9. Quality control or analysis
10. Effluent treatment
11. Conclusion

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Department of

B. Voc. Food Processing and Quality Management

Second Year (2020-21)
Revised Syllabus

Semester IV

B. Voc. Part – II
Food Processing and Quality Management
Semester IV

Fundamentals of Financial Accounting II (FG 41)

Credits Prescribed for Theory: **03 Credits (75 Marks)**

Credits Prescribed for Internal: **01Credit (25 Marks)**

Total Credits = 04

Objectives:

1. To impart basic accounting knowledge as applicable to business.
2. To develop right understanding regarding role and importance of monetary and financial transaction in business

Outcomes:

1. State the uses and users of accounting information;
2. Explain and apply accounting concepts, principles and conventions;
3. Record basic accounting transactions and prepare annual financial statements; and
4. Analyses, interpret and communicate the information contained in basic financial statements and explain the limitations of such statements

Credit 1

Unit 1: Computerized Accounting System **8 L**

- Introduction, Concept, Components, Features
- Importance and Utilization of Computerized Accounting System.

Unit 2: Computer Application through Accounting Package Tally **8 L**

- Creation of Company, Group, Ledger Accounts, Feeding of Accounting Data Receipts, Payments, Purchase, Sale, Contra, Journal, Credit Note and Debit Note
- Inventory Information – Groups, Items and Valuation
- Generation of various Accounting Reports

Credit 2

Unit 3: Accounts of Professionals **10 L**

- Preparation of Receipts and Payment Account
- Income and Expenditure Account and Balance Sheets of Non Profit Organization

Unit 4: Single Entry System **9 L**

- Conversion of Single Entry System into Double Entry System.

Credit 3

Unit 5: Bank Reconciliation Statement **10 L**

- Meaning, Importance and Preparation of Bank Reconciliation statement.

Credit 4

Practical: 25 Marks (1 Credit) **15 L**

1. Understanding computerized accounting practices applied in different retail malls in and around Kolhapur city
2. Practical problems based on computerized accounting using Tally
3. Practical problems on preparation of Receipts and Payment Account
4. Preparation of Income and Expenditure account and Balance Sheet of Non-profit making organizations
5. Solving the problems on conversion of Single Entry system into Double entry system.
6. Oral /Seminar

Reference Books:

1. Advanced Accountancy, M. C. Shukla and T. S. Garewal.
2. Advanced Accountancy, S.C. Jain and K. L. Narang.
3. Advanced Accountancy, S.N. Maheshwari.
4. Theory and practice of Computer Accounting, Rajan Chougule and Dhaval Chougule.

B. Voc. Part – II
Food Processing and Quality Management
Semester IV

Plant Hygiene and Sanitation (FG 42)

Credits Prescribed for Theory: **03 Credits (75 Marks)**

Credits Prescribed for Internal: **01Credit (25 Marks)**

Total Credits = 04

Objectives:

1. To provide consumer protection and ensure that all foods during production, handling, storage, processing and distribution are safe, wholesome and fit for consumption.
2. To provide information about GMP, HACCP, CIP, COP and food defense.

Outcomes:

1. Define and use correctly all of the key words printed in bold.
2. Describe the public health importance and objectives of food hygiene.
3. Describe the essential functions of food.
4. Outline the principle aspects of a food control system and explain why food control is important

Credit 1

Unit I: General Principles of Hygiene **3 L**

- Importance of food hygiene and sanitation Definition & Importance of food hygiene, Nature of food hazard, Good hygiene control, Contamination of food and protective against contamination.
- General principles of food hygiene viz. aseptic processing, packaging

Unit II: Personal Hygiene and Food Handling **4 L**

- Personal hygiene, Necessity of personal hygiene, Personal appearance of food handler during food processing.

- Sanitary practices-Bathing, hair, eyes, teeth & mouth, hands, fingernails, jewelers, feet & footwear
- Protective clothing & uniform Importance of rest, exercise& recreation
- Food handling habits - List of Good habit of food handling (wearing aprons, mask, gloves, cap, cleaning hands before & after work)
- List of Bad habits - coughing, sneezing, smoking, nose picking, handshaking, washing hands in sink used for food preparation, testing of food with spoon

Credit 2

Unit III: Cleaning and Sanitizing Operations **12 L**

- Cleaning - Principles of cleaning , cleaning agents and methods, CIP, Factors affecting cleaning, Detergents for cleaning, concentration of detergents and cleaning frequency
- Sanitizing - Principles of sanitizing, Heat sanitation, Chemical sanitation and Cleaning Environment area.

