



स्वामी रामानंद तीर्थ मराठवाडा विद्यापीठ

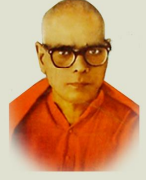
नांदेड- ४३१६०६ (महाराष्ट्र)

SWAMI RAMANAND TEERTH MARATHWADA UNIVERSITY

NANDED-431606, MAHARASHTRA STATE, INDIA.

स्वामी रामानंद तीर्थ
मराठवाडा विद्यापीठ, नांदेड.

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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परिपत्रक

सर्व संबंधितांना परिपत्रकान्वये कळविण्यात येते की, प्रस्तुत विद्यापीठाच्या मा. विद्यापरिषद बैठकीतील विषय क्र. ०२/४२-२०१८, दि. १९ नोव्हेंबर २०१८ अन्वये १. प्रस्तुत विद्यापीठाशी संलग्नित असलेल्या महाराष्ट्र महाविद्यालय, निलंगा येथे राबविण्यात येणारा (B.Voc. Food Processing, Preservation and Storage) आणि (B.Voc. Web Printing Technology) या विषयाचा प्रथम वर्ष अभ्यासक्रमास शैक्षणिक वर्ष २०१८-१९ करिता तात्पुरती मान्यता सर्वानुमते देण्यात आली आहे.

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

“ज्ञानतीर्थ” परिसर)(
विष्णुपूरी, नांदेड.)(
जा.क्र.शैक्षणिक/०१/बि.व्होक.अभ्या./२११७)(
दिनांक : ०४/१२/२०१८)(
स्वा/—
उपकुलसचिव
शैक्षणिक (अभ्यासमंडळ) विभाग

प्रत माहिती व पुढील कार्यवाहीस्तव :

- १) संचालक, परीक्षा व मूल्यमापन मंडळ, प्रस्तुत विद्यापीठ
- २) कुलसचिव, (निवडणूक व सभा कक्ष) यांचे कार्यालय, प्रस्तुत विद्यापीठ.
- ३) उपकुलसचिव, पदव्युत्तर विभाग व पात्रता विभाग, प्रस्तुत विद्यापीठ.
- ४) सिस्टीम एक्सपर्ट, प्रस्तुत विद्यापीठ. (सदरील परिपत्रक व अभ्यासक्रम विद्यापीठाच्या संकेतस्थळावर प्रसारित करावे.)

Maharashtra Mahavidyalaya, Nilanga,

Dist: Latur.

Affiliated to

Swami Ramanand Teerth Marathwada University, Nanded

B.Vocational (Food Processing, Preservation and Storage)



Syllabus Ist Year

Effective from the academic year 2018-19

Curriculum for Bachelor of Vocational (B. Voc.) in Food Processing, Preservation and Storage

The Bachelor in Vocational program, **Food Processing, Preservation and Storage** is divided into six semester 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). Each semester has 10 papers out of which five papers are dedicated for theory and five are dedicated for practical. Skill Development Components of Food Processing Technology courses 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 implant training, seminar and project etc.

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 (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 industries and professional organization. It trains the students about the trade or about technician or professional position in R & D 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 consumers 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 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 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 process food and its effects on health.
- Understand the impact of food processing technologies 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
 - a. The certification levels shall lead to Diploma/Advanced Diploma/B. Voc. Degree in Food processing, preservation and storage.

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 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

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. 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 weightage for equivalent hours shall be 50% of that for lectures/workshops.
- For self-learning, based on e-content or otherwise, the credit weightage 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 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 theory 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.

Scheme of examination for a paper

Credits	Teaching Scheme	Examination Scheme			
		Theory /Practical Paper Hrs.	Average of Unit Test (2 Unit Test of 25 Marks Each)	End Semester Total Marks	Total Marks
03	04Hrs. per week	2.50 / 3.00 Hrs.	25	50	75

Question Paper Pattern
(Theory)

Q.1	Multiple Choice Question (Ten)	10 M
Q.2	Solve any Five (2 marks each)	10 M
Q.3	Solve (5 marks each)	10 M
	A	
	B	
		OR
	C	
	D	
Q.4	Solve (5 marks each)	10 M
	A	
	B	
		OR
	C	
	D	
Q.5	Write notes on any two. (5 marks each)	10 M
	A	
	B	
	C	
	D	

Question Paper Pattern
(Practical)

Q 1	Experiment	35
Q 2	Oral	10
Q 3	Record book	05

Course Structure for 3 years (6 Semester)

SEMESTER - I					
Sr. No.	Course Number	Course Title	Credit	Hours	Marks
General Education					
1	BVGE-1	Introduction to Computer Hardware	3	45	75
2	BVGE-2	Introduction to Computer Application	3	45	75
3	BVGE-3	Lab-Introduction to Computer Hardware	3	45	75
4	BVGE-4	Lab- Introduction to Computer Application	3	45	75
Skill Education					
5	FPPS-111	Principles of Food Processing	3	45	75
6	FPPS-112	Food Chemistry	3	45	75
7	FPPS-113	Fundamentals of Microbiology	3	45	75
8	FPPS-114	Lab- Principles of Food Processing	3	45	75
9	FPPS-115	Lab- Food chemistry	3	45	75
10	FPPS-116	Lab- Fundamentals of Microbiology	3	45	75
		Total	30	450	750
SEMESTER – II					
Sr. No.	Course Number	Course Title	Credit	Hours	Marks
General Education					
1	BVGE-5	Computer Operating Skills	3	45	75
2	BVGE-6	Communication and Documentation Skills	3	45	75
3	BVGE-7	Lab- Computer Operating Skills	3	45	75
4	BVGE-8	Lab- Communication and Documentation Skills	3	45	75
Skill Education					
5	FPPS- 121	Cereal Processing	3	45	75
6	FPPS- 122	Confectionary Technology	3	45	75
7	FPPS- 123	Introduction to Food Microbiology	3	45	75
8	FPPS- 124	Lab-Cereal Processing	3	45	75
9	FPPS- 125	Lab-Confectionary Technology	3	45	75
10	FPPS- 126	Lab-Introduction to Food Microbiology	3	45	75
		Total	30	450	750

SEMESTER – III					
Sr. No.	Course Number	Course Title	Credit	Hours	Marks
General Education					
1	BVGE-9	General Education 1	3	45	75
2	BVGE-10	General Education 2	3	45	75
3	BVGE-11	Lab- paper General Education 1	3	45	75
4	BVGE-12	Lab- paper General Education 2	3	45	75
Skill Education					
5	FPPS-231	Introduction to Food Packaging	3	45	75
6	FPPS-232	Dairy Technology	3	45	75
7	FPPS-233	Food Hygiene and Sanitation	3	45	75
8	FPPS-234	Lab-Introduction to Food Packaging	3	45	75
9	FPPS-235	Lab-Dairy Technology	3	45	75
10	FPPS-236	Lab- Food Hygiene and Sanitation	3	45	75
		Total	30	450	750
SEMESTER – IV					
Sr. No.	Course Number	Course Title	Credit	Hours	Marks
General Education					
1	BVGE-13	General Education 3	3	45	75
2	BVGE-14	General Education 4	3	45	75
3	BVGE-15	Lab-I paper General Education 3	3	45	75
4	BVGE-16	Lab-I paper General Education 4	3	45	75
Skill Education					
5	FPPS-241	Meat, Poultry and Fish Technology	3	45	75
6	FPPS-242	Wheat Milling and baking Technology	3	45	75
7	FPPS-243	Fruit and Vegetable Processing	3	45	75
8	FPPS-244	Lab -Meat, Poultry and Fish Technology	3	45	75
9	FPPS-245	Lab -Wheat Milling and baking Technology	3	45	75
10	FPPS-246	Lab -Fruit and Vegetable Processing	3	45	75
		Total	30	450	750

SEMESTER – V					
Sr. No.	Course Number	Course Title	Credit	Theory hours	Practical hours
General Education					
1	BVGE-17	General Education5	3	45	75
2	BVGE-18	General Education 6	3	45	75
3	BVGE-19	Lab-paper General Education 5	3	45	75
4	BVGE-20	Lab-paper General Education 6	3	45	75
Skill Education					
5	FPPS-351	Beverage Technology	3	45	75
6	FPPS-352	Extrusion Technology	3	45	75
7	FPPS-353	Food Storage and Logistic Management	3	45	75
8	FPPS-354	Lab-Beverage Technology	3	45	75
9	FPPS-355	Lab-Extrusion Technology	3	45	75
10	FPPS-356	Lab-Food Storage and Logistic Management	3	45	75
		Total	30	450	750
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

Semester I General Education

COURSE NAME : B.VOC. IN FOOD PROCESSING, PRESERVATION AND STORAGE
SEMESTER : FIRST
SUBJECT TITLE : INTRODUCTION TO COMPUTER HARDWARE
CONTENTS : THEORY
SUBJECT CODE : BVGE1
MARKS : 75 MARKS
TOTAL HRS : 45

Objectives:

- 1) To make aware the students with the knowledge and use of computer hardware
- 2) To introduce the basic principle of hardware and operational aspects of computers

hardware.

Contents:

SR. No.	Topic name	Number of Hours	Marks
1	Unit 1 Definition of Computer, Features, Parts of Computer System: (Input, Output, Storage unit, ALU, CU, CPU), Hardware, Software, Data, Information processing cycle. Computer Generations, Computer languages, Compilers, Interpreters. Memory Devices (RAM, ROM & its types) Input Devices: Keyboard and Mouse: The Standard Keyboard Layout, Using Mouse, Other Data Input Devices: Pen, Touch Screens, Bar Code Readers, OCR Output Devices: CRT Monitors, Printers: Dot Matrix, Ink Jet, Laser Printers.	12	25
2	Unit 2 Number Systems (Binary, Octal, Hexadecimal), Computer Arithmetic ('+', '-', '*', '/), Conversions (Octal to Binary, Binary to Octal, Binary to Hexadecimal, Hexadecimal to Binary). Computer codes: BCD, EBCDIC, ASCII, Unicode.	10	25
3	Unit 3 Data Processing: Factors Affecting Processing Speed, Bus, Cache Memory. RISC Processors, Ports: Standard Computer Ports, Serial and Parallel Ports Specialized Expansion Ports: SCSI, USB, FireWire, MIDI, Expansion Slots and Boards, PC Cards, Plug and Play.	12	15

	Secondary Storage Devices: Magnetic Tapes, Magnetic Disks, Optical Disks (Basic Principles of operation, Types, Advantages, Limitations)		
4	Unit 4 Software: System and Application Software Operating System: Purpose of Operating Systems, Types of Operating System, Popular Operating System, Managing Hardware: Processing Interrupts, Working with Device Drivers, Utility Software, Backup Utilities, and Screen Savers.	11	10
	Total	45	75

Reference Books:-

1. Computer Today- Basandara
2. Introduction to Computer and Data Processing- Pawar (Wiley-Dreamtech) 12
3. Computer Fundamentals- P.K. Sinha
4. Fundamental of computers- V. Rajaraman.
5. Introduction to Computers- Norton Peter,
6. Foundations of Computing-1st ed., BPB Publications - P. K. Sinha &PritiSinha.
7. Introduction to Computers- 4th ed., PHI- V. Raja Raman.
8. Introduction to Computers- Vikas Publishing House- Alex Leon & Mathews Leon.
9. Complete Computer Kit- Wiley Dreamtech, Delhi- Vikas Gupta,

COURSE NAME : B.VOC. IN FOOD PROCESSING, PRESERVATION AND STORAGE
SEMESTER : FIRST
SUBJECT TITLE : INTRODUCTION TO COMPUTER APPLICATION
CONTENTS : THEORY
SUBJECT CODE : BVGE2
MARKS : 75 MARKS
TOTAL HRS : 45

Learning Objectives:

To acquaint the students with the knowledge and use of computers and to introduce the basic principles, organization and operational aspects of computers.

