

PUNJABI UNIVERSITY,

PATIALA, PUNJAB, INDIA

(Established under Punjab Act No. 35 of 1961)



Syllabi

for

**BACHELOR OF VOCATION (B.Voc.)
(FOOD PROCESSING)**

PART 3 (Semester V & VI)

PROGRAMME CODE: FDPB3PUP

FOR

Session 2022-23, 2023-24, 2024-25

Under

CHOICE BASED CREDIT SYSTEM

9/11/24

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SCHEME & SYLLABUS
BACHELOR OF VOCATION (B. Voc.) FOOD PROCESSING

OUTLINE OF PAPERS AND TESTS
 FOR

B. Voc. FOOD PROCESSING PART -III (Semester V)
PROGRAMME CODE: FDPB3PUP
Session: 2023-24, 2024-25 & 2025-26

CODE	SUBJECTS	L	T	P	Total Credits* *one credit =15 hrs./1 lecture of 1 hr.	External Marks	Internal Marks	Practical Marks	Total Marks
									700
FDPB3101T	Communication Skills II	3	1	0	4	75	25		100
FDPB3102T	Marketing and Retail Management	3	1	0	4	74	26		100
FDPB3103T	Sugar Processing Technology	3	0	0	3	74	26		100
FDPB3104T	Food Industry Waste Management	3	0	0	3	74	26		100
FDPB3105T	Entrepreneurship Development in Food Processing	3	0	0	3	74	26		100
FDPB3101L	Practical paper XVII Pertaining to Paper FDPB3102T			3	3			45	45
FDPB3102L	Practical Paper XVIII pertaining to Paper FDPB3103T	0		3	3			45	45
FDPB3103L	Practical Paper XIX pertaining to Paper FDPB3104T			3	3			45	45
FDPB3104L	Practical Paper XX pertaining to paper FDPB3105T			3	3			45	45
	Industrial Visit			1	1			20	20
	Total				30				700

SCHEME & SYLLABUS
BACHELOR OF VOCATION (B. Voc.) FOOD PROCESSING

OUTLINE OF PAPERS AND TESTS
FOR
B. Voc. FOOD PROCESSING PART -III (Semester VI)
PROGRAMME CODE: FDPB3PUP
Session: 2023-24, 2024-25 & 2025-26

Code	Subjects	L	T	P	Total Credits* *one credit =1Shrs/1 lecture of 1hr.	External Marks	Internal Marks	Practical Marks	Total Marks
FDPB3201L	Industrial Training/Institutional Project			12	30	-----	-----	-----	200
QP7	QP Production Manager/or any QP of level7			18					
	Total				30				200

• **Distribution of marks will be according to ordinance no. 18**

Project work will be of 200 marks based on three categories:

1. Performance and Practical: 100 marks
2. Project Report: 50 marks
3. Viva Voce : 50 marks

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SYLLABUS
B. Voc. FOOD PROCESSING PART -III (Semester V)

Code:FDPB3101T

Communication Skills II

Max. Marks: 75 Lectures to be delivered: 75

COURSE CONTENT

The course content shall comprise the following books:

1. *Perspectives: Selections from Modern English Prose and Fiction*, edited by S.A. Vasudevan and M. Sathya Babu, Published by Orient Longman.
2. *Six One-Act Plays*, edited by Maurice Stamford. Published by Orient Longman.

TESTING

The paper shall have two sections. Section-A shall comprise testing from *Perspectives: Selections from Modern English Prose and Fiction* while Section-B from *Six One-Act Plays*.

