

॥ सा विद्या या विमुक्तये ॥



स्वामी रामानंद तीर्थ मराठवाडा विद्यापीठ, नांदेड

“ज्ञानतीर्थ” परिसर, विष्णुपुरी, नांदेड - ४३१६०६ (महाराष्ट्र)

SWAMI RAMANAND TEERTH MARATHWADA UNIVERSITY NANDED

“Dnyanteerth”, Vishnupuri, Nanded - 431606 Maharashtra State (INDIA)

Established on 17th September 1994 – Recognized by the UGC U/s 2(f) and 12(B), NAAC Re-accredited with ‘A’ Grade

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संलग्नित महाविद्यालयांतील विज्ञान व तंत्रज्ञान विद्याशाखेतील बी. व्होक पदवी स्तरावरील द्वितीय व तृतीय वर्षांचे CBCS Pattern नुसारचे अभ्यासक्रम शैक्षणिक वर्ष २०२०-२१ पासून लागू करण्याबाबत.

प रि प त्र क

या परिपत्रकान्वये सर्व संबंधितांना कळविण्यात येते की, प्रस्तुत विद्यापीठाच्या संलग्नित महाविद्यालयांतील विज्ञान व तंत्रज्ञान विद्याशाखेतील बी. व्होक पदवी स्तरावरील द्वितीय व तृतीय वर्षांचे खालील विषयांचे C.B.C.S. (Choice Based Credit System) Pattern नुसारचा अभ्यासक्रम शैक्षणिक वर्ष २०२०-२१ पासून लागू करण्याच्या दृष्टीने मा. कुलगुरू महोदयानी मा. विद्या परिषदेच्या मान्यतेच्या अधीन राहून मान्यता दिलेली आहे.

01. Food Processing, Preservation and Storage II Year (Revised)

02. Food Processing, Preservation and Storage III Year

03. Web Printing Technology III Year

सदरील परिपत्रक व अभ्यासक्रम प्रस्तुत विद्यापीठाच्या www.srtmun.ac.in या संकेतस्थळावर उपलब्ध आहेत. तरी सदरील बाब ही सर्व संबंधितांच्या निदर्शनास आणून द्यावी.

‘ज्ञानतीर्थ’ परिसर,
विष्णुपुरी, नांदेड - ४३१ ६०६.
जा.क्र.:शैक्षणिक-१ / परिपत्रक/पदवी-सीबीसीएस अभ्यासक्रम/
२०२०-२१/१५१२

दिनांक : २०.११.२०२०.

प्रत माहिती व पुढील कार्यवाहीस्तव :

- १) मा. अधिष्ठाता, विज्ञान व तंत्रज्ञान विद्याशाखा प्रस्तुत विद्यापीठ.
- २) मा. संचालक, परीक्षा व मूल्यमापन मंडळ यांचे कार्यालय, प्रस्तुत विद्यापीठ.
- ३) प्राचार्य, सर्व संबंधित संलग्नित महाविद्यालये, प्रस्तुत विद्यापीठ.
- ४) सिस्टम एक्सपर्ट, शैक्षणिक विभाग, प्रस्तुत विद्यापीठ.

स्वाक्षरित

सहा.कुलसचिव

शैक्षणिक (१-अभ्यासमंडळ) विभाग

Maharashtra Mahavidyalaya, Nilanga,

Dist: Latur.

Affiliated to

Swami Ramanand Teerth Marathwada University, Nanded



Syllabus

Bachelor of Vocational Courses

(Food Processing, Preservation and Storage)

T.Y. (V th and VI th semester)

Effective from June 2020

Introduction

The Bachelor in Vocational program, **Food Processing, Preservation and Storage** is divided into six semesters having 180 credits. Each semester will have courses based on General Education Components (40% of the syllabus) and Skill Development Components. (60% of the syllabus). Skill Development Components of Food Processing Technology course will emphasize on Laboratory Work / Project / Industrial Training / In-plant Internship. This program offers following General Education Components which include Communication Skill, Computer Fundamental, Environmental Science, Personality Development, Economics & Management etc. whereas Skill Development Components includes Food Chemistry, Biochemistry, Microbiology and Biotechnology, Human Nutrition, Processing and Preservation Technology of Fruits & Vegetables, Cereals, Legumes, Oil seeds, Spices and Condiments, Meat, Fish and Poultry, Milk and Milk products, Bakery and Confectionary technology, Food analysis, Food Safety regulations and quality management, Storage of processed food and food products, special in-plant training, seminar and project etc.

Aims and Objectives

During their studies, students shall learn the detailed aspects of various food processes like fruits and vegetables, milk and milk product, cereal legumes and oil seed processing, snacks and extruded processing, meat and meat product, bakery and confectionery products processing techniques being used in food industries. Also students shall get the subject knowledge of food microbiology, food processing, food preservation techniques, food storage techniques, food laws and regulation, quality control and quality analysis, product development, research and development skills, entrepreneur and business management skills, computer operating skills etc. Subjects on food laws and regulation and food storage and logistics management have been included in the curriculum to impart basic knowledge of food laws, food storage systems and logistics management skills to enable the students to apply the same in his professional career.

It involves several technical skills which hold the prime importance. Each person engaged in performing food production work like food processing, quality control, microbial analysis new product development, food enrichment, new innovation in food based products and techniques used in food industries, sales marketing of food products etc.

Categories of personnel with Diploma/Advance Diploma/ B Voc. Degree in Food Processing, Preservation and Storage shall have the potentiality to get employment in various positions like production officer, quality officer, research and development executive, procurement officer, sales and marketing officer, production supervisor, production manager, quality manager etc., depending upon the level of qualification.

Program Structure:

The three-year B. Voc. course (full time) has a specific feature of multi point entry and multi point exit provision. After completion of one-year course, if any student desire to leave he/she will be awarded Diploma, subject to the condition of earning the required credit points. Similarly, after completing the second year he/she will be awarded Advance Diploma and once the candidate completes the third year, candidate will be awarded the Degree of Bachelor in Vocational Course (Food Processing, Preservation and Storage). If any student desire to take admission to some other university, at any other stage i.e., on completing 1st year, he/she may take admission to 2nd year in same branch. Similarly, on completing the 2nd year, one can take admission to 3rd year.