Contents:-

Sr. No	Topic name	Number of Hours	Marks
1	<p>Unit 1: MS-WORD -File Management: Opening, creating and saving a document, locating files, copying contents in some different file(s), protecting files, giving password protection for a file -Page Set up: Setting margins, tab setting, ruler, indenting - Editing a document: Entering text, Cut, copy, paste using tool- bars -Formatting a document: Using different fonts, changing font size and colour, changing the appearance through bold/ italic/ underlined, highlighting a text, changing case, using subscript and superscript, using different underline methods. -Aligning of text in a document, justification of document, Inserting bullets and numbering , Formatting paragraph, inserting page breaks and column breaks, Use of headers, footers: Inserting footnote, end note, use of comments, Inserting date, time, special symbols, importing graphic images, drawing tool. -Tables and Borders: Creating a table, formatting cells, use of different border styles, shading in tables, merging of cells, partition of cells, inserting and deleting a row in at able, print preview, zoom, page set up, printing options. Using Find, Replace options Using Tools like: Spell checker, help, use of macros, mail merge, thesaurus word content and statistics, printing envelops and labels. -Using shapes and drawing toolbar, Working with more than one window in MS Word, How to change the version</p>	18	30

	of the document from one window OS to another , Conversion between different text editors, software and MS word		
2	<p>Unit 2 : MS-EXCEL- Starting excel, open worksheet, enter, edit, data, formulas to calculate values, format data, create chart, printing chart, save worksheet, switching from another spread sheet</p> <p>-Menu commands: Create, format charts, organize, manage data, solving problem by analyzing data, and exchange with other applications. Programming with MS Excel, getting information while working.</p> <p>-Work books: Managing workbooks (create, open, close, save), working in work books, selecting the cells, choosing commands, data entry techniques, formula creation and links, controlling calculations, working with arrays. Editing a worksheet, copying, moving cells, pasting, inserting, deletion cells, rows, columns, find and replace text, numbers of cells, formatting worksheet.</p> <p>-Creating a chart: Working with chart types, changing data in chart, formatting a chart, use chart to analyze data Using a list to organize data, sorting and filtering data in list</p> <p>- Retrieve data with MS – query: Create a pivot table, customizing a pivot table. Statistical analysis of data</p> <p>-Customize MS-Excel: How to change view of worksheet, outlining a worksheet, customize workspace, using templates to create default workbooks, protecting work book Exchange data with other application: linking and embedding, embedding Objects, linking to other applications, import, export document.</p>	17	30
3	<p>Unit 3 : MS PowerPoint: Creating own design, formatting objects on a slide, Use of Slide Master to control the design & formatting of a presentation, Use of Image, audio, video in the presentation, Slide show setup, slide transition, use of animation, Use of narration in presentation, Print setup & Printing handouts of a presentation.</p>	10	15
	Total	45	75

Reference Books

1. Fundamentals of Computers - E. Balagurusamy (Author) Publisher: McGraw Hill Education (India) Private Limited.
2. Ms Office 2007 in a Nutshell -S. Saxena (Author) Publisher: S. Chand (G/L) & Company Ltd.
3. Computer Fundamentals Paperback – P. K. Sinha (Author) Publisher: BPP

COURSE NAME : B.VOC. IN FOOD PROCESSING, PRESERVATION AND STORAGE
SEMESTER : FIRST
SUBJECT TITLE : LAB-INTRODUCTION TO COMPUTER HARDWARE
CONTENTS : PRACTICAL
SUBJECT CODE : BVGE3
MARKS : 75 MARKS
TOTAL HRS : 45

List of the Practical's

1. Study of different parts of CPU
2. Study of SMPS
3. Identification and study of input devices
4. Identification of output devices
5. Identification of and study different parts of motherboard
6. Identification and study of different types of processors
7. Identification and study of different types of RAM
8. Study of different types of networking topology of computers
9. LAN networking
10. Setting of IP Address
11. Sharing of hard disks /printers /scanners etc.
12. Installation of Operating systems
13. Installation of MS Office
14. Installation of antivirus

Reference Books:-

- 1) Computer Today- Basandara
- 2) Introduction to Computer and Data Processing- Pawar (Wiley-Dreamtech)12
- 3) Computer Fundamentals- P.K. Sinha
- 4) Fundamental of computers- V. Rajaraman

COURSE NAME : B.VOC. IN FOOD PROCESSING, PRESERVATION AND STORAGE
SEMESTER : FIRST
SUBJECT TITLE : LAB- INTRODUCTION TO COMPUTER APPLICATIONCONTENTS : PRACTICAL
SUBJECT CODE : BVGE4
MARKS : 75 MARKS
TOTAL HRS : 45

List of the Practical's

1. To Study Microsoft Office word
2. Use of Microsoft word for creating reports
3. Formatting of reports.
4. To Study Microsoft Excel
5. Applications of MS Excel to create payroll Sheets
6. Formatting of sheets
7. Use of Microsoft Excel for using functions
8. To Study Microsoft Power Point
9. To Study and create power point presentation
10. To Study Web and Networking
11. Visit to Industry and case study problems on computer application
12. Any other practical based on the syllabus decided by the college

Reference Books

1. Fundamentals of Computers - E. Balagurusamy (Author) Publisher: McGraw Hill Education (India) Private Limited
2. Ms Office 2007 in a Nutshell - S. Saxena (Author) Publisher: S.Chand (G/L) & Company Ltd
3. Computer Fundamentals Paperback – P. K. Sinha (Author) Publisher: BPP

Skill Education

COURSE NAME : B.VOC. IN FOOD PROCESSING, PRESERVATION AND STORAGE
SEMESTER : FIRST
SUBJECT TITLE : PRINCIPLES OF FOOD PROCESSING
CONTENTS : THEORY
SUBJECT CODE : FPPS-111
MARKS : 75 MARKS
TOTAL HRS : 45

Learning Objective:

To acquaint the students with fundamental principles and various techniques of food preservation.

Learning Outcome:

- Student will be able to understand different food preservation techniques, process.
- Student will be able to extend shelf life of different food product by using the various methods of food preservation.

Contents:-

SR. No.	Topic name	Number of Hours	Marks
1	Unit-I Introduction, sources of food, scope and benefit of industrial food preservation, perishable, non-perishable food, causes of food spoilage. Preservation by salt and sugar – Principle, method, equipment and effect on food quality	15	15
2	Unit-II Thermal processing methods of preservation – Principle and equipments: Canning, blanching, pasteurization, sterilization, evaporation, etc. Need and principle of concentration, methods of concentration, Thermal concentration, freeze concentration, membrane concentration, changes in food quality by concentration	12	10
3	Unit-III	5	10

	Food preservation by use of low temperature – Principle, equipments and effect on quality, Chilling, cold storage, freezing etc.		
4	Unit-IV Preservation by drying dehydration and concentration – Principle, Methods, equipment and effect on quality : Difference, importance of drying and dehydration over other methods of drying and dehydration, equipments and machineries, physical and chemical changes in food during drying and dehydration.	7	15
5	Unit-V Preservation by radiation, chemicals and preservatives: Definition, methods of irradiation, direct and indirect effect, measurement of radiation dose, dose distribution, effect on microorganisms. Deterioration of irradiated foods- physical, chemical and biological, effects on quality of foods. Preservation of foods by chemicals: antioxidants, mold inhibitors, antibodies, acidulants etc. Preservation by fermentation- Definition, advantages, disadvantages, types, equipments	5	15
6	Unit-VI Recent methods in preservation: Pulsed electric field processing, high pressure processing, Processing using ultrasound, dielectric, Ohmic and infrared heating. Theory, equipments and effect on food quality.	11	10
	Total	45	75

Reference Books:

1. Food Processing and Preservation- Subbulaksmi G., and Udipi S.
2. Principles of Food Science- Vol. II- G. Borgstron, Mc. Millan Co. Ltd. London.
3. Principles of food preservation Part I& II- Owen R. Fenemma.
4. Food Science- Potter, CBS publishers.

5. Technology of Food Preservation - N.W. Desroiser and N.W. Desrosier
6. Introduction to Food Science & Technology- G.P. Stewart & M.A. Amerine
7. Food Processing Operations Vol. III -M.A. Joslyn and J.J. Heild.
8. Preservation of Fruits and Vegetables- GiridhariLal, G.S. Siddappa, and G.L.Tondon

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

SEMESTER : FIRST

SUBJECT TITLE : FOOD CHEMISTRY

CONTENTS : THEORY

SUBJECT CODE : FPPS- 112

MARKS : 75 MARKS

TOTAL HRS : 45

Learning Objectives:

1. To learn and understand the chemistry with respect to roles and functionality of constituents of the food.
2. To learn the importance of chemistry in food processing and preservation and storage.

Learning Outcome:

1. To learn and understand the chemistry of various Food micronutrient used in foods along with their role and properties

Contents:-

SR. No.	Topic name	Number of Hours	Marks
1.	Unit-I Nature scope and development of food chemistry, role of food chemist. Moisture in foods, Role and type of water in foods, Functional properties of water, role of water in food spoilage and food safety, Water activity and sorption isotherm.	5	10
2.	Unit-II Carbohydrates Classification and nomenclature of carbohydrates, Functional characteristics of different carbohydrates (sugar-water relationship, sweetness), Structure and function of carbohydrates: monosaccharide, oligosaccharide and polysaccharide, Browning Reactions .Enzymatic and non-enzymatic browning reaction, Millard--action, caramelization, method to control non enzymatic reaction	10	15

3.	<p>Unit-III Protein in Food</p> <p>Role of proteins in foods, Classification and structure of amino acids, essential amino acids, classification and structural organization of proteins-primary structure, secondary structure and tertiary structure, Physicochemical properties- ionic properties, protein denaturation, gelation and hydrolysis, Protein content and composition in various foods- cereal grains, legumes and oilseed proteins, proteins of meat, milk, egg and fish,</p>	10	12
4.	<p>Unit-IV Lipids in food</p> <p>Role and use of lipids /fat, occurrence, fat group classification, Physicochemical aspects of fatty acids in natural foods, hydrolysis, reversion ,polymorphism and its application, Chemical aspects of lipolysis, auto oxidation, antioxidants, Technology of fat and oil processing- Refining, Hydrogenations, Inter esterification</p>	10	13
5.	<p>Unit-V Vitamin</p> <p>Definition of vitamin, type of vitamin, Water soluble (Vit B-1, B-2, B-3, C) and Fat soluble (Vit A, D, E, K)- their structure and functions.</p>	5	10
6.	<p>Unit-VI Enzyme</p> <p>General properties of enzymes, enzyme action, classification and nomenclature of enzymes, coenzymes enzyme inhibition, isozymes, Carbohydrates (Amylases, celluloses, pectinases, vertases) Proteases, Lipases and oxidases in food processing, Enzyme applications in food industry</p>	5	15
	Total	45	75

Reference Books:

1. Principles of Biochemistry, 4th edition- David L, Nelson and M.M. Cox (2005) Maxmillan/Worth publishers/W.H. Freeman and Company- Lehninger

2. Biochemistry, 2nd edition- R.H. Garrett and C.M. Grisham (1999). Saunders college publishing N. Y. and Sons N.Y.
3. Fundamentals of Biochemistry, 2nd edition- Donald Voet, Judith G, Voet and Charlotte W. Pratt (2006), John Wiley and Sons, INC.
4. Biochemistry (2004) - J. David Rawn, Panima, Publishing Corporation, New Delhi.