SECTION-A: PERSPECTIVES

Q. 1. Based on the section entitled "Prose", comprising chapters 1 to VI.

- a) One essay-type question with internal alternative. The answer should not exceed 250 words. 10 Marks
- b) Five short-answer questions to be attempted out of seven. Each answer should be written in 25 to 30 words. 5 X 2=10 Marks

Q. 2. Based on the section entitled "Fiction", comprising chapters VII to IX.

- a) One essay-type question with internal alternative on character/theme and incident/episode. The answer should not exceed 250 words. 10 Marks
- b) There will be one short answer question from each of the three stories. The candidate shall be required to attempt any two. Each answer should be written in 25 to 30 words. 2 X 2 1/2 =5 Marks

Q. 3. Based on the section entitled "Biographies", comprising chapters X to XII.

- a) One essay-type question with internal alternative. The answer should not exceed 250 words. 10 Marks
- b) There will be one short answer question from each chapter. The candidate shall be required to attempt any two. Each answer should be written in 25 to 30 words. 2 X 2 1/2 =5 Marks

SECTION-B: SIX ONE-ACT PLAYS

Q. 4

- a) One essay-type question on character, incident/episode and theme, with internal alternative. The answer should not exceed 250 words. 15 Marks
- b) Five short-answer question to be attempted out of seven. Each answer should be written in 25-30 words. 5X2=10 Marks

Code: FDPB3102T

Marketing and Retail Management

OBJECTIVES

- Students will learn about the marketing process and strategic planning of food processing industries in the world.
- Students will gain information about the marketing environment, consumer markets, consumerbuyer behaviour, rural and urban industrial marketing.
- Students will gain knowledge about role of advertising, promotion, product and service strategies.
- Student will develop understanding about product, brand and sales management.
- Students will identify trends in retailing, communication and customer relations.
- Learners will identify different branded food items and determine their qualitative and quantitative comparison.
- Learners will conduct survey and prepare a report on consumer behavior with respect to a particular product.
- Learners will identify parameters of customer satisfaction.
- Students will prepare industrial unit set up for a product.

Time Allowed 3hrs;

MM: 74;

Pass Percentage: 35%

INSTRUCTIONS FOR THE PAPER-SETTER

The question paper will consist of three sections A, B and C. Section A and B will have four questions from the respective sections of the syllabus and carry 11 marks each. Section C will consist of 15 short answer type questions which will cover the entire syllabus uniformly and will carry 30 marks in all.

INSTRUCTIONS FOR THE CANDIDATES

1. Candidates are required to attempt two questions each from sections A and B of the questionpaper and the entire section C.

SECTION-A

1. Marketing in FPI in the global world, strategic planning and the marketing process, the marketing environment, consumer markets and consumer buyer behavior Rural Marketing, industrial Marketing
2. Marketing strategy – Overview, advertising and promotion, Product and services strategy, Pricing products, Distribution and supply chain management channels, Direct and online marketing, competitive strategies

SECTION-B

3. Product and Brand Management, consumer buying behavior, Sales Management and sales promotion, Food product handling and transportation
4. Place of Retailing in the Marketing Mix, Trends in retailing, Communication and Customer Relations, Managing People at Work - Recruitment and Motivation, Total Quality Management, product development, globalization in food industries

REFERENCES

1. Robert Reeder, Edward G, Industrial Marketing – Analysis, Planning and Control.
2. Krishna K. Havildar, Industrial Marketing , Tata McGraw Hill
3. Jagdish Sheth & G shainesh, Customer Relationship Management,
4. Michael Levy, Retailing Management. 5.SwapnaPradhan, Retailing Management – Text & Cases.
5. Gibson Vedamani, Retail Management.
6. Walker and Larreche, Marketing Strategy – Boyd,Mc Graw Hill Irwin
7. David Aaker, Strategic Market management, John Wiley& sons
8. George Belch, San Diego University Michael Belch. Advertising and Promotion: An Integrated Marketing Communications Perspective, San Diego University
9. Rajeev Batra, John G. Myers, David A. Aaker, Advertising Management.
10. Schiffman & Kanuk, Consumer Behavior, 6th edition Prentice Hall India
11. Loudon & Della Bitta, Consumer Behavior, 4th edition Tata McGraw Hill 13.Suja R Nair, Consumer Behaviour in Indian Context, Himalaya Pub. House.
12. Arora, M. 2020, Practical Manual Food Processing. Bachelor of Vocation Food processing: Part II: Semester III Nirali Prakashan, Pune.
13. Hawkins Best & Coney, Consumer Behavior building marketing strategy, 7th edition McGraw Hill International edition

PRACTICAL (FDPB3101L)