Program Outcomes

Vocational Education prepares the students for specific job roles in various sectors in food processing industry and professional organization. It trains the students for various technical and / or professional positions in food industry and also in Research & Development organizations for specific job roles. The program outcomes are the skills and knowledge which the students have at each exit level/at the time of graduation. These outcomes are generic and are common to all exit levels mentioned in the program structure.

- Students with vocational training can find work in several state and central government organizations, non-profit groups, and academic institutions and in private sectors as well.
- This program prepares students for specific types of occupations and frequently for direct entry into the market.
- After completion of this program students will have enough competences, to get benefit from market opportunities.

- This program would enable students to update their knowledge and professional skills for entering the work force executing income generating activities or occupying better positions
- At each exit level of this program, students will be able to
 - Apply knowledge of general education subjects and skill development subjects to the conceptualization of food processing technologies.
 - Designing and formulation of new food products, on the basis of consumer demands, development of methodology/technologies of food processing design, that meet solutions needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations.
 - Conduct and undertake investigations of problems including design of processing technology for various type of food, food analysis, food quality and safety aspects and interpretation of data in order to provide valid conclusions.
 - Create, select and apply appropriate processing technology/techniques, resources, modern processing tools in order to improve the quality, safety of the shelf life and processed food to keep it fresh.
 - Communicate effectively on minimal processing activity and value addition to the farmers/producers/grower at large, such as being able to comprehend and write effective reports, design documentation and make effective presentations.
 - Demonstrate understanding of the social, health, safety, legal and cultural issues and the consequent responsibilities relevant to food processing.
 - Understand and commit to professional ethics and responsibilities and norms/regulation for manufacturing of processed food and its effects on health.
 - Understand the impact of food processing technology solutions in a societal context and demonstrate technical know-how and understanding of food safety, quality for sustainable development.

Exit Options:

Bachelor of Vocational (B. Voc.) is launched under the scheme of University Grants Commission for skill development based on higher education leading to Bachelor of Vocational (B. Voc.) Degree with multiple exits as Diploma/Advanced Diploma under the

National Skill Qualification Framework (NSQF). The B. Voc. programme incorporates specific job roles and their National Occupational Standards along with broad based general education.

1. B. Voc. Programme has been designed as per National Skill Qualification Framework emphasizing on skill based education.
2. Levels of Award

The certification levels shall lead to

1. Certificate successful completion of the course at the end of first semester
2. Diploma after successful completion of the course at the end of first year
3. Advanced Diploma after successful completion of the course at the end of second year
4. B. Voc. Degree after successful completion of the course at the end of third year
in Food processing, preservation and storage.

Skills Acquired

1. Skills to be acquired after completion of 1st Year:

After successful completion of the 1st year, the student shall be able to perform the following skills.

- 1) Prepare a different product of fruits and vegetables
- 2) Knowledge about software: MS Word, MS Excel, MS Power Point, PageMaker and Typing (English & Marathi)
- 3) Prepare jam, jelly and marmalade
- 4) Prepare ketchup, candies
- 5) Prepare confectionery products
- 6) Students will be able to prepare cake, pastries
- 7) Students will be able to analysis chemical constituents of food
- 8) Students will be able to analysis microbial count
- 9) Students will be able to prepare different media and able to prepare culture media

- **Self-Employment and Employment Opportunities:** On successful completion of the course the candidates can either get employed, or become a self-employed / Entrepreneur in any one of the following fields

1. Production
2. Quality

3. Microbial
4. Can be start own layout like candy, ketchup, pickle, jam, jelly etc.
5. Confectionery products like cake, pastries, etc.

2.Skills to be acquired after completion of 2nd Year:

After successful completion of the 2nd year, the student shall be able to perform the following skills.

- 1) Students will be able to prepare bakery products
- 2) Students will be able to prepare milk and milk products
- 3) Students will be able to prepare spices and their byproducts
- 4) Students will be able to produce different fruits and vegetable based products like jam, jelly, ketchup, candy, pickles etc.
- 5) Students will be able to prepare meat and meat products
- 6) Students will be able to produce fish products
- 7) Students will be able to preserve meat, fish etc.

- **Self-Employment and Employment Opportunities:** On successful completion of the course the candidates can either get employed, or become a self-employed / Entrepreneur in any one of the following fields.

- 1) Bakery industries
- 2) Dairy industries
- 3) Meat processing industries
- 4) Fruits and vegetable industries
- 5) Pickles manufacturing industries
- 6) Dal mills
- 7) Oil processing and packing industries

Students are able to start their own bakery, sweet homes, milk collection centres, milk packing and chilling centres, milk and milk processing industries etc.

3.Skills to be acquired after completion of 3rd Year:

After successful completion of the 3rd year, the student shall be able to perform the following skills.

- 1) To get knowledge about food laws and regulation
- 2) Students will be able to produce different beverages
- 3) Students get idea about business management
- 4) Students will be able to start cold storage and warehouse

- 5) Students will be able to manage accounts and statics
 - 6) Students will be able to manage logistics
- **Self-Employment and Employment Opportunities:**On successful completion of the course the candidates can either get employed, or become a self-employed / Entrepreneur in any one of the followingfields.
 - 1) Alcohol production industries
 - 2) Beverage industries
 - 3) Soft drinks industries
 - 4) Audits helper
 - 5) Food legal advice business
 - 6) Students can be start their own business like beverage manufacturing units, legal advice office etc.

In the third year, sixth semester is totally devoted for industrial training. In this semester student will be deputed to various industries for three months. There, these students will be trained to operate various machines to give useful productions. Industrialists will train them, according to their needs. Hence after the completion of the internship period these students will be “Industry fit” to get employed.

Duration:

The Duration of the B.Voc. Course will be of Three Years.

- **B.Voc. Part I - Diploma in Food Processing, Preservation and Storage**
- **B.Voc. Part II - Advanced Diploma in Food Processing, Preservation and Storage**
- **B.Voc. Part III - Bachelor of Vocation in Food Processing, Preservation and Storage**

The final B.Voc. degree will be awarded only after successful completion of three years course.