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

SEMESTER : FIRST

SUBJECT TITLE : FUNDAMENTALS OF MICROBIOLOGY

CONTENTS : THEORY

SUBJECT CODE : FPPS-113

MARKS : 75 MARKS

TOTAL HRS : 45

Learning Objectives:

To learn and understand the different food microorganisms and known different techniques used to detect microorganisms

Learning Outcome:

1. Student will enable to know the basics and importance of microbiology in food science

Contents:-

SR. No.	Topic name	Number of Hours	Marks
1	Unit I: History and Scope of Microbiology, Important contributions of various scientists, Scope of microbiology, Introduction to microorganisms - bacteria, algae, fungi, protozoa and viruses. Importance of bacteria ,yeast , and moulds in foods	10	15
2	Unit II : General Characteristics of Microorganisms, Structure of Prokaryotic and Eukaryotic cell, Morphology of bacteria: Size, Shape and Arrangements, Cytology of bacteria - structure & functions of cell wall, cell membrane, capsules & slime layer, flagella, Pilli, nuclear material, mesosome, ribosome and spores.	10	25
3	Unit III Growth curve : physical and chemical factors influencing growth and destruction microorganisms	10	15
4	Unit IV: Control of Microorganisms: Definitions of Sterilization,	10	15

	Disinfection, Antiseptic, Germicide, Microbiostasis, Antisepsis, Sanitization, Mode of action, application and advantages of: Physical agents, Chemical Agents , , Gaseous Agents		
5	Preservation of microbial cultures	5	5
	Total	45	75

Reference Books:

1. Industrial Microbiology- CBS Publisher-Prescott Dunn,
2. Microbiology fundamentals and applications- Edition, 6. Publisher, Agrobios, 2003. Purohit S.S.
3. Food Microbiology- A.S. M. press Washington-Doyle, Beuchat and Montville
4. Food Microbiology-Frazier W.C. and Westhoff D.C.1988.
5. Microbiology-Chapman& Hall, New York.
- 6.Essentials of the Microbiology of Foods -Mossel, D.A.A., Corry, E. L., Struij k, C. B., and Baird, R. M. 1995. John Wiley & Sons. New York, NY

COURSE NAME : B.VOC. IN FOOD PROCESSING, PRESERVATION AND STORAGE
SEMESTER : FIRST
SUBJECT TITLE : LAB-PRINCIPLES OF FOOD PROCESSING
CONTENTS : PRACTICAL
SUBJECT CODE : FPPS-114
MARKS : 75 MARKS
TOTAL HRS : 45

List of the Practical's

1. Demonstration of various machineries used in food processing.
2. Demonstration on effect of blanching on quality of foods.
3. Demonstration on canning and bottling of fruits and vegetables.
4. Production and Preservation of food by high concentration of sugar i.e. preparation of jam/jelly
5. Production and Preservation of food by using salt e.g. Pickle
6. Production and Preservation of food by using acidulants i.e. pickling by acid, vinegar or acetic acid
7. Production and Preservation of food by using chemicals.
8. Production and Preservation of coconut shreds using humectants.
9. Drying of fruit slices in cabinet drier
10. Demonstration on drying of green leafy vegetables
11. Osmotic dehydration of foods e.g. candy
12. Production and Preservation of milk by condensation/concentration.
13. Demonstration of preserving foods under cold v/s freezing process.
14. Production and Preservation of food by fermentation (Sauerkraut, idli, tempeh, curd, dhokla etc.)
15. Visit to any food processing industry/unit.

Reference Books:

1. Food Processing and Preservation- Subbulaksmi G., and Udipi S.
2. Principles of Food Science, Vol. II- G. Borgstron, Mc. Millan Co. Ltd. London.
3. Principles of food preservation Part I& II- Owen R. Fenemma.
4. Food Science- Potter, CBS publishers.
5. Technology of Food Preservation - N.W. Desroiser and N.W. Desrosier

COURSE NAME : B.VOC. IN FOOD PROCESSING, PRESERVATION AND STORAGE
SEMESTER : FIRST
SUBJECT TITLE : LAB. - FOOD CHEMISTRY
CONTENTS : PRACTICAL
SUBJECT CODE : FPPS-115
MARKS : 75 MARKS
TOTAL HRS : 45

List of the Practical's

1. To Study Safety measures in laboratory
2. To Study preparation of various Solutions
3. Determination of moisture in food sample.
4. Determination of protein in food sample.
5. Determination of ash/minerals in food sample.
6. Determination of crude fat in food sample.
7. Determination of acidity of food sample/beverages
8. Determination of pH of food samples
9. Determination of total, non-reducing and reducing sugars.
10. Determination of vitamin C content in food sample.
11. Determination of pigments in food sample.
12. Estimation of calcium.
13. Estimation of iron.
14. Estimation of zinc in food products.

Reference Books:

1. Lehninger: Principles of Biochemistry, 4th edition- David L, Nelson and M.M. Cox (2005) Maxmillan/Worth publishers/W.H. Freeman and Company.
2. Biochemistry, 2nd edition- R.H. Garrett and C.M. Grisham (1999). Saunders College publishing, N. Y. Sons, N.Y.
3. Fundamentals of Biochemistry, 2nded- Donald Voet, Judith G, Voet and Charlotte W. Pratt (2006), John Wiley and Sons, INC.
4. Biochemistry (2004) - J. David Rawn, Panima, Publishing Corporation, New Delhi.

COURSE NAME : B.VOC. IN FOOD PROCESSING, PRESERVATION AND STORAGE
SEMESTER : FIRST
SUBJECT TITLE : LAB- FUNDAMENTALS OF MICROBIOLOGY
CONTENTS : PRACTICAL
SUBJECT CODE : FPPS-116
MARKS : 75 MARKS
TOTAL HRS : 45

List of the Practical's

1. Basic rules in microbiology laboratory.
2. Introduction to microbiology laboratory.
3. Study of Microscope.
4. Cleaning and Sterilization of Glass Wares.
5. Preparation of Nutrient agar Media.
6. To preparation serial dilutions.
7. Techniques of Inoculation.
8. Staining Methods.
9. Pure Culture Techniques (Streak Plate/Pour)
10. Introduction to identification procedures.
11. Growth Characteristics of Bacteria: Determination of microbial numbers, direct plate count, generation time.
12. Factors Influencing growth, pH, temperature, growth curve for bacteria.
13. Methods of microbial culture preservation (Bacteria and yeast).

Reference Books:

1. Industrial Microbiology- CBS Publisher-Prescott Dunn,
2. Microbiology fundamentals and applications- Edition, 6; Publisher, Agro-bios, 2003.
Purohit S.S.
3. Food Microbiology- A.S. M. press Washington-Doyle, Beuchat and Montville
4. Food Microbiology-Frazier W.C. and Westhoff D.C.1988.
5. Microbiology-Chapman& Hall, New York.
- 6.Essentials of the Microbiology of Foods -Mossel, D.A.A., Corry, E. L., Struij k, C. B.,
and Baird, R. M. 1995. John Wiley & Sons. New York, NY

II Semester

General Education

COURSE NAME : B.VOC. IN FOOD PROCESSING, PRESERVATION AND STORAGE
SEMESTER : SECOND
SUBJECT TITLE : COMPUTER OPERATING SKILLS
CONTENTS : THEORY
SUBJECT CODE : BVGE-5
MARKS : 75 MARKS
TOTAL HRS : 45

Learning Objective

This subject helps to understand the basics of computer operating skills

Objective

Student will learn about

1. the exchange of information through email
2. Modes of transmission
3. Different operating systems
4. E-commerce

Contents:-

SR. No.	Topic name	Number of Hours	Marks
1.	UNIT I Basic elements of a communication system, Data transmission modes, Data Transmission speed, Data transmission media, Digital and Analog transmission, Network topologies, Network Types (LAN, WAN and MAN), OSI & TCP/IP Model, Internet: Network, Client and Servers, Host & Terminals, TCP/IP, World Wide Web, Hypertext, Uniform Resource Locator, Web Browsers, IP Address, Domain Name, Internet Services Providers, Internet Security, Internet Requirements, Web Search Engine, Net Surfing, Internet Services, Intranet	15	20
2.	UNIT II Operating System concepts, different types of Operating systems, structure of operating system, DOS/UNIX/LINUX commands, working with Windows, Windows 2007.	10	15
3.	UNIT III E-mail & Internet: 1. Introduction 2. E-mail Account & Its Functions 3. Search Engine 4. Surfing WebPages 5. Basics of Social Networking Site	10	20

4.	UNIT IV E-Commerce Introduction: E-commerce as Business need, E-com Types, Advantages, Disadvantages, e-Commerce Architecture, Internet Payment Systems - Characteristics - 4C Payment Methods - SET Protocol for Credit Card Payment - E-Cash, E- Check - Overview of Smart Card E-Commerce security - Need of security - Encryption: Public Private & Hybrid - Digital Signature - Authentication	10	20
5.	Total	45	75

Reference Books

1. Fundamentals of Computers - E. Balagurusamy (Author) Publisher: McGraw Hill Education (India) Private Limited
2. Ms Office 2007 in a Nutshell - S. Saxena (Author) Publisher: S.Chand (G/L) & Company Ltd
3. Computer Fundamentals Paperback – by P. K. Sinha (Author) Publisher: BPP

COURSE NAME : B.VOC. IN FOOD PROCESSING, PRESERVATION AND STORAGE
SEMESTER : SECOND
SUBJECT TITLE : COMMUNICATION AND DOCUMENTATION SKILLS
CONTENTS : THEORY
SUBJECT CODE : BVGE-6
MARKS : 75 MARKS
TOTAL HRS : 45

Learning Objective

To enrich the students with skills to write to communicate and articulate in English (verbal as well as writing) and to acquaint the students with the knowledge and use of computers and to introduce the basic principles, organization and operational aspects of computers.

Contents:-

SR. No.	Topic name	Number of Hours	Marks
1.	UNIT I Introduction to Communication & Grammar : Consonant & Vowel Sounds, Indianism, Syllable & Syllable Stress, Determiners, Articles, Tense & Time, Preposition, Prepositional Phrases, Subject-Verb Agreement, Active – Passive Voice, Intonation & Modulation, Conjunctions	15	15
2.	UNIT II Formal Writing Skills: Composition Writing: Business Letters (Functions of a Business Letter, Layout of a Business Letter, Salient Features of a Business Letter, Kinds of Business Letter, Application Writing)	15	15
3.	UNIT III Conversation Skills: Nature of Conversation, Purpose of Conversation, Guidelines for Effective Conversation Skills, Proverbs used in Everyday Conversation with their Meanings/Explanations	15	15
4.	UNIT IV Documentation Skills: Introduction to Documentation: Meaning, Purpose, Need.	15	15
5.	UNIT V A short introduction to Computers, digitalized era, global connection via net, Drafting of Text, Excel, E Mails, Making Presentations, MS Word	15	15
	Total	45	75

Reference Books:

1. High School English Grammar and Composition - Wren & Martin, Publisher - Churchill Livingstone
2. Anthology of English Language and Communication Skills - Sharma S R, Jacob, Mark Publications
3. Language and Communication Skills - Shastri, Rameshchandra, ABD Publications
4. A Course in Academic Writing - Renu Gupta, Orient Blackswan Publications.