M.M.45

1. To collect different branded food items and their qualitative and quantitative comparison.
2. To conduct survey and prepare a report on consumer behavior with respect to a particular product.
3. To study parameters of customer satisfaction.
4. To plan for industrial unit set up for a product.
5. To study advantages & disadvantages of on line shop

Code:FDPPB3103T

SUGAR PROCESSING TECHNOLOGY

OBJECTIVES

- Students will learn about the properties of sugarcane and sugar beet.
- Students will gain information about different sugar production processes.
- Students will develop understanding about the techniques and instruments involved in preparation of different confectionary products.
- Students will prepare or manufacture different sugar products such as coffee, fudge, chewinggum etc.
- Learners will conduct experiments to determine acidity, ash content, and moisture content of sugar products.

Time Allowed 3hrs;

MM: 74;

Pass Percentage: 35 %

INSTRUCTIONS FOR THE PAPER-SETTER

The question paper will consist of three sections A, B and C. Section A and B will have four questions from the respective sections of the syllabus and carry 11 marks each. Section C will consist of 15 short answer type questions which will cover the entire syllabus uniformly and will carry 30 marks in all.

INSTRUCTIONS FOR THE CANDIDATES

1. Candidates are required to attempt two questions each from sections A and B of the question paper and the entire section C.

SECTION A

1. **Introduction** Sugarcane and sugar beet as sugar raw materials. Flow charts for manufacture of Granulated sugar and Liquid sugars. Properties of Granulated sucrose and Liquid Sugars. Invert sugar and their characteristics. Specialty products of Sugar Industry. Back strap Molasses and its uses. Applications in animal feed.
2. **Sugar production processes:** Extraction of juice, extraction yields, drying and uses of Bagasse, Purification of juices -Juice filtration and chemical purification, Clarification stages, Lime addition, pH control, Treatment of clarified juice, evaporation –multiple effect evaporators, Vacuum pans, Crystallization, Washing of sugar crystals and centrifugal separation/dewatering of sugar and other related processes. Sugar Refining, Sugar analysis, Sugar recovery – improvement, Sugar balance, energy conservation, Sugar plant sanitation.

2 AM



SECTION B

3. **Technology of Confectionery manufacture:** General technical aspects of industrial sugar confectionery manufacture, Manufacture of high boiled sweets – Ingredients, Methods of manufacture – Types – Center – filled, lollipops, coextruded products, Manufacture of gums and jellies – Quality aspects
4. **Technology of Chocolate manufacturing and Miscellaneous Products:** Chocolate manufacturing ingredients and their role as food additives. Machineries involved in the process of manufacturing chocolates. Caramel, Toffee and fudge-Licorice paste and aerated confectionary, Lozenges, sugar panning and chewing gum

TEXT BOOKS

1. E.B. Jackson, 1999, Sugar Confectionery Manufacture, Second edition, Aspen publishers Inc., Great Britain
2. Guilford L Spencer and George P. Made, 1993, Cane Sugar Hand Book, John Wiley and sons Inc. London
3. P. Manohara Rao: Industrial Utilization of Sugar Cane and its co-products. P. J. International Consultants, New Delhi

REFERENCES

1. Maurice Shachman, Soft Drinks Companion: (2005). A Technical Handbook for the Beverage Industry, CRC press, Florida, USA.
2. W. Ray, Junk & Harry M. Pancost: (1973), Hand Book of Sugars – for Processors, Chemists and Technologists: AVI Publishing, West port.
3. Oliver Lyle: (1950), Technology of Sugar for Refinery Workers Chapman and Hall Ltd.

PRACTICAL (FDPPB3102L)

M.M. 45

1. Determination of sugar content in juice.
2. Determination of reducing and non-reducing sugars in sugar product.
3. To prepare chocolate
4. To prepare candy and jelly from fruit sources.
5. To study the equipment's related to sugar manufacturing.
6. To determine ash content of sugar product.
7. To determine moisture content of sugar product.
8. To estimate acidity and TSS of sugar products.