The suggested credits for each of the years are as follows:

Awards		Normal Calendar Duration	Skill Component Credits	General Education Credits
Year 1	Diploma in Food Processing, Preservation and Storage	Two Semester	36	24
Year 2	Advanced Diploma in Food Processing, Preservation and Storage	Four Semester	36	24
Year 3	B.Voc. in Food Processing, Preservation and Storage	Six Semester	36	24
		Total	108	72

Note

General Education Component should not exceed 40% of the total curriculum.

Credits can be defined as the workload of a student in

1. Lectures
2. Practical's
3. Seminars
4. Private work in the Library/home
5. Examination
6. Industrial Training
7. Other assessment activities.

The following formula should be used for conversion of time into credit hours.

- One Credit would mean equivalent of 15 periods of 60 minutes each, for theory, workshops /labs and tutorials.
- For internship/field work, the credit weight age for equivalent hours shall be 50% of that for lectures/workshops.
- For self-learning, based on e-content or otherwise, the credit weight age for equivalent hours of study should be 50% or less of that for lectures/workshops.

Eligibility:

1. The eligibility condition for admission to B.Voc. Program shall be **10+2 or equivalent**, in any stream **from any recognized board or university**.
2. The candidate with 10+2 year or ITI course in any branch is eligible for the course.

3. The merit list will be prepared as per the directives issued by the government, by considering the marks of qualifying examination.

Pattern: Semester Pattern

Examination:

Scheme of examination:

- The semester examination will be conducted at the end of each term (both theory and practical examination)
- There are in all 10 papers per semester. Two theory and two practical papers for general education and 3 theories and 3 practical papers for skill education. Each paper will be of 75 marks each. Hence total marks of each semester will be of 750 marks.
- In the IIIrd.and Vth semester in addition to 10 papers mentioned above. Students will have to submit a project report on industrial training of one-month duration, they have undergone during the previous vacation. This project report will be accessed by the examiner appointed by university and will carry the weightage of 75 marks. Practical of these semester of skill education will carry the weightage of 50 marks each paper
- Scheme of examination for a theory paper.

Credits	Teaching Scheme	Examination Scheme			
		Theory Paper Hrs.	Continuous Assessment / Internal evaluation	End Semester Examination Marks	Total Marks
			Average of 2 Unit Test of 25 Marks Each		
03	04 Hrs.per week	2.50.Hrs.	25	50	75

➤ Scheme of exam for a practical paper for sem I, II & IV.

Credits	Teaching Scheme	Examination Scheme			
		Practical Paper Hrs.	Continuous Assessment/ Internal evaluation Marks	End Semester Examination Marks	Total Marks
03	03 hrs. per week per paper	3.00.Hrs.	25	50	75

➤ Scheme of exam for a practical paper for sem III & V.

Credits	Teaching Scheme	Examination Scheme			
		Practical Paper Hrs.	Continuous Assessment/ Internal Evaluation	End Semester Examination Marks	Total Marks
02	03 Hrs. per week	3.00.Hrs.	10	40	50

➤ Scheme of Examination for Project semi III & V.

Credits	Teaching Scheme	Examination Scheme			
		Industrial Training. Marks	Project Work Marks	Seminar Marks.	End Semester Examination Total Marks
03	Industrial Training of 01 Month	50	15	10	75

➤ Scheme of Examination for Project semVI.

Credits	Teaching Scheme	Examination Scheme			
		Industrial Training. Marks	Project Work Marks	Seminar Marks.	End Semester Examination Total Marks
30	Industrial Training of 03 Month	400	200	150	750

Question Paper Pattern
(Theory)

Q.1	Question		15 M
		OR	
Q.1	Question		15 M
Q.2	Question		15 M
		OR	
Q.2	Question		15 M
Q.3	Question		10 M
		OR	
Q.3	Question		10 M
Q.4	Question		10 M
		OR	
Q.4	Question		10 M

Question Paper Pattern (Practical) Semi I, II & IV

(Continuous Assessment = 25, End Sem. Exam = 50, Total Mark = 75)

Question	Mark
Experiment	35
Viva	10
Record Book	05
Total marks	50

Question Paper Pattern (Practical) Sem III& V

(Continuous Assessment = 10 End Sem. Exam = 40, Total Mark = 50)

Question	Mark
Experiment	25
Viva	10
Record Book	05
Total marks	40

Course Structure for 3 years (6 Semester)

SEMESTER - I							
Sr. No.	Course Number	Course Title	Credit	Hours	C.A/ Internal Evaluation	Theory	Total marks
General Education							
1	BVGE-1	Introduction to Computer Hardware	3	45	25	50	75
2	BVGE-2	Introduction to Computer Application	3	45	25	50	75
3	BVGE-3	Practical on "Introduction to Computer Hardware"	3	45	25	50	75
4	BVGE-4	Practical on "Introduction to Computer Application"	3	45	25	50	75
Skill Education							
5	FPPS-111	Principles of Food Processing	3	45	25	50	75
6	FPPS-112	Food Chemistry	3	45	25	50	75
7	FPPS-113	Fundamentals of Microbiology	3	45	25	50	75
8	FPPS-114	Practical on "Principles of Food Processing"	3	45	25	50	75
9	FPPS-115	Practical on "Food Chemistry"	3	45	25	50	75
10	FPPS-116	Practical on "Fundamentals of Microbiology"	3	45	25	50	75
Total			30	450	250	500	750
SEMESTER – II							
Sr. No.	Course Number	Course Title	Credit	Hours	C.A/ Internal Evaluation	Theory	Total marks
General Education							
1	BVGE-5	Computer Operating Skills	3	45	25	40	75
2	BVGE-6	Communication and Documentation Skills	3	45	25	40	75
3	BVGE-7	Practical on "Computer Operating Skills"	3	45	25	50	75
4	BVGE-8	Practical on "Communication and Documentation Skills"	3	45	25	50	75
Skill Education							
5	FPPS-121	Cereal Processing	3	45	25	40	75
6	FPPS-122	Confectionary Technology	3	45	25	40	75
7	FPPS-123	Introduction to Food Microbiology	3	45	25	40	75
8	FPPS-124	Practical on "Cereal Processing"	3	45	25	50	75
9	FPPS-125	Practical on "Confectionary Technology"	3	45	25	50	75
10	FPPS-126	Practical on "Introduction to Food Microbiology"	3	45	25	50	75
Total			30	450	250	500	750