COURSE NAME : B.VOC. IN FOOD PROCESSING, PRESERVATION AND STORAGE
SEMESTER : SECOND
SUBJECT TITLE : LAB- COMPUTER OPERATING SKILLS
CONTENTS : PRACTICAL
SUBJECT CODE : BVGE-7
MARKS : 75 MARKS
TOTAL HRS : 45

List of the Practical's

Internet and its Applications

1. Log-in to internet
2. Navigation for information seeking on internet
3. Browsing and down loading of information from internet
4. Sending and receiving e-mail
5. Creating a message
6. Creating an address book
7. Attaching a file with e-mail message receiving a message deleting a message

Practical

8. Introduction to Windows
9. What is an operating system and basics of Windows?

Practical

The User Interface

- 10 Using Mouse and Moving Icons on the screen
- 11 The My Computer Icon
- 12 The Recycle Bin
- 13 Status Bar, Start and Menu & Menu-selection
- 14 Running an Application
- 15 Windows Explorer Viewing of File, Folders and Directories Creating and Renaming of files and folder, opening and closing of different W

Practical

Windows Setting Control Panels

- 16 Wall paper and Screen Savers
- 17 Setting the date and Sound

18 Concept of menu Using Help

Practical

Advanced Windows

19. Using right Button of the Mouse
20. Creating Short cuts
21. Basics of Window Setup
22. Notepad
23. Window Accessories

Reference Books

1. Fundamentals of Computers - E. Balagurusamy (Author) Publisher: McGraw Hill Education (India) Private Limited
2. Ms Office 2007 in a Nutshell - S. Saxena (Author) Publisher: S.Chand (G/L) & Company Ltd
3. Computer Fundamentals Paperback – by P. K. Sinha (Author) Publisher: BPP

COURSE NAME : B.VOC. IN FOOD PROCESSING, PRESERVATION AND STORAGE
SEMESTER : SECOND
SUBJECT TITLE : LAB-COMMUNICATION AND DOCUMENTATION SKILLS
CONTENTS : PRACTICAL
SUBJECT CODE : BVGE-8
MARKS : 75 MARKS
TOTAL HRS : 45

List of the Practical's

1. Verbal & Non Verbal Communication
2. Verbal Communication - Extempore, Just a Minute, Declamation, Dialogue, Monologue
3. Non verbal Communication - Guess the Mime, Dumb Charades, Formal & Informal Writing, Facial
4. Expressions, Dressing & Clothing
5. Oral Communication - Day to today talk, formal talk, informal talk, conversation
6. Body Language
7. Right body postures, Eye Contact, Pet Fiddles, how to walk, talk and present oneself.
8. Group Discussion Skills(Meaning, Characteristic, Do's & Don'ts, Relevance, Moderating a group
9. Discussion
10. Presentation Skills - Confidence, Effective Delivery of ideas, Convincing the audience, basic courtesies
11. Public Speaking - Oration, Debates
12. English Movie Sessions
13. Documentation Skills
14. Basics of Computers, usage of short cut keys, taking out print outs, page set ups.
15. Making of Power point Presentation
16. E- Mail (Subject line, salutation, subscription, how to mark cc, drafting, sending of mails, reverts,
17. forwarding of mails, attaching pictures and documents, attaching ppts
18. Differentiation between hardware and software and practical usage of both.
19. Diagrammatic representation of pie-charts, tabular presentation of data/info, Etc

20. Basic use of MS Excel/Spread Sheets

Reference Books:

1. High School English Grammar and Composition - Wren & Martin, Publisher - Churchill Livingstone
2. Anthology of English Language and Communication Skills - Sharma S R, Jacob, Mark Publications
3. Language and Communication Skills - Shastri, Rameshchandra, ABD Publications
4. A Course in Academic Writing - Renu Gupta, Orient Blackswan Publications.

Skill Education

COURSE NAME : B.VOC. IN FOOD PROCESSING, PRESERVATION AND STORAGE
SEMESTER : SECOND
SUBJECT TITLE : CEREAL PROCESSING
CONTENTS : THEORY
SUBJECT CODE : FPPS-121
MARKS : 75 MARKS
TOTAL HRS : 45

Learning Objective

To acquaint the students with the knowledge and processing of cereal grains like Rice, Wheat, Sorghum, Bajra etc.

Learning outcome:-

Student will get acquainted with knowledge and processing, preservation and storage of various cereal grains and their products.

Contents:-

SR. No.	Topic name	Number of Hours	Marks
1	UNIT-I Present status and future prospects of cereals and millets; Morphology: Physicochemical properties; chemical composition and nutritive value	5	15
2	UNIT-II Rice: Paddy processing and rice milling: conventional milling, modern milling, milling operations, milling machines, milling efficiency, by products of rice milling. Quality characteristics influencing final milled products. Parboiling: rice bran stabilization and its methods; Aging of rice; Enrichment – need, methods; processed foods from rice – breakfast cereals, flakes, puffing, canning and instant rice.	10	20
3	UNIT-III Wheat: break system, purification system and reduction	10	15

	system; extraction rate and its effect on flour composition; Quality characteristics of flour and their suitability for baking. Corn: Corn milling – dry and wet milling, starch and gluten separation, milling fractions and modified starches. Barley: Malting and milling		
4	UNIT-IV Sorghum: milling, Malting, Pearling and industrial utilization Millets: Importance of Millet, composition, processing of millets for food uses, major and minor millets Products and By product of cereal	10	15
5	UNIT-V Millets: infant foods from cereals and millets, breakfast cereal foods – flaked, puffed, expanded, extruded and shredded products, etc	5	10
	Total	45	75

Reference Books

1. Technology of cereals - Kent
2. Hand Book of cereal science and technology- O.R. Fennema, Markus Karel
3. PHT of cereals, pulses, oilseeds- A. Chakrawarthy
4. Utilization of Rice- Luh.

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

SEMESTER : SECOND

SUBJECT TITLE : CONFECTIONARY TECHNOLOGY

CONTENTS : THEORY

SUBJECT CODE : FPPS-122

MARKS : 75 MARKS

TOTAL HRS : 45

Learning Objective

- To provide the students with the knowledge of various confectionary products with their formulations.

Learning outcome:-

- Students will be able to perform different confectionery products like, candies, fruit toffee, chakki, petha, toffee etc.
- Students will get knowledge of sugar and allied industries.

Contents:-

SR. No.	Topic name	Number of Hours	Marks
1	Unit I History, Traditional confectionary goods, Types of confectionary, classification of confectionery products Raw Materials/ ingredients-Sugar, Sugar qualities, Physical, Chemical, Optical properties. Sugar grinding, Dextrose, Fructose, Lactose, caramel, maltose, Honey, sorbitol, xylitol, Iso-malt, soy maltose, Poly-dextrose, Mannitol.	5	10
2	Unit II Whipping, Release agent, thickeners, Acidulents, Milk and Milk Products, Flavours for confectionery, emulsifiers and other additives, Starch derivatives, colours used in confectionary. Production of glucose syrup, Acid hydrolysis, enzyme hydrolysis,	10	15
3	Cocoa Processing: Cocoa bean, processing, roasting, Fermentation, Production of Cocoa butter Cocoa powder, its quality. Chocolate Processing: Ingredients, Mixing, Refining,	10	15

	Conching, Tempering, Molding, Cooling, Coating, Fat bloom.		
4	Unit IV High Boiled Sweets: Introduction, Composition, Properties of high boiled sweets, preparation of high boiled sweets, Traditional, batch and continuous Method of preparation, Different types of higher boiled sweets, Recipes. Caramel: Definition, Composition, Factors affecting quality of caramel, caramel Manufacture process, batch type, continuous types, checking of faults in caramel,	10	10
5	Unit V Toffee: Definition, Composition, types of toffee Ingredient and their role. Batch and Continuous method of toffee Fondant: Fudge/Creamy: ingredients, Methods, Productivity Lozenges: Definition recipe, Method of Manufacture, Compositions, factors affecting quality, Industrial production, checklist of faults and remedy	5	10
6	Unit VI Tablets: Definitions, recipe, composition, wet granulation, Slugging, Manufacture of Tablet, and Checklist of tablet faults. Marshmallow and. Nougat: Definition, composition, recipe, and method of manufacture. Nougat	5	10
	Total	45	75

Reference Books;

1. Sugar Confectionary and Chocolate Manufacture - R. Less and E.B. Jackson
2. Industrial Chocolate Manufactory and Use- S.T. Beekelt
3. Chocolate, Cocoa& Confectionary Sci. & Tech. - Bernared W. Minifie
4. Basic Baking- S.C. Dubey

COURSE NAME : B.VOC. IN FOOD PROCESSING, PRESERVATION AND STORAGE
SEMESTER : SECOND
SUBJECT TITLE : INTRODUCTION TO FOOD MICROBIOLOGY
CONTENTS : THEORY
SUBJECT CODE : FPPS 123
MARKS : 75 MARKS
TOTAL HRS : 45

Learning Objective

To acquaint with different groups of micro-organisms associated with food, their activities, destruction and detection in food.

Learning outcomes:-

Student will get acquainted with different groups of micro-organisms associated with food and their activities in food and food products during processing, preservation and storage.

Contents:-

SR. No.	Topic name	Number of Hours	Marks
1	UNIT I: Introduction of microbiology, History and significance of food microbiology. Classification of microbes, Structure of microbes, Metabolism of microbes.	5	15
2	UNIT II : Environmental microbiology: microbiology of air and water	10	15
3	UNIT III : Food contamination and public health: food poisoning	10	15
4	UNIT IV: Food microbiology and spoilage of fruits and vegetables, milk and milk products, cereals and cereal products. Industrial microbiology: Industrial application of microbes	10	15
5	UNIT V: Thermal inactivation of microbes: pasteurization, sterilization etc. concept of TDT, F, Z and D values. Factors affecting heat resistance. Antimicrobial agents: mechanism and action	10	15
	Total	45	75

Reference Books:

1. Food microbiology by V. Ramesh, MJP publishing.
2. Food microbiology by W.C. Frazier, Ist Edition by Mcgraw Hill Pub. Co. New York.
3. Modern Food Microbiology, J.M. Jay. CBS publisher.

COURSE NAME : B.VOC. IN FOOD PROCESSING, PRESERVATION AND STORAGE
SEMESTER : SECOND
SUBJECT TITLE : CEREAL PROCESSING
CONTENTS : PRACTICAL
SUBJECT CODE : FPPS-124
MARKS : 75 MARKS
TOTAL HRS : 45

List of the Practical's:-

1. Determination of physical properties of cereal grains
2. Determination of chemical properties of cereal grains
3. Determination of Ash content of cereal grains
4. Determination of moisture content of cereal grains
5. Determination of crude protein content of cereals
6. Determination of fat content of cereal grain
7. Studies on cooking quality of cereals;
8. Preparation of malt;
9. Value added products from cereals and millets;
10. Production of modified starch;
11. Preparation of different cereal products(Puffed rice)
12. Preparation of different rice products (Idli)
13. Visit to milling industry

Reference Books

5. Technology of cereals - Kent
6. Hand Book of cereal science and technology- O.R. Fennema, Markus Karel
7. PHT of cereals, pulses, oilseeds- A. Chakrawarthy
8. Utilization of Rice- Luh.