Unit IV: Hygiene and Sanitation in Food Service Establishments **13 L**

- Introduction: Sources of contamination, General Principles of Food Hygiene (GHP), Sanitization practices and procedures in food plant operations, legal aspects of food hygiene and sanitation
- Pest control and construction material-In fruit and vegetable Industry, meat and poultry Industry, bakery Industries and Dairy Industry.
- Pest control-Insect Destruction, Rodents, Birds, Cockroaches and use of pesticides

Credit 3

Unit V: Safety at the Work Place **13 L**

- Introduction, How accidents takes place, Types of Accidents, common types of injuries, fire safety, fire extinguishers, Precautions to prevent accidents. General Practice in food laboratory.

Credit 4 **15L**

Practical: Based on the theory units 25 Marks (1 Credit)

Reference Books

1. Principles of Food Sanitation, Marriot and Gravi, Springer, 2006
2. Food Hygiene and Sanitation Roday S. McGraw Hill Education, 2011
3. Biotechnology - Expanding Horizons, B.D. Singh, Kalyani Publishers, New Delhi. 2014
4. Essentials of Food Sanitation, Marriot N. Springer 1997

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B. Voc. Part – II
Food Processing and Quality Management
Semester IV

Food laws and Regulations (FG 43)

Credits Prescribed for Theory: **03 Credits (75 Marks)**

Credits Prescribed for Internal: **01Credit (25 Marks)**

Total Credits = 04

Objectives

1. To know the role of government rules and regulation in food business.
2. To familiar with global marketing with respect to food laws and regulations.
3. To implement various government policies for the growth of food business.

Outcomes:

1. Become familiar with government statutes and regulations that contribute to a safe, nutritious, and wholesome food supply.
2. Understand how technological, social and political forces interact in the development of food law and regulation
3. Understand the differences and similarities between international and domestic food law and regulation.
4. Participate in an international network of legal, regulatory and scientific professionals regarding on food law issues
5. Become familiar and comfortable with the use of Internet based resources such as real time audio and video communication, electronic information transfer, online research, listservs, electronic instruction and content delivery.

Credit 1

Unit I Introduction **5 L**

- Introduction to Food Laws and Regulations: Need for food standards and their enforcement, various types of laws (Mandatory/Regulatory and Voluntary/Optional)

Unit II: FSSAI **10 L**

- Food Safety and Standards Authority of India (FSSAI);
- Food Safety and Standards Act, 2006 (FSSA) – inception, importance and significance, discussion on important sections;

Credit 2

Unit III: International Agencies **10 L**

- Introduction, objectives and applications of ISO and CAC
- Introduction, objectives and applications of WHO and FAO
- Introduction, objectives and applications of WTO and FDA

Unit IV: Domestic Standards **10 L**

- Essential Commodities Act, 1955
- The Export (Quality Control and Inspection) Act, 1963
- Consumer Protection Act, 1986
- Introduction to various food laws (Voluntary) - Agmark Standards (AGMARK), Codex Alimentarius Standards, BIS Standards and Specifications, GMP Regulations

Credit 3

Unit V: Food Adulteration and food safety **10 L**

- Common adulterants, methods of detection
- Safety Assurance System(SAS) – HACCP and GMP
- Nutrition Labeling and Education Act 1990

Credit 4 **15L**

Practical: Based on the theory units 25 Marks (1 Credit)

Reference Books

1. Krammer, A. and Twigg, B.A. 1970. “Quality Control for the Food Industry”. 3rd Edition. AVI, Westport.

2. Pattee, H.E. Ed. 1985. “Evaluation of Quality of Fruits and Vegetables”. AVI, Westport.
3. Ranganna, S. 1986. “Handbook of Analysis and Quality Control for Fruits and Vegetable”
4. Tannenbaum, S.R. Ed. 1979. “Nutritional and Safety Aspects of Food Processing”, marcel

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B. Voc. Part – II
Food Processing and Quality Management
Semester IV

Meat, fish and poultry technology (FSC 41)

Credits Prescribed for Theory: **03 Credits (75 Marks)**

Credits Prescribed for Internal: **03 Credit (75 Marks)**

Total Credits = 06

Objectives

1. To provide an understanding of the technology for handling, processing, preservation
2. By-product utilization of meat, poultry and fish products processing.