Activity:-Deputation of the students for industrial training of one month during vacation

SEMESTER – III							
Sr. No.	Course Number	Course Title	Credit	Hours	C.A/ Internal Evaluation	Theory	Total marks
General Education							
1	BVGE-9	Environmental Science	3	45	25	50	75
2	BVGE-10	Soft Skills and Personality Development	3	45	25	50	75
3	BVGE-11	Practical on “Environmental Science”	3	45	25	50	75
4	BVGE-12	Practical on “Soft Skills and Personality Development”	3	45	25	50	75
Skill Education							
5	FPPS-231	Legumes and Oilseeds Technology	3	45	25	50	75
6	FPPS-232	Processing of Milk and Milk Products	3	45	25	50	75
7	FPPS-233	Processing of Spices and Plantation Crops	3	45	25	50	75
8	FPPS-234	Practical on Legumes and Oilseeds Technology	2	45	10	40	50
9	FPPS-235	Practical on Processing of Milk and Milk Products	2	45	10	40	50
10	FPPS-236	Practical on Processing of Spices and Plantation Crops	2	45	10	40	50
11	FPPS-237	Project report on the industrial training completed during vacation at the end of II sem	3	45	---	---	75
		Total	30	450	205	470	750
SEMESTER – IV							
Sr. No.	Course Number	Course Title	Credit	Hours	C.A/ Internal Evaluation	Theory	Total marks
General Education							
1	BVGE-13	Introduction to Entrepreneurship	3	45	25	50	75
2	BVGE-14	Principles of Marketing Management	3	45	25	50	75
3	BVGE-15	Practical on “Introduction to Entrepreneurship”	3	45	25	50	75
4	BVGE-16	Practical on “Principles of Marketing Management”	3	45	25	50	75
Skill Education							
5	FPPS-241	Wheat Milling and baking Technology	3	45	25	50	75

6	FPPS-242	Meat, Poultry and Fish Technology	3	45	25	50	75
7	FPPS-243	Fruit and Vegetable Processing	3	45	25	50	75
8	FPPS-244	Practical on“Wheat Milling and baking Technology”	3	45	25	50	75
9	FPPS-245	Practical on“Meat, Poultry and Fish Technology”	3	45	25	50	75
10	FPPS-246	Practical on“Fruit and Vegetable Processing”	3	45	25	50	75
		Total	30	450	250	500	750

Activity: -Deputation of the students for industrial training of one month during vacation

SEMESTER –V							
Sr. No.	Course Number	Course Title	Credit	Hours	C.A/ Internal Evaluation	Theory	Total marks
General Education							
1	BVGE-17	Introduction to business management and Industrial laws	3	45	25	50	75
2	BVGE-18	Introduction to Business Accounting	3	45	25	50	75
3	BVGE-19	Practical on“Introduction to business management and Industrial laws”	3	45	25	50	75
4	BVGE-20	Practical on “Introduction to Business Accounting”	3	45	25	50	75
Skill Education							
5	FPPS-351	Food laws and regulation	3	45	25	50	75
6	FPPS-352	Food storage and logistics management	3	45	25	50	75
7	FPPS-353	Beverage and Extrusion technology	3	45	25	50	75
8	FPPS-354	Practical on “Food laws and regulation”	2	45	10	40	50
9	FPPS-355	Practical on “Food storage and logistics management”	2	45	10	40	50
10	FPPS-356	Practical on “Beverage and Extrusion technology”	2	45	10	40	50
11	FPPS-357	Project report on the industrial training completed during vacation at the end of II sem	3	45	---	---	75
		Total	30	450	205	470	750

SEMESTER –VI

Course Number	Name of Subject	Credit	Hrs./ Duration	Marks	Total marks
FPPS-361	In-plant Training	30	3 Months	400	750
	Project work			200	
	Seminar			150	
	Total	30		750	750

Syllabus IIIrdYear
V th and VI th Semester
Effective from June 2020

V Semester General Education

COURSE NAME : B.VOC. IN FOOD PROCESSING, PRESERVATION AND STORAGE
SEMESTER : FIFTH
SUBJECT TITLE : INTRODUCTION TO BUSINESS MANAGEMENT AND INDUSTRIAL LAWS
CONTENTS : THEORY
SUBJECT CODE : BVGE-17
MARKS : 75 MARKS
TOTAL HRS : 45

Objectives: -

The core objective of this paper is to provide the knowledge about business management and industrial laws to the students

Course Outcomes: - After studying this paper the students will be able to

1. Understand the basics of business management
2. Understand the functions and role of business management
3. Practically understand the work culture of management

SR.No.	Topic name	Number of Hours	Marks
1	Unit-I:- Introduction to Business Management a) Meaning, Concept and Definitions of Business Management, b) Objective and characteristics of management c) Types of management d) Components of business management e) Importance of business management	15	20
2	Unit-II :- Function of Business Management a) Role of management in decision making b) Planning and forecasting c) Recruitment and staffing d) Motivation and controlling	12	20
3	Unit-III :- The Factories Act,1948 Introduction to the Factories Acts, 1948	9	20

	Provision of the Act regarding a) General duties of the manufacturer b) Health, Cleanliness and Hygiene in the factory premises c) Safety of the workers d) Provision regarding hazardous procedure e) Workers, welfare and working hours of the adults f) Employment of young persons		
4	Unit-IV:- The Minimum Wages Act, 1948 Introduction to the Minimum Wages Act, 1948, Provision regarding, a) Fixing of minimum rates of wages b) Minimum rates of wages c) Fixing hours for a normal working day d) Provisions of the minimum wages (Central) Rules, 1950 e) Workers unions.	9	15
	Total	45	75