COURSE NAME : B.VOC. IN FOOD PROCESSING, PRESERVATION AND STORAGE
SEMESTER : SECOND
SUBJECT TITLE : LAB-CONFECTIONARY TECHNOLOGY
CONTENTS : PRACTICAL
SUBJECT CODE : FPPS-125
MARKS : 75 MARKS
TOTAL HRS : 45

List of the Practical's

1. Production of invert sugar
2. Preparation of High boiled sweets;
3. Preparation of Toffee
4. Preparation of Groundnut Chikki
5. Preparation of decorative cake;
6. Preparation of Chocolate;
7. Preparation of Traditional ; Indian Confection;
8. Preparation of shrikhandwadi
9. Preparation of milk chocolate
10. ;Preparation ;f fruit toffee
11. Preparation of flour based confectionery
12. Preparation of milk cake;
13. Preparation of petha
14. ;Preparation of fruit candy
15. Preparation of rasgulla
16. Visit to Confectionary Industry

Reference Books;

1. Sugar Confectionary and Chocolate Manufacture - R. Less and E.B. Jackson
2. Industrial Chocolate Manufactory and Use- S.T. Beekelt
3. Chocolate, Cocoa & Confectionary Sci. & Tech. - Bernared W. Minifie
Basic Baking- S.C. Dubey

COURSE NAME : B.VOC. IN FOOD PROCESSING, PRESERVATION AND STORAGE
SEMESTER : SECOND
SUBJECT TITLE : LAB- INTRODUCTION TO FOOD MICROBIOLOGY
CONTENTS : PRACTICAL
SUBJECT CODE : FPPS 126
MARKS : 75 MARKS
TOTAL HRS : 45

List of the Practical's

1. An introduction to microbiology, aseptic technique and safety.
2. Preparation of culture media.
3. To sterilize the media and equipment.
4. To prepare serial dilutions.
5. Plating techniques
6. Culturing the bacteria on a solid media by using serial dilution method and determining the number of viable cells in the culture (standard plate count).
7. Introduction to microscopy and to study cell morphology with simple staining.
8. To study cell morphology and cell arrangement with negative stain.
9. To stain bacteria with gram stain.
10. To stain bacterial cells by wet-mount technique to check the mobility (flagellin) in bacterial cell.
11. To stain bacterial cells with malachite green stain to check the presence of endospore.
12. Isolation of mold from foods.
13. Microbial examination of cereal and cereal products
14. Microbial examination of fruits and vegetable products
15. Microbial examination of milk and milk products

Reference Books:

4. Food microbiology - V. Ramesh, MJP publishing.
5. Food microbiology - W.C. Frazier, Ist Edition by Mcgraw Hill Pub. Co. New York.
6. Modern Food Microbiology- J.M. Jay. CBS publisher.

**Maharashtra Mahavidyalaya, Nilanga,
Dist: Latur.**

Affiliated to

Swami Ramanand Teerth Marathwada University, Nanded

B.Vocational (Web Printing Technology)



Syllabus Ist Year

Effective from the academic year 2018-19

TITLE OF THE PROGRAMME
BACHELOR OF VOCATION IN WEB PRINTING TECHNOLOGY

Introduction:

Printing Technology has wide application in print media and communication, publications, security printing, printing for packaging etc. Digital printing is also emerging technology in the current field of printing technology. It involves knowledge and several technical skills of various printing process, material science, graphic design and editing, printing machineries, print finishing etc.

Employment opportunities are available in the area of publishing houses under Central, State Govt. and in private sector. Printing presses under Central and State govt., commercial printing presses doing offset, flexography, gravure and screen printing, pre-press solution for printing industry, designing and digital printing, security printing presses under Govt. of India, software solution for printing industry, color management solution, e-publishing, packaging and printing, consumables like ink, press consumables production organizations, print finishing and converting. There are lots of scopes in entrepreneurship in printing.

Aims & Objectives:

During their studies, students shall learn the detailed aspects of various printing processes like Offset printing, Gravure printing, flexography, letterpress and screen printing including the machineries being used. Also students shall get the subject knowledge of printing material, pre-press technologies, digital printing, security printing, print finishing techniques, project work, business management, entrepreneurship development, cost estimation etc. Subjects on packaging technology have been included in the curriculum to impart basic knowledge of packaging technology 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 pre-press work like typesetting, graphics designing and editing, making of image carrier, press work and printing, finishing have specific and specialized role to perform and contribute for the final output.

Categories of personnel with Diploma/Advance Diploma/ B Voc. Degree in Web Printing Technology shall have the potentiality to get employment in various positions like shop floor production personnel, supervisor, production manager, works manager,

maintenance personnel, coordinator in publishing and advertising agencies, sales and marketing personnel 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 completing one year of the 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 (Web Printing Technology). 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 Outcome:

First year students shall have the knowledge of the subject on pre-press technology, offset printing process, printing material science, with the practical aspects involved with it. On completion the first year students shall have the skills of Offset printing process and they will reach the level of Diploma in Printing Technology.

Second year, students shall learn the subject on digital pre-press technology, gravure printing process, packaging technology and computer science applicable to printing with the practical aspects involved with it. On completion of the second year, they will have the skill of gravure printing process and will reach the level of Advance Diploma in Printing Technology.

Third year students shall learn the subject on print finishing technology, flexographic printing process, digital and security printing, mechanical maintenance, estimating and costing entrepreneurship with the practical aspects involved with it. Students shall get the industrial training and project work. On completion the third year they will have the skill of security printing, entrepreneurship development and candidate will be awarded Bachelor of Vocation Degree in Printing Technology.

STRUCTURE OF SYLLABUS

To be implemented from the academic year 2018-2019

Title of the course : **BACHELOR OF VOCATION**
(*WEB PRINTING TECHNOLOGY*)

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 layout of a job
 - 2) Knowledge about software : MS Word, MS Excel, MS PowerPoint, PageMaker and Typing (English & Marathi)
 - 3) Prepare screen for screen printing
 - 4) Prepare pre-sensitized plates for offset lithography process
 - 5) To print different Screen Printing Jobs
 - 6) To print different offset printing jobs.
- **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. Designing
2. Screen Printing
3. Pre-Press
4. Offset plate making
5. Offset printing
6. Book binding

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) Working with Scanner
- 2) Working with Laser Printer and Inkjet Printer
- 3) Knowledge about Software : Corel Draw, Photoshop, InDesign, Illustrator
- 4) Prepare a design for a given job like visiting card, wedding card, pamphlets and brochures.
- 5) Knowledge about Newspaper Printing

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. Designing
2. Web Offset Printing (Newspaper)
3. Food & Pharmaceutical Packaging
4. Gravure Printing
5. Material Science
6. Paper and Ink Manufacturing

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) Prepare a layout of a Company
- 2) Prepare a design for a given job like Magazine, brochures, etc.
- 3) Prepare Design and Development of Pack for New Products
- 4) Prepare Flexo Plate for Flexography Printing
- 5) Management of the Press Department
- 6) To print different Digital Printing jobs.

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. Designing
2. Flexography Printing
3. Digital and Security Printing
4. Packaging
5. Planning Department
6. Printing Machine Maintenance
7. Cost & Estimation

4. Duration:

The duration of the B.Voc. Course will be of **Three Years.**

•**B.Voc. Part I - Diploma in Web Printing Technology**

•**B.Voc. Part II - Advanced Diploma in Web Printing Technology**

•**B.Voc. Part III - Bachelor of Vocation in Web Printing Technology**

The final B.Voc. degree will be awarded only after 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 Web Printing Technology	Two Semester	36	24
Year 2	Advanced Diploma in Web Printing Technology	Four Semester	36	24
Year 3	B.Voc. in Printing Technology	Six Semester	36	24
		Total	108	72

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. 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 weightage for equivalent hours shall be 50% of that for lectures/workshops.
- For self-learning, based on e-content or otherwise, the credit weightage for equivalent hours of study should be 50% or less of that for lectures/workshops.

5. 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 I.T.I. course in any branch is eligible for the course.
3. The merit list will be prepared by considering the marks of qualifying examination.

6. Pattern: Semester Pattern.

7. 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 theory 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.

➤ Scheme of examination for a paper

Credits	Teaching Scheme	Examination Scheme			
		Theory /Practical Paper Hrs.	Average of Unit Test (2 Unit Test of 25 Marks Each)	End Semester Total Marks	Total Marks
03	04 Hrs. per week	2.50 / 3.00 Hrs.	25	50	75

Question Paper Pattern
(Theory)

Q.1	Multiple Choice Question (Ten)	10 M
Q.2	Solve any Five (2 marks each)	10 M
Q.3	Solve (5 marks each)	10 M
	A	
	B	
	OR	
	C	
	D	
Q.4	Solve (5 marks each)	10 M
	A	
	B	
	OR	
	C	
	D	
Q.5	Write notes on any two. (5 marks each)	10 M
	A	
	B	
	C	
	D	

Question Paper Pattern
(Practical)

Q 1	Experiment	35
Q 2	Oral	10
Q 3	Record book	05

Syllabus Structure of the B. Voc. degree course

Semester 1				
Paper Code	Name of the Subject	Hrs	Marks	Credit
General Education				
BVGE-1	Introduction to Computer Hardware	45	75	3
BVGE-2	Introduction to Computer Software	45	75	3
BVGE-3	Practical on Introduction to computer hardware	45	75	3
BVGE-4	Practical on Introduction to computer Software	45	75	3
Skill Education				
BVWPT-111	Introduction to Printing Technology	45	75	3
BVWPT-112	Introduction to Graphic Design	45	75	3
BVWPT-113	Basic science of Printing	45	75	3
BVWPT-114	Practical on Screen Printing	45	75	3
BVWPT-115	Practical on Introduction to Design Software	45	75	3
BVWPT-116	Practical on Graphic Design and Layout	45	75	3
	Total	450	750	30

Semester 2				
Paper Code	Name of the Subject	Hrs	Marks	Credit
General Education				
BVGE-5	Computer Operating Skills	45	75	3
BVGE-6	Communication & documentation skills	45	75	3
BVGE-7	Practical paper 2 Computer Operating Skills	45	75	3
BVGE-8	Practical paper 1 on Communication & documentation	45	75	3
Skill Education				
BVWPT-121	Basics of Mechanical Engineering	45	75	3
BVWPT-122	Image Carrier Preparation for Gravure, Flexo, Offset	45	75	3
BVWPT-123	Offset Printing Technology	45	75	3
BVWPT-124	Practical on Mechanical Engineering	45	75	3
BVWPT-125	Practical based on digital prepress lab	45	75	3
BVWPT-126	Practical on Offset Printing Technology	45	75	3
	Total	450	750	30

Semester 3				
Paper Code	Name of the Subject	Hrs	Marks	Credit
General Education				
BVGE-9	General Education 1	45	75	3
BVGE-10	General Education 2	45	75	3
BVGE-11	Practical paper General Education 1	45	75	3
BVGE-12	Practical paper General Education 2	45	75	3
Skill Education				
BVWPT-231	Basics of Electrical and Instrumentation Engineering	45	75	3
BVWPT-232	Gravure - Flexo Printing	45	75	3
BVWPT-233	Paper, Ink and Coating Technology (Material Science for Printing)	45	75	3
BVWPT-234	Practical on Electrical and Instrumentation Engineering	45	75	3
BVWPT-235	Practical on Paper and Paperboard Material (Tests)	45	75	3
BVWPT-236	Practical on Inks and Coating (Tests)	45	75	3
	Total	450	750	30

Semester 4				
Paper Code	Name of the Subject	Hrs	Marks	Credit
General Education				
BVGE-13	General Education 1	45	75	3
BVGE-14	General Education 2	45	75	3
BVGE-15	Practical paper General Education 1	45	75	3
BVGE-16	Practical paper General Education 2	45	75	3
Skill Education				
BVWPT-241	Digital Printing and Color Management	45	75	3
BVWPT-242	Print Finishing Technology	45	75	3
BVWPT-243	Introduction to Packaging Technology	45	75	3
BVWPT-244	Practical on Color Management	45	75	3
BVWPT-245	Practical on Print Finishing	45	75	3
BVWPT-246	Tutorial on Packaging Technology	45	75	3
	Total	450	750	30

Semester 5				
Paper Code	Name of the Subject	Hrs	Marks	Credit
General Education				
BVGE-17	General Education 1	45	75	3
BVGE-18	General Education 2	45	75	3
BVGE-19	Practical paper General Education 1	45	75	3
BVGE-20	Practical paper General Education 2	45	75	3
Skill Education				
BVWPT-351	Packaging Converting Machinery and System	45	75	3
BVWPT-352	Press Maintenance and Management	45	75	3
BVWPT-353	Costing and Estimation	45	75	3
BVWPT-354	Practical on Press Maintenance	45	75	3
BVWPT-355	Tutorial on Security Printing	45	75	3
BVWPT-356	Tutorial on Product Packaging	45	75	3
	Total	450	750	30

Semester 6				
Paper Code	Name of the Subject	Hrs	Marks	Credit
BVWPT-361	Industrial Training	3 Months	400	16
BVWPT-362	Project Work		200	08
BVWPT-362	Seminar		150	06
	Total		750	30

COURSE NAME : B.VOC. IN WEB PRINTING TECHNOLOGY
SEMESTER : FIRST
SUBJECT TITLE : INTRODUCTION TO COMPUTER HARDWARE
CONTENTS : THEORY
SUBJECT CODE : BVGE1
MARKS : 75 MARKS
TOTAL HRS : 45

Objectives :

To make aware students with the knowledge and use of computer hardware and to introduce the basic principle hardware and operational aspects of computers hardware.