Outcomes:

1. Understand the importance of dairy and fishery industry, the techniques that can be used for preservation of fish and manufacturing of various value added fish products.
2. Understand the need and importance of livestock, egg and poultry industry Understand the structure, composition and nutritional quality of animal products.
3. Understand the of concept and methods of processing and preservation of animal foods.
4. Understand the technology behind preparation of various animal food products and byproduct utilization
5. Understand egg production practices and egg preservation methods
6. Understand factors affecting egg quality and measures of egg quality

Credit 1

UNIT I: Introduction **5 L**

- Sources and developments of meat and poultry industries in India and importance in national economy.

- Slaughter and dressing, post-mortem examination.
- Post-mortem changes in meat and factors affecting them.

UNIT II :Physico-chemical properties of meat **8 L**

- Muscle structure, chemical composition and physico-chemical properties of meat muscle. Abattoir design and layout.
- Meat tenderization principle and methods

Credit 2

UNIT III: Processing and preservation of meat **10 L**

- Processing and preservation of meat- mechanical deboning, aging or chilling, freezing, pickling, curing, cooking and smoking of meat.
- Meat plant hygiene – GMP and HACCP; Packaging of meat products.

UNIT IV: Processing Technology of Eggs **12 L**

- Structure, composition and nutritive value of poultry eggs. Poultry dressing, Functional properties of eggs,
- Internal quality of eggs and its preservation.
- Eggs spoilage, Spray dried and frozen egg products.

Credit 3

UNIT V: Fish structure and composition. **10 L**

- Fish structure and composition. Classification of fish (fresh water and marine), characteristics of fresh fish, Cold storage, freezing preservation and canning of fish.
- Picking of fish, fish protein concentrates, fish meal and by products of fish processing industry

Credit (4 to 6)

Practicals **45 L**

1. Slaughtering and dressing of meat animals
2. Study of post-mortem changes; meat cutting and handling
3. Evaluation of meat quality
4. Evaluation of quality of eggs
5. Preparation of meat products
6. Preparation of meat products
7. Composition and structure of egg
8. Preparation of fish protein concentrate (FPC)
9. Composition and structure of egg
10. Visit to meat processing plants.

Reference Books

1. Principles of Meat Science, Aberle E.D., Kendall Hunt Publication ISBN: 9780787247201
2. Principles of Meat Technology, Singh V. P., New India Publishing Agency, Delhi ISBN: 9789380235554
3. Poultry Production, Singh R. A., Khyani Publishers, Delhi
4. Fish Processing Technology, Hall G.M., Springer Publication ISBN: 9781461311133
5. Handbook of Meat, Poultry and Seafood Quality, Kerth, Wiley Backwell, 2012 SBN: 9780470958322
6. Meat Products Handbook – Practical Science and Technology, Gerhard Feiner, CRC Press, Boca Raton, ISBN: 9780849380105
7. Handbook of Heat and Meat Processing, Hue Y.H. , CRC Press, New York, ISBN: 9781439836835

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B. Voc. Part – II
Food Processing and Quality Management
Semester IV

Dairy Technology (FSC 42)

Credits Prescribed for Theory: **03 Credits (75 Marks)**

Credits Prescribed for Internal: **03 Credit (75 Marks)**

Total Credits = 06

Objectives

1. To acquaint with techniques and technologies of testing and processing of milk into various products and by products.
2. To know about processing and preservation of milk and milk products

Outcomes:

1. Understand the various properties and composition of milk and the technology of manufacturing of various products like butter, ghee, flavored milk, yoghurt, dahi, shrikhand, ice cream, cheese, channa, paneer, condensed milk and milk powder.
2. Understand market milk industry stages of milk processing and working of a few dairy equipments

Credit 1

Unit 1: Introduction **5 L**

- Milk and milk products in India; Importance of milk processing plant in the country
- Physical properties of milk: Color, taste, pH and buffering capacity, refractive index, viscosity, surface tension, freezing, boiling point, specific heat, OR, electrical conductivity.