Reference Book:

1. Koontz, O Donnell, Management, McGraw-Hill
2. Appaniah, Reddy, Essentials of Management, Himalaya Publishing House.
3. Prasad, L. M., Principles of management, Sultan Chand and Sons.
4. Srinivasan, Chunawalla, Management Principles and Practice, Himalaya Publishing House.
5. Tulsian, P.C., & Pandey, Vishal, Business Organization and Management, Pearson Education

COURSE NAME : B.VOC. IN FOOD PROCESSING, PRESERVATION AND STORAGE
SEMESTER : FIFTH
SUBJECT TITLE : INTRODUCTION TO BUSINESS ACCOUNTING
CONTENTS : THEORY
SUBJECT CODE : BVGE-18
MARKS : 75 MARKS
TOTAL HRS : 45

SR.No.	Topic name	Number of Hours	Marks
1	Unit 1 Introduction of Accountancy and Final Accounts a) Meaning and Objectives Accountancy b) Types and rules of debit and credit c) Introduction to Journal and Ledger d) Indian Accounting Standard	15	20
2	Unit 2 Final Accounts of Sole Trader a) Meaning and objectives of Final Account b) Trading and Profit and Loss Account c) Balance Sheet with Adjustment Entries d) Numerical Problems on Final A/c of Sole Trader	12	20
3	Unit 3 Introduction to Cost Accounting a) Meaning and Objectives of cost accounting b) Elements of cost and cost classification. c) Basic concepts of cost, cost unit and preparation of cost sheet d) Treatment of stocks: Opening stock, stock of work-in-progress, closing stock	9	20
4	Unit 4 Introduction to Management Accounting a) Meaning, Definition, Nature of Management Accounting b) Significance and Limitations of Management Accounting. c) Meaning, Advantages and Limitations of Ratio Analysis. d) Calculations of Ratios and their Interpretation - Current Ratio, Liquid Ratio, Stock Turnover Ratio, Debtor Turnover Ratio, Creditor's Turnover Ratio, Operating Ratio, Proprietary Ratio, Fixed Asset Turn Over Ratio, Debt Equity Ratio	9	15
	Total	45	75

Reference Book:

- Advanced Accountancy Jain, Narang Advanced Accountancy R.C. Shukla Cost
- Accounting- S.P. Jain and K. L. Narang Cost Accounting, Dr. S.N Maheshwari
- Management Accounting by Manmohan Goyal Management Accounting by Khan M.Y.
& Jain R. K.

COURSE NAME : B.VOC. IN FOOD PROCESSING, PRESERVATION AND STORAGE
SEMESTER : FIFTH
SUBJECT TITLE : PRACTICAL ONINTRODUCTION TO BUSINESS MANAGEMENT AND INDUSTRIAL LAWS
CONTENTS : PRACTICAL
SUBJECT CODE : BVGE-19
MARKS : 75 MARKS
TOTAL HRS : 45

Practical :

1. Visit to any local business and write a report on the business administration by the owner.
2. Collect case studies of effective business management practices
3. Take interview of business Owner/ Manager regarding their business management
4. Make SWOC analysis of business Management
5. Take interview of industrial employees regarding awareness of industrial laws.
6. Prepare own business plan or module.
7. Write an assignment on business management aspect.
8. Make a survey of the local industries and find business opportunities.
9. Prepare a study report on ideal business management.
10. Write up a detailed report about any outstanding business unit irrespective of area of its functioning.
11. Alternatively, the students will prepare a project report on a topic after proper research and industry practice. The project report (Approx 5000 words) will be evaluated as above.

Duration of the practical

- 1) One day in a week, preferably Saturday or Sunday (min. 7 hours)
- 2) 12 weeks in a semester * 7 hours of each practical day= 84 hours/semester.

Weightage of marks – 50 for practical + 20 viva voce + 5 attendance = 75 marks

Reference Book:

1. Koontz, O Donnell, Management, McGraw-Hill
2. Appaniah, Reddy, Essentials of Management, Himalaya Publishing House.
3. Prasad, L. M., Principles of management, Sultan Chand and Sons.
4. Srinivasan, Chunawalla, Management Principles and Practice, Himalaya Publishing House.
5. Tulsian, P.C., & Pandey, Vishal, Business Organization and Management, Pearson Education

COURSE NAME : B.VOC. IN FOOD PROCESSING, PRESERVATION AND STORAGE
SEMESTER : FIFTH
SUBJECT TITLE : PRACTICAL ON INTRODUCTION TO BUSINESS ACCOUNTING
CONTENTS : PRACTICAL
SUBJECT CODE : BVGE-20
MARKS : 75 MARKS
TOTAL HRS : 45

Practical:

- 1) Write up a summary report on financial accounting and reporting methods.
- 2) Write up a summary report on management accountancy and it's reporting.
- 3) Visit to a production unit and prepare it's different cost sheets.
- 4) Visit to a Chartered Accountant office and conduct an interview.
- 5) Visit to a tax consultancy agency at local place and conduct an interview.
- 6) Write up different financial statements of visited units.
- 7) Comparative study of two or more units with regard to accounting methods.
- 8) Write up a report on computer based accounting.
- 9) Prepare a project report of a manufacturing unit focused of different accounts.
- 10) Assignments on accountancy.

Duration of the practical

- 1) One day in a week, preferably Saturday or Sunday (min. 7 hours)
- 2) 12 weeks in a semester * 7 hours of each practical day= 84 hours/semester.

Weightage of marks – 50 for practical + 20 viva voce + 5 attendance = 75 marks

Books:

1. Advanced Accounts- M.C. Shukla, T.S. Grewal, S.C. Gupta, S. Chand Publication- New Delhi.
2. Financial Accounting for B.com- CA (Dr.) P.C. Tulsian S.C. Gupta, S. Chand Publication- New Delhi.
3. Financial Accounting- Dr.JintendraAhirrao
4. Basic Accounting- RajniSofat and Preeti Hiro, PHI Learning Pvt. Ltd.- New Delhi.