Code: FDPB3104T

FOOD INDUSTRY WASTE MANAGEMENT

OBJECTIVES

- Student will learn about classification & characterization of food industrial waste from dairy, fruit & vegetable processing etc.
- Students will gain information about waste disposal method, economical aspects of waste treatment etc.
- Students will evaluate different treatment methods for liquid waste etc.
- Student will acquire knowledge about treatment methods for solid waste, biogas and effluent waste treatment method.
- Learners will conduct experiments to determine BOD and COD of water sample.
- Learners will conduct experiments to find the TDS and TSS.
- Students will prepare flow process chart of food plant waste utilization processes

Time Allowed 3hrs;

MM: 74;

Pass Percentage: 35 %

INSTRUCTIONS FOR THE PAPER-SETTER

The question paper will consist of three sections A, B and C. Section A and B will have four questions from the respective sections of the syllabus and carry 11 marks each. Section C will consist of 15 short answer type questions which will cover the entire syllabus uniformly and will carry 30 marks in all.

INSTRUCTIONS FOR THE CANDIDATES

1. Candidates are required to attempt two questions each from sections A and B of the question paper and the entire section C.

SECTION-A

1. Introduction: Classification and characterization of food industrial wastes from Fruit and Vegetable processing industry, Beverage industry; Fish, Meat & Poultry industry, Sugar industry and Dairy industry; Waste disposal methods – Physical, Chemical & Biological; Economical aspects of waste treatment and disposal.
2. Treatment methods for liquid wastes from food process industries; Design of Activated Sludge Process, Rotating Biological Contactors, Tricking Filters, UASB, Biogas Plant.

SECTION-B

3. Treatment methods of solid wastes: Biological composting, drying and incineration, Design of Solid Waste Management System: Landfill Digester, Vermicomposting Pit. Biofilters and Bioclarifiers, Ion exchange treatment of waste water, Drinking-Water treatment, Recovery of useful materials from effluents by different methods.

4. Utilization from rice mill - Thermal and biotechnological uses of rice husk - pyrolysis and gasification of rice, utilization of rice bran, citric acid production from fruit waste, Coconut processing – by-product utilization – fuel briquette .

REFERENCES:

1. V. Oreopoulou, W. Russ, (ed), 2007, "Utilization of by-products and treatment of waste in the foodindustry" Vol, 3, Springer.
2. K. Waldron, 2007, "Handbook of waste management and co-product recovery in foodprocessing".CRC.
3. R. Smith, J. Klemes, J-K Kim 2008, "Handbook of water and energy management in food processing.", CRC.
4. C. Yapijakis, L.Wang, Yung T-se-Hung,2005. . Waste treatment in the food processing industry, H.L.O, CRC,
5. Herzka A & Booth RG; 1981, Applied Science Pub Ltd, Food Industry Wastes: Disposal and Recovery
6. Fair GM, Geyer JC & Okun DA; 1986, John Wiley & Sons, Inc.
7. Bartlett RE; . Water & Wastewater Engineering; Applied Science Pub Ltd.
8. Green JH & Kramer A; 1979, Food Processing Waste Management; AVL.
9. Rittmann BE & McCarty PL; 2001, Environmental Biotechnology: Principles and Applications, Mc-Grow-Hill International editions.
10. Bhattacharyya B C & Banerjee R; Environmental Biotechnology, Oxford University Press.
11. P. N. Chereminoﬀ& A.C Morresi, 1976, "Energy from Solid Wastes" 12 .A. Chakravarthy & De, "Agricultural Waste and By Product Utilisation" .
13. Bor S. Luli (ed), "Rice Production and Utilisation"
14. E. Beagle, "Rice Husk Conversion to Energy"

PRACTICAL (FDPB3103L)

M.M. 45

1. To find BOD of water sample.
2. To find COD of waste sample.
3. To find the total dissolved solids (TDS) and its volatile and non-volatile components.
4. To find the total suspended solids (TSS) and its volatile and non-volatile components.
5. Flow process chart of food plant Waste utilization processes
6. To find the phenol content of water sample and evolution of parameters.
7. To operate the electro dialysis apparatus.
8. To find the biodegradation constant (K) and the effect of timing on it.
9. To use the membrane separation techniques for salt brine and reverse osmosis process for sugar.