Contents:

SR. No.	Topic name	Number of Hours	Marks
1	Unit 1 Definition of Computer, Features, Parts of Computer System: (Input, Output, Storage unit, ALU, CU, CPU), Hardware, Software, Data, Information processing cycle. Computer Generations, Computer languages, Compilers, Interpreters. Memory Devices (RAM, ROM & its types) Input Devices: Keyboard and Mouse: The Standard Keyboard Layout, Using Mouse, Other Data Input Devices: Pen, Touch Screens, Bar Code Readers, OCR Output Devices: CRT Monitors, Printers: Dot Matrix, Ink Jet, Laser Printers.	12	25
2	Unit 2 Number Systems (Binary, Octal, Hexadecimal), Computer Arithmetic ('+', '-', '*', '/), Conversions (Octal to Binary, Binary to Octal, Binary to Hexadecimal, Hexadecimal to Binary). Computer codes: BCD, EBCDIC, ASCII, Unicode.	10	25
3	Unit 3 Data Processing: Factors Affecting Processing	12	15

	Speed, Bus, Cache Memory. RISC Processors, Ports: Standard Computer Ports, Serial and Parallel Ports Specialized Expansion Ports: SCSI, USB, FireWire, MIDI, Expansion Slots and Boards, PC Cards, Plug and Play. Secondary Storage Devices: Magnetic Tapes, Magnetic Disks, Optical Disks (Basic Principles of operation, Types, Advantages, Limitations)		
4	Unit 4 Software: System and Application Software Operating System: Purpose of Operating Systems, Types of Operating System, Popular Operating System, Managing Hardware: Processing Interrupts, Working with Device Drivers, Utility Software, Backup Utilities, and Screen Savers.	11	10
	Total	45	75

Referances:-

1. Computer Today, Basandara
2. Introduction to Computer and Data Processing, Pawar (Wiley-Dreamtech) 12
3. Computer Fundamentals, P.K. Sinha
4. Fundamental of computers, V. Rajaraman.
5. Introduction to Computers- Norton Peter,
6. Foundations of Computing, 1st ed., BPB Publications - P. K. Sinha & Priti Sinha.
7. Introduction to Computers, 4th ed., PHI- V. Raja Raman.
8. Introduction to Computers, Vikas Publishing House- Alex Leon & Mathews Leon.
9. Complete Computer Kit, Wiley Dreamtech, Delhi- Vikas Gupta,

COURSE NAME : B.VOC. IN WEB PRINTING TECHNOLOGY
SEMESTER : FIRST
SUBJECT TITLE : INTRODUCTION TO COMPUTER APPLICATIONS
CONTENTS : THEORY
SUBJECT CODE : BVGE2
MARKS : 75 MARKS
TOTAL HRS : 45

Objectives :

To acquaint students with the knowledge and use of computers and to introduce to basic Applications of computers.

Contents:

Sr. No	Topic name	Number of Hours	Marks
1	<p>Unit 1: MS-WORD</p> <p>-File Management: Opening, creating and saving a document, locating files, copying contents in some different file(s), protecting files, giving password protection for afile</p> <p>-Page Set up: Setting margins, tab setting, ruler, indenting - Editing a document: Entering text, Cut, copy, paste using tool- bars</p> <p>-Formatting a document: Using different fonts, changing font size and color, changing the appearance through bold/ italic/ underlined, highlighting a text, changing case, using subscript and superscript, using different underline methods.</p> <p>-Aligning of text in a document, justification of document, Inserting bullets and numbering , Formatting paragraph, inserting page breaks and column breaks, Use of headers, footers: Inserting footnote, end note, use of comments, Inserting date, time, special symbols, importing graphic images, drawing tool.</p>	18	30

	<p>-Tables and Borders: Creating a table, formatting cells, use of different border styles, shading intables, merging of cells, partition of cells, inserting and deleting a row in at able, print preview, zoom, page set up, printing options. Using Find, Replace options Using Tools like: Spell checker, help, use of macros, mail merge, thesaurus word content and statistics, printing envelops and labels.</p> <p>-Using shapes and drawing toolbar, Working with more than one window in MS Word, How to change the version of the document from one window OS to another , Conversion between different text editors, software and MS word</p>		
2	<p>Unit 2 : MS-EXCEL-</p> <p>Starting excel, open worksheet, enter, edit, data, formulas to calculate values, format data, create chart, printing chart, save worksheet, switching from another spread sheet</p> <p>-Menu commands: Create, format charts, organize, manage data, solving problem by analyzing data, and exchange with other applications. Programming with MS Excel, getting information while working.</p> <p>-Work books: Managing workbooks (create, open, close, save), working in work books, selecting the cells, choosing commands, data entry techniques, formula creation and links, controlling calculations, working with arrays. Editing a worksheet, copying, moving cells, pasting, inserting, deletion cells, rows, columns, find and replace text, numbers of cells, formatting worksheet.</p> <p>-Creating a chart: Working with chart types, changing data in chart, formatting a chart, use chart to analyze</p>	17	30

	<p>data Using a list to organize data, sorting and filtering data in list</p> <p>- Retrieve data with MS – query: Create a pivot table, customizing a pivot table. Statistical analysis of data</p> <p>-Customize MS-Excel:</p> <p>How to change view of worksheet, outlining a worksheet, customize workspace, using templates to create default workbooks, protecting work book</p> <p>Exchange data with other application: linking and embedding, embedding</p> <p>Objects, linking to other applications, import, export document.</p>		
3	<p>Unit 3 :</p> <p>MS PowerPoint:Creating own design, formatting objects on a slide, Use of Slide Master to control the design & formatting of presentation, Use of Image, audio, video in the presentation, Slide show setup, slide transition, use of animation, Use of narration in presentation, Print setup & Printing handouts of a presentation.</p>	10	15
	Total	45	75

Reference Books

1. Fundamentals of Computers by E. Balagurusamy (Author) Publisher: McGraw Hill Education (India) Private Limited
2. Ms Office 2007 in a Nutshell by S. Saxena (Author) Publisher: S.Chand (G/L) & Company Ltd
3. Computer Fundamentals Paperback – by P. K. Sinha (Author) Publisher: BPP

COURSE NAME : B.VOC. IN WEB PRINTING TECHNOLOGY
SEMESTER : FIRST
SUBJECT TITLE : PRACTICAL ON INTRODUCTION TO COMPUTER
HARDWARE
CONTENTS : PRACTICAL
SUBJECT CODE : BVGE3
MARKS : 75 MARKS
TOTAL HRS : 45

List of the Practical's

1. Study of different parts of CPU
2. Study of SMPS
3. Identification and study of input devices
4. Identification of output devices
5. Identification of and study different parts of motherboard
6. Identification and study of different types of processors
7. Identification and study of different types of RAM
8. Study of different types of networking topology of computers
9. LAN networking
10. Setting of IP Address
11. Sharing of hard disks /printers /scanners etc.
12. Installation of Operating systems
13. Installation of MS Office
14. Installation of antivirus

References:-

- 1) Computer Today, Basandara
- 2) Introduction to Computer and Data Processing, Pawar (Wiley-Dreamtech)12
- 3) Computer Fundamentals, P.K. Sinha
- 4) Fundamental of computers, V. Rajaraman.

COURSE NAME : B.VOC. IN WEB PRINTING TECHNOLOGY
SEMESTER : FIRST
SUBJECT TITLE : PRACTICAL ON INTRODUCTION TO COMPUTER APPLICATION
CONTENTS : PRACTICAL
SUBJECT CODE : BVGE4
MARKS : 75 MARKS
TOTAL HRS : 45

List of the Practical's

1. To Study Microsoft Office word
2. Use of Microsoft word for creating reports
3. Formatting of reports.
4. To Study Microsoft Excel
5. Applications of MS Excel to create payroll Sheets
6. Formatting of sheets
7. Use of Microsoft Excel for using functions
8. To Study Microsoft Power Point
9. To Study and create power point presentation
10. To Study Web and Networking
11. Visit to Industry and case study problems on computer application
12. Any other practical based on the syllabus decided by the college

Reference Books

1. Fundamentals of Computers by E. Balagurusamy, Publisher: McGraw Hill Education (India) Private Limited
2. Ms Office 2007 in a Nutshell by S. Saxena, Publisher: S.Chand (G/L) & Company Ltd
3. Computer Fundamentals Paperback – by P. K. Sinha, Publisher: BPP

COURSE NAME : B.VOC. IN WEB PRINTING TECHNOLOGY
SEMESTER : FIRST
SUBJECT TITLE : INTRODUCTION TO PRINTING TECHNOLOGY
CONTENTS : THEORY
SUBJECT CODE : BVWPT111
MARKS : 75 MARKS
TOTAL HRS : 45

Rationale:

This course aims at creating a foundation among entry level students. It introduces common concepts frequently used in the printing industry such as image carrier, design, various printing techniques and finishing processes. After completion of this course, a student can understand the flow of various printing Processes.