Skill Education

COURSE NAME : B.VOC. IN FOOD PROCESSING, PRESERVATION AND STORAGE
SEMESTER : FIFTH
SUBJECT TITLE : FOOD LAWS AND REGULATIONS
CONTENTS : THEORY
SUBJECT CODE : FPPS- 351
MARKS : 75 MARKS
TOTAL HRS : 45

Learning Objective:

To acquaint with food quality parameters and control systems, food standards, regulations, specifications.

Learning Outcomes:

- To describe the food quality management systems.
- To explain the national and international food laws and regulations

Contents: -

SR. No.	Topic name	Number of Hours	Marks
1	UNIT-I Introduction and Need of enforcing to Food Laws.	5	15
2	UNIT-II Mandatory food laws; The food safety and standards Act 2006, Establishment of the authority, composition of authoring functions of chief executive officer, scientific part, and General principles to be followed in administration of act, General provisions as to articles of food, special responsibility as to safety of food, analysis of food offences of penalties.	10	20
3	UNIT-III Edible Oils Packaging (Regulation) Order, 1998, Environment (Protection) Act, 1986, Fruit Products Order, 1955 (FPO), Meat Food Products Order, 1973 (MFPO), Milk and Milk Product Order, 1992 (MMPO), Solvent Extracted Oil, De-oiled Meal and Edible Flour (Control) Order, 1967.	10	15

4	UNIT-IV Standards of Weights and Measures Act, 1976, The Essential Commodities Act, 1955, The Export (Quality Control and Inspection) Act, 1963, The Insecticides Act, 1968, Vegetables Oil Products(Control) Order, 1998, Prevention of Food Adulteration Act & Rules (PFA Act), 1954 , Agmark Standards (AGMARK), Codex Alimentarius Standards, BIS Standards and Specifications, Consumer Protection Act, 1986	15	15
5	UNIT-V Recommended international code of hygiene for various products. HACCP, ISO etc.	5	10
	Total	45	75

Reference Books

1. Guide to Quality Management Systems for Food Industries. 1995. Early R.
2. Quality Control in Food Industry. Vol. I, II. AVI Publ, 1973- Krammer A & Twigg B.A.
3. Food Safety and Standards Act, 2006 ommercials Law Publications, New Delhi
4. Food Safety and Standards Act, 2006 FSSAI, New Delhi
5. The Food Safety and Standards Act, 2006 (Along with Rules & Regulations) Commercials Law Publications, New Delhi
6. TAXMANN's Guide to Food Safety and Standards Act 2006 Taxmann's Publication
7. Food Safety and Standards Act, Rules & Regulations. Vidhi Jain Akalank Kumar Jain

COURSE NAME : B.VOC. IN FOOD PROCESSING, PRESERVATION AND STORAGE
SEMESTER : FIFTH
SUBJECT TITLE : FOOD STORAGE AND LOGISTICS MANAGEMENT
CONTENTS : THEORY
SUBJECT CODE : FPPS- 352
MARKS : 75 MARKS
TOTAL HRS : 45

Learning Objective

- Understand the physical, chemical and biological processes involved in conversion of raw materials into finished food products, including production, packaging, and storage/shelf life.
- Understand the principles and processes that make food safe for consumption.
- Know the modes of spoilage and deterioration of foods, and methods for their control.

Learning Outcomes:

- To disseminate the knowledge of storage technique to increase the shelf life of food and logistics Management

Contents:-

SR. No.	Topic name	Number of Hours	Marks
	UNIT-I		
1	Importance of scientific storage systems, post-harvest physiology of semi- perishables and perishables, climacteric and non-climacteric fruits, respiration, ripening, changes during ripening, ethylene bio-synthesis	5	15
	UNIT-II		
2	Damages Direct damages, indirect damages, causes of spoilage in storage (moisture, temperature, humidity, respiration loss, heat of respiration, sprouting), destructive agents (rodents, birds, insects, etc.), sources of infestation and control	10	20
	UNIT-III		
3	Storage of perishables Cold storage, controlled and modified atmospheric storage, hypobaric storage, evaporative cooling storage, conditions for storage of perishable products, control of temperature and relative humidity inside storage	10	15

4	UNIT-IV Concept of Logistics: Introduction, Objectives, Concept of Logistics, Objectives of logistics, Types of logistics, Concept of Logistics Management, Evolution of Logistics, Role of Logistics in an Economy, Difference between Logistics and Supply Chain Management, Logistics and Competitive Advantage, Logistics Mix, Logistics in Organized Retail in India	15	15
5	UNIT-V Inventory Management: Introduction, Objectives, Concept of Inventory, Types of Inventory, Concept of Inventory Management, Importance of inventory management, Objectives of inventory management, Different Types of Inventory Costs, Inventory Performance Measures, Inventory turnover ratio (ITR), Framework of performance indicators, Inventory Planning Measures, Economic order quantity (EOQ), Reorder point, Safety stock, Supplier-managed inventory.	5	10
Total		45	75

Reference Books

1. P.H. Pandey. 2014. Principles and Practices of Agricultural Structures and Environmental Control. Kalyani Publishers, Ludhiana. Myer Kutz. 2007.
2. Handbook of Farm, Dairy, and Food Machinery. William Andrew, Inc., Norwich, NY, USA. A.M. Michael and T.P. Ojha. 2004.
3. Principal of Agricultural Engineering, Vol. I. Jain Brothers, New Delhi. L.W. Newbaver and H.B. Walker. 2003.
4. Farm Buildings Design. Prentice-Hall Inc., New Jersey, USA. Jayas D.S., White N.D.G., Muir, W.E. 1994.
5. Stored Grain Ecosystems. Marcel Dekker, New York. J. Whitaker. 2002.
6. Agricultural Buildings and Structures. Reston Publishing Home, Reston, Virginia, USA. G. Boumans. 1985.
7. Grain Handling and Storage. Elsevier Science Publishers, Amsterdam, The Netherlands. C.W. Hall. 1980.
8. Drying and Storage of Agricultural Crops. The AVI Publishing Company, Inc., Westport, Connecticut, USA. Donald B. Brooker, F.W. Bakker-Arkema, Carl W. Hall. 1974. Drying and Storage of Grains and Oilseeds. The AVI Publishing Company, Inc., Westport, Connecticut, USA.