Code: FDPBR310ST	ENTREPRENEURSHIP PROCESSING	DEVELOPMENT IN	FOOD
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OBJECTIVES

- Students will learn about definition and requirements to be an entrepreneur.
- Students will identify competencies of entrepreneurs.
- Students will get the information about NABARD, NSIC, SIDBI, DIC, DIO, SFC, TCO and other governmental organizations that promote entrepreneurship.
- Students will evaluate about planning a small scale unit.
- Students will gain knowledge about project identification and requirements to start a business.

Time Allowed 3hrs;

MM: 74;

Pass Percentage: 35%

INSTRUCTIONS FOR THE PAPER-SETTER

The question paper will consist of three sections A, B and C. Section A and B will have four questions from the respective sections of the syllabus and carry 11 marks each. Section C will consist of 15 short answer type questions which will cover the entire syllabus uniformly and will carry 30 marks in all.

INSTRUCTIONS FOR THE CANDIDATES

1. Candidates are required to attempt two questions each from sections A and B of the question paper and the entire section C.

SECTION-A

1. Entrepreneurship: definition, requirements to be an entrepreneur, entrepreneur and intrapreneur, entrepreneur and manager, growth of entrepreneurship in India, women entrepreneurship, rural and urban entrepreneurship, competencies of entrepreneurs-(1) Decision Making (2) Problem Solving (3) Risk Taking (4) Leadership (5) Communication (5) Dealing with customers.
2. Entrepreneurial Support System: National Bank for Agriculture and Rural Development(NABARD), National Small Industries Corporation (NSIC), Small Industries Development Bank of India (SIDBI) Role of District Industries Centre, Directorate /Commissioner of Industries Office, State Financial Corporation, Technical Consultancy Organization.

50/1



SECTION-B

3. Food processing Sector in India: An overview, Make In India: (Sector Food Processing Policy, Financial Support, Investment Opportunities), MOFPI: (Schemes), FICSI: (Overview) , MSME:(Schemes and Entrepreneurship development programs)
4. Planning a small scale unit: Whom to approach for what, Project Identification, requirements to start a business, SSI registration, obtaining NOC from state pollution control board, The National Institute for Entrepreneurship and Small Business Development (NIESBUD)- Entrepreneurship Development Institute of India (EDII) Science and Technology Entrepreneurship Parks (STEPS) -Use of IT enabled services in entrepreneurship - E Licensing, E filing.

REFERENCES

1. P. C. Jain Handbook for New Entrepreneur Oxford Latest Edition
2. S. S. Khanka Entrepreneurial Development S. Chand Latest Edition
3. Thomas W. Zimmerer & Norman M. Scarborough Essentials of Entrepreneurship and small businessmanagement 4th Edition
4. Dr. VidyaHattangadi2007, Entrepreneurship Himalaya.
5. Vasant Desai 2008, Small Scale Industries and Entrepreneurship Himalaya.
6. Dr. v. B. Angadi, Dr. H. S. Cheema &Dr. M. R. Das, 2009, Entrepreneurship, Growth, and EconomicIntegration-A linkage Himalaya.
6. Roy Rajeev, Entrepreneurship Oxford Latest Edition
7. E. Gordon & K.Natarajan, 2008, Entrepreneurship Development Himalaya.
8. Coulter Entrepreneurship inaction PHI 2nd Edition

PRACTICAL (FDPB3104L)

M.M. 45

1. Test to assess the Entrepreneurial spirit of learner through questionnaire (EntrepreneurialSelf-Assessment Tool)
2. Demonstrate and practice five core life skills
 - (A) Managing self and others
 - (B) Positive Attitude
 - (C) Creativity
 - (D) Team building
 - (E) Motivation
3. A SWOT analysis of entrepreneurial opportunity in your locality with reference to the vocational course.
4. Show videos of successful entrepreneurs.
5. Prepare a list of agencies providing financial support and make a chart for their guidelines.
6. Prepare checklist of legal, technical and other administrative requirements to setup a small scale food processing unit.