Unit 2: Dairy Equipments **10 L**

- Handling and maintenance of dairy plant equipment. Dairy plant operations viz. receiving, separation, clarification, pasteurization, standardization, homogenization, sterilization, storage, transport and distribution of milk

Credit 2

Unit 3: Market Milk **10 L**

- Market milk industry and milk products: Systems of collection of milk, Reception, Platform testing, various

Unit 4: Fermented Milk Products **10 L**

- Technology of fermented milks (starter culture, dahi, yoghurt, shrikhand); Milk products processing viz. cream, butter, ghee, cheese, condensed milk, evaporated milk, whole and skimmed milk powder
- Ice-cream, butter oil, khoa, channa, paneer and similar products.

Credit 3

Unit 5: Dairy plant Hygiene and Sanitation **10 L**

- Specifications and standards in milk processing industry,
- Dairy plant sanitation and waste disposal, packaing

Credit (4-6)

Practicals: **45 L**

1. To perform platform tests in milk. (Acidity and COB).
2. Sampling of milk and milk production
3. Determination of fat content of milk
4. Detection of adulterants in milk and milk products
5. Preparation of butter and ghee
6. Preparation of ice-cream
7. Preparation of coagulated milk product (paneer)
8. Preparation of indigenous fermented milk products (dahi, Shrikhand, etc)
9. Preparation of khoa

10. Preparation of khoa based sweet
11. Prepaartion of channa
12. Preparation of channa based sweet (Rasogulla)
13. Visit to dairy plant
14. Preparation of flavoured milk
15. Visit to a milk industry

Reference Book:

1. Outline of Dairy Technology: Sukumar De Oxford University Press, 2008
2. The Fluid Milk Industry: Henderson JL AVI Publishing Co, USA
3. Indian Dairy Industry: K.S.Rangappa and K L Acharya Asia publishing house, Mumbai
4. Technology of Milk Processing: Khan QA and Padmanabhan ICAR, New Delhi
5. Principles of Dairy Processing: J.N.Warner, Wiley Eastern Ltd, New Delhi
6. Judging of Dairy Products: J.A.Nelson and Trout The Olsen publishing Co. Milwankee, Wisconsin, USA
7. Dairy Technology: Principles of milk properties and processes Walstra P. CRC Press, 1999
8. Technology of Dairy Products: Early R. Springer, 1998

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B. Voc. Part – II
Food Processing and Quality Management
Semester IV

Industrial Training (FSC 43)

Distribution of Marks:

Credits Prescribed for Report / Viva: 03 Credits (75 Marks)

Credits Prescribed for Internal: 03 Credit (75 Marks)

Total Credits = 06

Objectives:

1. Develop understanding of various field activities in which students are going to play a role as food technologists after completing diploma.
2. Develop understanding of subject based knowledge given in the class room in the context of its application at work places
3. Gain firsthand experience and confidence amongst the students to enable them to use and apply knowledge and skills to solve practical problems in the field
4. Develop of special skills and abilities like interpersonal skills communication skills, attitudes and values
5. Develop perfect knowledge about the theoretical part in syllabus.
6. Know about hygiene and sanitation in industry.
7. Set the goal for personal development.
8. Solve problems with confidence.

Outcomes:

1. Explore career alternatives prior to graduation.
2. Integrate theory and practice.
3. Assess interests and abilities in their field of study.
4. Learn to appreciate work and its function in the economy.

5. Develop work habits and attitudes necessary for job success.
6. Develop communication, interpersonal and other critical skills in the job interview process.
7. Build a record of work experience.
8. Acquire employment contacts leading directly to a full-time job following graduation from college.
9. Identify, write down, and carry out performance objectives (mutually agreed upon by the employer, the MCC experiential learning supervisor, and the student) related to their job assignment.

Contents of the Report:

1. Acknowledgment
2. In-plant training certificate
3. Introduction of industry
4. Raw material and processing
5. Processing equipments
6. Industry lay- out
7. Process flow charts
8. Packaging
9. Quality control or analysis
10. Effluent treatment
11. Conclusion

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