COURSE NAME : B.VOC. IN FOOD PROCESSING, PRESERVATION AND STORAGE
SEMESTER : FIFTH
SUBJECT TITLE : BEVERAGE AND EXTRUSION TECHNOLOGY
CONTENTS : THEORY
SUBJECT CODE : FPPS 353
MARKS : 75 MARKS
TOTAL HRS : 45

Learning Objective

In this the students will be exposed to the knowledge of beverage types and manufacturing process involved in different beverage manufacturing industries.

Contents:-

SR.No.	Topic name	Number of Hours	Marks
1	Unit-I Extrusion: definition, introduction to extruders, principles and types, Uses of extruders in the food industry, Single screw extruder: principle of working, net flow, factors affecting extrusion process, Twin screw extruder: counter rotating and co-rotating twin screw extruder	15	15
2	Unit-II Chemical and nutritional changes in food during extrusion, Classification of Breakfast cereals: Raw materials, process and quality testing of vermicelli, spaghetti, pasta and macaroni products. Texturized vegetable protein: Definition, processing techniques, and foods Ready to eat breakfast cereals by extrusion cooking.	12	15
3	Unit-III History, importance of beverages and status of beverage industry, Processing of beverages, Packaged drinking water, juice based beverages, Synthetic, still, carbonated, low-calorie and dry beverages, isotonic and sports drinks, dairy based beverage , alcoholic beverages, fruit beverages, speciality beverages, tea, coffee, cocoa, spices, plant extracts, etc.; FSSAI specifications for beverages,	5	15
4	Unit-IV Ingredients, manufacturing and packaging processes and equipment for different beverages; Water treatment and	8	15

	quality of process water Sweeteners, colorants, acidulants, clouding and clarifying and flavouring agents for beverages.		
5	Unit-V Carbon dioxide and carbonation Quality tests and control in beverages; Miscellaneous beverages Coconut water, sweet toddy, sugar cane juice, coconut milk, flavoured syrups	5	15
	Total	45	75

Reference Books:

1. Advances in Food Extrusion Technology Maskan and Altan CRC Press, 2000.
2. Extrusion of Foods Harper JM CRC Press, 1981
3. Food Process Engineering and Technology Berk Z. Academic Press, 2013
4. Preservation of Fruit and Vegetable Products Girdharilal, Siddappa, Tondon Indian Council of Agricultural Research, Publications 1986
5. Manufacturing of Food and Beverages NIIR Board NIIR Publication, New Delhi
6. Handbook of Alcoholic Beverages Alan Buglass John Wiley and Sons, 2011
7. Beverages Pare Jean Company's Coming Publishing Limited, 1997

COURSE NAME : B.VOC. IN FOOD PROCESSING, PRESERVATION AND STORAGE
SEMESTER : FIFTH
SUBJECT TITLE : PRACTICAL ON FOOD LAWS AND REGULATIONS
CONTENTS : PRACTICAL
SUBJECT CODE : FPPS-354
MARKS : 50 MARKS
TOTAL HRS : 45

List of the Practical :-

1. Licensing and registration process
2. Examination of Cereals as per specifications
3. Examination of ghee for various standards MMPO and BIS
4. Examination of honey for PFA and BIS standards
5. Examination of spices for Agmark and BIS standards
6. Examination of milk and milk products for BIS and milk products order standards
7. Examination of fruit jam of two to three different companies for FPO specification
8. Examination of ketchup of two to three different companies for FPO specification
9. Examination of squash of two to three different industries for FPO specification
10. Examination of fruits and vegetable products as per regulations
11. Visit to BIS laboratory
12. Visit to quality control laboratory and food processing industry
13. Visit to FDA department

Reference Books

1. Guide to Quality Management Systems for Food Industries. 1995. Early R.
2. Quality Control in Food Industry. Vol. I, II. AVI Publ, 1973- Krammer A & Twigg B.A.
3. Food Safety and Standards Act, 2006 ommercials Law Publications, New Delhi
4. Food Safety and Standards Act, 2006 FSSAI, New Delhi

5. The Food Safety and Standards Act, 2006 (Along with Rules & Regulations)
Commercials Law Publications, New Delhi
6. TAXMANN's Guide to Food Safety and Standards Act 2006 Taxmann's Publication
7. Food Safety and Standards Act, Rules & Regulations. Vidhi Jain Akalank Kumar Jain

COURSE NAME : B.VOC. IN FOOD PROCESSING, PRESERVATION AND STORAGE
SEMESTER : FIFTH
SUBJECT TITLE : PRACTICAL ON FOOD STORAGE AND LOGISTICS MANAGEMENT
CONTENTS : PRACTICAL
SUBJECT CODE : FPPS-355
MARKS : 50 MARKS
TOTAL HRS : 45

List of the Practical's: -

1. Visits to traditional storage structures
2. Layout design, sizing, capacity and drawing of traditional storage structures
3. Visits to FCI godowns
4. Measurement of respiration of fruits/grains in the laboratory
5. Design of grain godowns for particular capacity and commodity
6. Drawing and layout of grain godown for particular commodity and capacity
7. Design of cold storage for particular capacity and commodity
8. Visits to cold storage
9. Design of CA storage for particular capacity and commodity
10. Visits to evaporative cooling system for storage

Reference Books

1. P.H. Pandey. 2014. Principles and Practices of Agricultural Structures and Environmental Control. Kalyani Publishers, Ludhiana. Myer Kutz. 2007.
2. Handbook of Farm, Dairy, and Food Machinery. William Andrew, Inc., Norwich, NY, USA. A.M. Michael and T.P. Ojha. 2004.
3. Principal of Agricultural Engineering, Vol. I. Jain Brothers, New Delhi. L.W. Newbaver and H.B. Walker. 2003.
4. Farm Buildings Design. Prentice-Hall Inc., New Jersey, USA. Jayas D.S., White N.D.G., Muir, W.E. 1994.
5. Stored Grain Ecosystems. Marcel Dekker, New York. J. Whitaker. 2002.