Objectives: The student will be able to:

- Understand flow of printing.
- Understand raw material required for printing.
- Scope of Printing

Contents:

Sr. No.	Details	Hrs.	Marks
1	Unit -1 Introduction	8	13
	Introduction to Printing – History, Need of Printing, Definition,		
	General Workflow of Printing process i.e. Pre-Press, Press, Post-Press,		
	Classification of printing process i.e. Conventional and Digital		
	Classification of Printing Industry – Newspaper, Commercial, Digital etc.		
2	Unit -2 Letter Press	4	7
	Introduction and Working Principle		
	Study of working principle and construction		
	Image carriers preparation / Typesetting- Various type, Font, Size, style Line Block and Halftone Block		
	Configuration : Platen to Platen; Platen to cylinder & Cylinder to cylinder		

	Advantages, Limitations and Application of the Process		
3	Unit -3 Lithographic Offset Printing	8	13
	Introduction and Working Principle		
	Sheet fed machine units- feeding, inking, damping, printing & delivery unit.		
	Definition of perfecting / Printing terminology & it's important in printing. Undercut / Bearer.		
	Web machine- Difference between sheet fed & web fed.		
	Configuration: Blanket to Blanket, Common impression cylinder, Stack, Inline etc.		
	Waterless Offset (Dry Offset)		
	Advantages, Limitations and Application of the Process		
4	Unit -4 Screen Printing	3	6
	Introduction and Working Principle		
	Materials: Cloth, Clamps, Screen stretching, Squeegee.		
	Stencil- Direct, indirect Screen printing- Manual operation.		
	Advantages, Limitations and Application of the Process		
5	Unit -5 Gravure Printing Process	4	8
	Introduction and Working Principle		
	Configuration of machine- Image carrier, Doctor Blade		
	Gravure printing advantages & disadvantages		
	Application in printing industry		
6	Unit -6 Flexography printing Process	5	8
	Study of construction, working principle, advantages and limitations		
	Machine types – Inline, stack and common impression cylinder		
	Different types of plate used in flexography		
	Application in printing industry		
7	Unit -7 Introduction to Digital Printing Process	8	13
	Working Principle, Advantages, Limitations, Applications of Electrophotography and Inkjet digital printing process		
8	Unit -8 Binding	5	7
	Different types of binding-side sewing/stitching,centre,		
	Sewing/stitching,Perfect Binding		

	Raw materials, Thread, Past, Gum, Cloth.		
	Total	45	75

Learning Resources:

Books:

Sr. No.	Author	Title	Publisher
1	Herbert Simonn	Introduction to printing	-
2	Ian Faux	Modern Lithography	Macdonad& Evans plynont
3	Helmut Kipphan	Hand book of print media	Heidelberg

COURSE NAME : B.VOC. IN WEB PRINTING TECHNOLOGY
SEMESTER : FIRST
SUBJECT TITLE : INTRODUCTION TO GRAPHIC DESIGN
CONTENTS : THEORY
SUBJECT CODE : BVWPT112
MARKS : 75 MARKS
TOTAL HRS : 45

Rationale:

Graphics design is the basics subject in understanding any design, this subject tells about fundamentals that are used in creating designs. This course will also cover the understanding about the color and its effects.

Objectives:

- This course covers basics elements as well as principle used in creating a design.
- This course gives inputs on the process of creating a design.
- This course will impart to knowledge on the basic color theory.
- This course covers the technology used today in making the design.

Contents:

Sr. No.	Details	Hrs.	Marks
1	Unit 1 : Introduction to Graphic Design Understanding graphic design-What is graphic design-Function of design-History of graphic design-Career in graphic design	06	10
2	Unit 2 : Design Process Introduction-Research-Thumbnails-Roughlayout-Comprehensive-Artwork-Type of original-	08	14
3	Unit 3 : Fundamental of Graphic Design Introduction, Elements of design, Principle of design	07	16
4	Unit 4 : Typography Introduction, development of written communication, Fonts-Text formatting, Multilingual and expressive typography	06	09
5	Unit 5 : Colors in Graphic Design Introduction-What is electromagnetic spectrum-Color perception-Color theory-Properties of color-Describing color-Psychology of color/colors and their effects	06	09
6	Unit 6 : Design Layout Introduction-Theme and Content-Layout for design-Copy and type-Design for publication-Layout for visiting card, pamphlets, advertising, bill book, wedding card etc.	07	09
7	Unit 7: Advertisement using different media Introduction-What is media planning-Different types of media-	05	08

	their characteristics, advantages and limitations		
	Total	45	75

Learning Resources:

Books:

Sr. No.	Author	Title	Publisher
1	R. W. G Hunt, M. R. Pointer	Measuring Color, Fourth Edition	Wiley-IS&T Series, 2006
2	Bilmeyer and Saltzman	Principles of Colour Technology, Second Edition	Wiley Interscience publication
3	Wyszecki and Stiles	Color Science, Second Edition	Wiley Interscience Publication
4	Phil Green	Color Management, Understanding and using ICC profiles	Wiley IS & T Series, 2001
5	Richard J. D. Tilley	Color and the optical properties of material	Wiley publication
6	J.A. C. Yele	Principles of Color Reproduction	Wiley, 2009.

COURSE NAME : B.VOC. IN WEB PRINTING TECHNOLOGY
SEMESTER : FIRST
SUBJECT TITLE : BASIC SCIENCE OF PRINTING
CONTENTS : THEORY
SUBJECT CODE : BVWPT113
MARKS : 75 MARKS
TOTAL HRS : 45

Rationale:

This subject contains concepts about colour, graphic reproduction and properties materials related with pre-press, construction and working of quality control instruments.

Objectives:

- This course covers basics elements of Color.
- To understand the working of graphic reproduction camera/Process camera and its types etc.
- To understand the terminology like film, contact lens, Halftone, dot percentage, Ink trapping.

Contents:

Sr. No	Details	Hrs.	Marks
1	Unit 1: Colour Basic	08	13
	Definition - Colour, Visible spectrum, Wavelength, Frequency,		
	Ultraviolet light, Infrared light		
	Additive & Subtractive colour theory & their applications		
2	Unit 2: Original For Graphic Reproduction	08	12
	Original - Definition, Classification, of the graphic original. Factors governing selection		
	Required physical and optical properties / characteristics of different types of graphic originals		
	Magnification and terminology of magnification of originals. Simple numerical problems based on magnification.		
3	Unit 3: Recording Media	06	11
	Required characteristics and different types of media used in graphic reproduction		

	Digital recording media such as SD card, memory stick and other digital storage media		
4	Unit 4: Equipment's used in Reproduction Photography	10	16
	Formulae and relationship between different quantities of lens such as focal length, depth of focus, depth of field, power etc. Simple numerical problems related to image formation using lens.process camera- vertical /horizontal camera.		
	Lens aberrations and flare		
5	Digital Camera - Working principle, Construction, applications,advantages, limitations. Introduction to different photo sensors (CCD, CMOS) used in digital camera. Resolution of digitalcamera.Comparison between digital photography and conventionalphotography.	09	14
	Unit 5: Formatting Page Layout		
	Paragraph style - indention, Tabs, alignment, leading		
	Character style - font, style, size, spacing		
	Study of graphic terminology associated with page. page layout -Running heads, column guides, page numbering, margins		
	Formatting graphics with the text in columns and tables.		
	Proofing and Proof Reading.		
Study of graphic terminology associated with page. and differentImposition schemes. Need and setting of headers and footers.			
6	Unit 6: Paper & ink Introduction of various types of substrate used in printing industry, It's application, types, size, coating material. Introduction of inks, content of ink, types of ink, application of inks according to various printing process.	04	9
	Total	45	75

References:

1. R.H. Leach, The Printing Ink Manual, fifth edition, Chapman & Hall, London
2. Robert F Reed, What the Printer should know about inks, GATF
3. Clifwool, A Manual for Flexographic inks, Fishburn Printing ink co. Ltd
4. Donald E Tood, Printing inks, Pira International, United Kingdom
5. Printing Materials Science and Technology- Bob Thomson, PIRA
6. Advances in Printing Sciences and Technology, Vol. 24-J. Anthony Bristow.
7. Handbook of printing and production-Michael Bernard, John Peacock.
8. Introduction in Printing Technology-Heigh. M. Speir.
9. W.H. Bureau, "What the printer should know about the paper", GATF
10. J.P. Casey, Pulp and paper chemistry and chemical technology.
11. R.J. McGill, " measurement and control in paper making", Adam Hilger Ltd.
12. D.Venkateswaralu, Paper for printing and packaging. SS Graphics

COURSE NAME : B.VOC. IN WEB PRINTING TECHNOLOGY
SEMESTER : FIRST
SUBJECT TITLE : PRACTICAL ON SCREEN PRINTING
CONTENTS : PRACTICAL
SUBJECT CODE : BVWPT114
MARKS : 75 MARKS
TOTAL HRS : 45

List of the Practical's

1. Introduction of Materials used for Screen Printing.
2. Understanding of +ve and -ve Photographic Films.
3. Preparation of Screen for Exposure.
4. Exposing of the Screen Printing Screen.
5. Image Centering.
6. Single Color Screen Printing.
7. Registration for Multicolor Job Printing.
8. Two Colour Printing by Screen Printing.
9. Personalized Visiting Card Printing.
10. T-Shirt or Textile Screen Printing.
11. Printing of Greeting Cards.
12. Wedding card Printing

Learning Resources:

Books:

Sr. No.	Author	Title	Publisher
1	Herbert Simonn	Introduction to printing	-
2	Ian Faux	Modern Lithography	Macdonad& Evans plynont
3	Helmut Kipphan	Hand book of print media	Heidelberg

COURSE NAME : B.VOC. IN WEB PRINTING TECHNOLOGY
SEMESTER : FIRST
SUBJECT TITLE : PRACTICAL ON INTRODUCTION TO GRAPHIC DESIGN
CONTENTS : PRACTICAL
SUBJECT CODE : BVWPT115
MARKS : 75 MARKS
TOTAL HRS : 45

List of the Practical's

1. Introduction of Manu Bar in Adobe Pagemaker 7.0 software
2. Introduction of Tool Bar in Adobe Pagemaker 7.0 software
3. Introduction of Property Bar in Adobe Pagemaker 7.0 software
4. Preparation of Personalized Visiting Card Layout using Adobe Pagemaker 7.0
5. Preparation of Pamphlet Layout using Adobe Pagemaker 7.0
6. Introduction of Welcome Screen in Coral Draw Graphic Suit X17
7. Introduction of Home Screen in Coral Draw Graphic Suit X17
8. Introduction of Standard Property Bar and Transformation in Coral Draw Graphic Suit X17
9. How to use Pick Tool and Rectangle Tool by using Coral Draw Graphic Suit X17
10. How to use Shape tool with complete Property and functions by using Coral Draw Graphic Suit X17.
11. How to use Smooth, Smear and Twirl Tool by using Coral Draw Graphic Suit X17
12. How to Create New files and Important settings in Adobe Photoshop CS6.
13. How to work with Layers in Adobe Photoshop CS6.
14. How to use rectangular Marquee Tool in Adobe Photoshop CS6.
15. How to use Magic Wand and Quick Selection Tool in Adobe Photoshop CS6.

Learning Resources:

Books:

Sr. No.	Author	Title	Publisher
1	R. W. G Hunt, M. R. Pointer	Measuring Color, Fourth Edition	Wiley-IS&T Series, 2006
2	Bilmeyer and Saltzman	Principles of Colour Technology, Second Edition	Wiley-Interscience publication
3	Wyszecki and Stiles	Color Science, Second Edition	Wiley-Interscience Publication
4	Phil Green	Color Management, Understanding and using ICC profiles	Wiley IS& T Series, 2001
5	Richard J. D. Tilley	Color and the optical properties of material	Wiley publication
6	J.A. C. Yele	Principles of Color Reproduction	Wiley, 2009.

COURSE NAME : B.VOC. IN WEB PRINTING TECHNOLOGY
SEMESTER : FIRST
SUBJECT TITLE : PRACTICAL ON INTRODUCTION TO GRAPHIC DESIGN AND LAYOUT
CONTENTS : PRACTICAL
SUBJECT CODE : BVWPT116
MARKS : 75 MARKS
TOTAL HRS : 45

List of the Practical's

1. Understanding and Need of Design and Design Software.
2. Understanding of steps in design
3. Understanding of Color and Light.
4. Physiology of Color.
5. Understanding of Original and their classifications.
6. Installation of Graphic Design Software i.e. Page maker
7. Installation of Graphic Design Software i.e. Photoshop
8. Installation of Graphic Design Software i.e. Coral Draw
9. Understanding of Imposition Scheme.
10. Understanding of Full Sheet Work Imposition Scheme.
11. Understanding of Half-Sheet Work Imposition Scheme.
12. Understanding of Different types of Papers and Specialty Papers and their applications.
13. Understanding of Different types of Inks and Special Purpose Inks and their Application.