6. Agricultural Buildings and Structures. Reston Publishing Home, Reston, Virginia, USA. G. Boumans. 1985.
7. Grain Handling and Storage. Elsevier Science Publishers, Amsterdam, The Netherlands. C.W. Hall. 1980.
8. Drying and Storage of Agricultural Crops. The AVI Publishing Company, Inc., Westport, Connecticut, USA. Donald B. Brooker, F.W. Bakker-Arkema, Carl W. Hall. 1974.
Drying and Storage of Grains and Oilseeds. The AVI Publishing Company, Inc., Westport, Connecticut, USA.

COURSE NAME : B.VOC. IN FOOD PROCESSING, PRESERVATION AND STORAGE
SEMESTER : FIFTH
SUBJECT TITLE : PRACTICAL ON BEVERAGE AND EXTRUSION TECHNOLOGY
CONTENTS : PRACTICAL
SUBJECT CODE : FPPS-356
MARKS : 50 MARKS
TOTAL HRS : 45

List of the Practical's: -

1. Physical properties of extruded foods (expansion, density, water absorption index, etc)
2. Preparation of protein isolate and concentrate
3. Preparation of noodles/ vermicelli /spaghetti.
4. Preparation of weaning foods.
5. Studies on properties of texturized vegetable protein.
6. Determination of oil absorption capacity of extruded products.
7. Determination of water absorption capacity of extruded product.
8. Studies on Textural Profile Analysis of extruded products.
9. Quality analysis of water from different sources and treatments
10. Measurement of pH and acidity of beverage.
11. Measurement of CO₂ content of carbonated beverage.
12. Determination of caffeine in beverages.
13. Preparation of Instant Tea/coffee.
14. Preparation of fruits squash /RTS beverage.
15. Preparation of carbonated beverage.
16. Specifications for different fruit beverages.
17. Preparation of artificial lemon juice.
18. Preparation of beverage using artificial sweetener.
19. Visit to carbonation unit and extrusion plant.

Reference Books:

1. Advances in Food Extrusion Technology Maskan and Altan CRC Press, 2000.
2. Extrusion of Foods Harper JM CRC Press, 1981

3. Food Process Engineering and Technology Berk Z. Academic Press, 2013
4. Preservation of Fruit and Vegetable Products Girdharilal, Siddappa, Tondon Indian Council of Agricultural Research, Publications 1986
5. Manufacturing of Food and Beverages NIIR Board NIIR Publication, New Delhi
6. Handbook of Alcoholic Beverages Alan Buglass John Wiley and Sons, 2011
7. Beverages Pare Jean Company's Coming Publishing Limited, 1997

COURSE NAME : B.VOC. IN FOOD PROCESSING, PRESERVATION AND STORAGE

SEMESTER : FIFTH

SUBJECT TITLE : PROJECT REPORT ON THE INDUSTRIAL TRAINING COMPLETED DURING VACATION AT THE END OF IV SEM

CONTENTS : SUMMER VACATIONAL TRAINING

SUBJECT CODE : FPPS-357

MARKS : 75 MARKS

TOTAL HRS : 45

OBJECTIVES: -

- a) To expose the students to Industrial environment, which cannot be simulated in the university
- b) To familiarize the students with various Materials, Machines, Processes, Products and their applications along with relevant aspects of shop management
- c) To make the students understand the psychology of the workers, and approach to problems along with the practices following at factory
- d) To make the students understand the scope, functions and job responsibility-ties in various department of an organization
- e) Exposure to various aspects of entrepreneurship during the programme period

Scheme of Examination for Project semi V.

Credits	Teaching Scheme	Examination Scheme			
		Industrial Training. Marks	Project Work Marks	Seminar Marks.	End Semester Examination Total Marks
03	Industrial Training of 01 Month	50	15	10	75

COURSE NAME: B.VOC. IN FOOD PROCESSING, PRESERVATION AND STORAGE

SEMESTER : SIX

SUBJECT TITLE : PROJECT REPORT ON THE INDUSTRIAL TRAINING COMPLETED DURING VACATION AT THE END OF VI SEM

CONTENTS : INDUSTRIAL TRAINING

SUBJECT CODE : FPPS-361

MARKS : 75 MARKS

TOTAL HRS : 45

Technology and globalization are ushering an era of unprecedented change. To augment this, the need and pressure for change and innovation is inevitable. In this training, students will exposure to different departments and activities of the industry and submit the reports to the university. Such in-plant trainings will provide an industrial exposure to the students as well as to develop their career in the high tech industrial requirements. In-Plant training is meant to correlate theory and actual practices in the industries. It is expected that sense of running an industry may be articulated in a right way through this type of industrial attachment mode. To enrich the practical knowledge of the students, In-plant Training shall be mandatory in the last semester for a period of up to 14 weeks. In-plant trainings will provide an industrial exposure to the students as well as to develop their career in the high tech industrial requirements. In-plant training is meant to correlate theory and actual practices in the industries with the following

OBJECTIVES: -

- a) To expose the students to Industrial environment, which cannot be simulated in the university
- b) To familiarize the students with various Materials, Machines, Processes, Products and their applications along with relevant aspects of shop management
- c) To make the students understand the psychology of the workers, and approach to problems along with the practices following at factory
- d) To make the students understand the scope, functions and job responsibility-ties in various department of an organization
- e) Exposure to various aspects of entrepreneurship during the programme period

- f) To acquire enterprise management capabilities

In-plant Training Procedure

In-plant Training should be arranged in VI Semester of Degree programme. In-plant Training Cell of the College should be established to coordinate and monitor the In-plant Training Programme. In-plant Training Cell should be collaborated with Training and Placement Cell of the College. A student shall be sent to various Food Industries approved by Academic Council of University.

SEMESTER –VI					
Sr. No.	Course Number	Course Title	Duration	Marks	Credit
1	FPPS-361	In-plant Training	3 Months	400	16
		Project work		200	08
		Seminar		150	06
		Total		750	30