Learning Resources:

Sr. No.	Author	Title	Publisher
1	L.C. Young	Printing Science	Pitman publication.
2	L.C. Young	Materials in Printing Processes	Focal Press publication.
3	D.S. Mathur	Properties of Matter, (2007)	S. Chand & Co. Ltd.
4	Leach and Pierce	Printing Ink Manual	Springer Publication.
5	Dr. Nelson R. Eldred	What Printer Should Know About Ink	GATF Press, Pittsburgh
6	Lawrence A. Wilson	What Printer Should Know About Paper, 3rd Edition	GATF Press, Pittsburgh
7	A.J. Athaley	Plastics in Packaging	Multi-tech publication
8	R. Holman	Technology of Printing Inks	All India PIMA Publication
9	C. H. Williams	Printing Ink Technology	PIRA UK Publication

COURSE NAME : B.VOC. IN WEB PRINTING TECHNOLOGY
SEMESTER : SECOND
SUBJECT TITLE : COMPUTER OPERATING SKILLS
CONTENTS : THEORY
SUBJECT CODE : BVGE-5
MARKS : 75 MARKS
TOTAL HRS : 45

Rationale : This subject helps to understand the basics of computer operating skills

Objective

Student will learn about

1. the exchange of information through email
2. Modes of transmission
3. Different operating systems
4. E-commerce

SR.No.	Topic name	Number of Hours	Weightage
1.	UNIT I Basic elements of a communication system, Data transmission modes, Data Transmission speed, Data transmission media, Digital and Analog transmission, Network topologies, Network Types (LAN, WAN and MAN), OSI & TCP/IP Model, Internet: Network, Client and Servers, Host & Terminals, TCP/IP, World Wide Web, Hypertext, Uniform Resource Locator, Web Browsers, IP Address, Domain Name, Internet Services Providers, Internet Security, Internet Requirements, Web Search Engine, Net Surfing, Internet Services, Intranet	15	20
2.	UNIT II Operating System concepts, different types of Operating systems, structure of operating system, DOS/UNIX/LINUX commands, working with Windows, Windows 2007.	10	15
3.	UNIT III E-mail & Internet: 1. Introduction 2. E-mail Account & Its Functions 3. Search Engine 4. Surfing WebPages 5. Basics of Social Networking Site	10	20
4.	UNIT IV E-Commerce Introduction: E-commerce as Business need, E-com	10	20

	Types, Advantages, Disadvantages, e-Commerce Architecture, Internet Payment Systems - Characteristics - 4C Payment Methods - SET Protocol for Credit Card Payment - E-Cash, E- Check - Overview of Smart Card E-Commerce security - Need of security - Encryption: Public Private & Hybrid - Digital Signature - Authentication		
5.	Total	45	75

Reference Books

1. Fundamentals of Computers by E. Balagurusamy (Author) Publisher: McGraw Hill Education (India) Private Limited
2. Ms Office 2007 in a Nutshell by S. Saxena (Author) Publisher: S.Chand (G/L) & Company Ltd
3. Computer Fundamentals Paperback – by P. K. Sinha (Author) Publisher: BPP

COURSE NAME : B.VOC. IN WEB PRINTING TECHNOLOGY
SEMESTER : SECOND
SUBJECT TITLE : COMMUNICATION & DOCUMENTATION SKILLS
CONTENTS : THEORY
SUBJECT CODE : BVGE-6
MARKS : 75 MARKS
TOTAL HRS : 45

Learning Objective

To equip students with skills to write to communicate and articulate in English (verbal as well as writing) and to acquaint the students with the knowledge and use of computers and to introduce the basic principles, organization and operational aspects of computers.

SR.No.	Topic name	Number of Hours	Weightage
1.	UNIT I : Introduction to Communication & Grammar : Consonant & Vowel Sounds, Indianism, Syllable & Syllable Stress, Determiners, Articles, Tense & Time, Preposition, Prepositional Phrases, Subject-Verb Agreement, Active – Passive Voice, Intonation & Modulation, Conjunctions	09	15
2.	UNIT II : Formal Writing Skills: Composition Writing: Business Letters (Functions of a Business Letter, Layout of a Business Letter, Salient Features of a Business Letter, Kinds of Business Letter, Application Writing)	09	15
3.	UNIT III : Conversation Skills: Nature of Conversation, Purpose of Conversation, Guidelines for Effective Conversation Skills, Proverbs used in Everyday Conversation with their Meanings/Explanations	09	15
4.	UNIT IV : Documentation Skills: Introduction to Documentation: Meaning, Purpose, Need.	09	15
5.	UNIT V : A short introduction to Computers, digitalized era, global connection via net, Drafting of Text, Excel, E Mails, Making Presentations, MS Word	09	15
	Total	45	75

Reference Books:

1. High School English Grammar and Composition - Wren & Martin, Publisher - Churchill Livingstone
2. Anthology of English Language and Communication Skills - Sharma S R, Jacob, Mark Publications
3. Language and Communication Skills - Shastri, Rameshchandra, ABD Publications
4. A Course in Academic Writing - Renu Gupta, Orient Blackswan Publications.

COURSE NAME : B.VOC. IN WEB PRINTING TECHNOLOGY
SEMESTER : SECOND
SUBJECT TITLE: PRACTICAL ON COMPUTER OPERATING SKILLS
CONTENTS : PRACTICAL
SUBJECT CODE : BVGE-7
MARKS : 75 MARKS
TOTAL HRS : 45

List of the Practical's

Internet and its Applications

1. Log-in to internet
2. Navigation for information seeking on internet
3. Browsing and down loading of information from internet
4. Sending and receiving e-mail
5. Creating a message
6. Creating an address book
7. Attaching a file with e-mail message receiving a message deleting a message

Practical

8. Introduction to Windows
9. What is an operating system and basics of Windows?

Practical

The User Interface

- 10 Using Mouse and Moving Icons on the screen
- 11 The My Computer Icon
- 12 The Recycle Bin
- 13 Status Bar, Start and Menu & Menu-selection
- 14 Running an Application
- 15 Windows Explorer Viewing of File, Folders and Directories Creating and Renaming of files and folder, opening and closing of different W

Practical

Windows Setting Control Panels

- 16 Wall paper and Screen Savers
- 17 Setting the date and Sound
- 18 Concept of menu Using Help

Practical

Advanced Windows

19. Using right Button of the Mouse
20. Creating Short cuts
21. Basics of Window Setup
22. Notepad
23. Window Accessories

Reference Books

1. Fundamentals of Computers by E. Balagurusamy (Author) Publisher: McGraw Hill Education (India) Private Limited
2. Ms Office 2007 in a Nutshell by S. Saxena (Author) Publisher: S.Chand (G/L) & Company Ltd
3. Computer Fundamentals Paperback – by P. K. Sinha (Author) Publisher: BPP

COURSE NAME : B.VOC. IN WEB PRINTING TECHNOLOGY
SEMESTER : SECOND
**SUBJECT TITLE : PRACTICAL ON COMMUNICATION &
DOCUMENTATION SKILL**
CONTENTS : PRACTICAL
SUBJECT CODE : BVGE-8
MARKS : 75 MARKS
TOTAL HRS : 45

List of the Practical's

1. Verbal & Non Verbal Communication
2. Verbal Communication - Extempore, Just a Minute, Declamation, Dialogue, Monologue
3. Non verbal Communication - Guess the Mime, Dumb Charades, Formal & Informal Writing, Facial
4. Expressions, Dressing & Clothing
5. Oral Communication - Day to today talk, formal talk, informal talk, conversation
6. Body Language
7. Right body postures, Eye Contact, Pet Fiddles, how to walk, talk and present oneself.
8. Group Discussion Skills(Meaning, Characteristic, Do's & Don'ts, Relevance, Moderating a group
9. Discussion
10. Presentation Skills - Confidence, Effective Delivery of ideas, Convincing the audience, basic courtesies
11. Public Speaking - Oration, Debates
12. English Movie Sessions
13. Documentation Skills
14. Basics of Computers, usage of short cut keys, taking out print outs, page set ups.
15. Making of Power point Presentation
16. E- Mail (Subject line, salutation, subscription, how to mark cc, drafting, sending of mails, reverts,
17. forwarding of mails, attaching pictures and documents, attaching ppts
18. Differentiation between hardware and software and practical usage of both.
19. Diagrammatic representation of pie-charts, tabular presentation of data/info, Etc
20. Basic use of MS Excel/Spread Sheets

Reference Books:

5. High School English Grammar and Composition - Wren & Martin, Publisher - Churchill Livingstone
6. Anthology of English Language and Communication Skills - Sharma S R, Jacob, Mark Publications
7. Language and Communication Skills - Shastri, Rameshchandra, ABD Publications
8. A Course in Academic Writing - Renu Gupta, Orient Blackswan Publications.

COURSE NAME : B.VOC. IN WEB PRINTING TECHNOLOGY
SEMESTER : SECOND
SUBJECT TITLE : BASIC MECHANICAL ENGINEERING
CONTENTS : THEORY
SUBJECT CODE : BVWPT121
MARKS : 75 MARKS
TOTAL HRS : 45

Rationale:

Printing Engineer is expected to develop basic workshop skills. Students are required to identify, select and use different kinds of tools, such as marking, measuring,, cutting, supporting, striking and various holding devices.

Objectives:

- This course covers basic Mechanical elements of Machine.
- To understand the working of Mechanical Parts.
- To understand the power transmission devices, and Different Mechanism.

Contents:

Sr. No.	Details	Hrs.	Marks
1	Unit -1 Machine Elements ,Power Transmission shafts, Axels, Keys, Bush & Ball Bearing, Flywheel & Governors.	07	12
2	Unit -2 Engineering Materials Materials used in engineering and their application Metal: Ferrous & non Ferrous, Nonmetallic materials, Material selection criteria. Design Consideration	09	12
3	Unit -3 Power Transmission Devices Types of Belts & Belts Drives, Chain Drive ,Types of Gears	10	18
4	Unit -4 Machine Tools (Basic Elements, working Principles & Types of operations) Lathe Machine- Centre Lathe, Drilling Machine- study of Pillar Drilling Machines. Introduction to NC & CNC Machines Grinding Machines, Power Saw, Milling Machines.	10	18
5	Unit -5 Mechanisms (Descriptive Treatment Only) Slider crank mechanism, four bar chain mechanism.List of various inversion all four bar chain mechanism.General mechanism, Ratchet& Pawl Mechanism.	9	15
	Total	45	75

Learning Resources:**Reference Books**

Sr. No.	Author	Title	Publisher
1	P. K Nag	“Thermodynamics”	Tata McGraw-Hill Publishing Co. Ltd Hajra-Chaudhari “ Workshop Technology”
2	Arora and Domkunwar	“Thermal Engineering”	DhanpatRai and Sons.
3	R. K. Rajput	“Heat transfer”	S Chand Publication, Delhi.
4	V. B. Bhandari	“Design of Machine Elements”	Tata McGraw-Hill Publishing Co. Ltd

COURSE NAME : B.VOC. IN WEB PRINTING TECHNOLOGY
SEMESTER : SECOND
SUBJECT TITLE : IMAGE CARRIER PREPARATION
CONTENTS : THEORY
SUBJECT CODE : BVWPT122

Rationale : This course covers the details for the preparations of the image carrier required for various printing processes.

Objectives:

1. To make learner aware about different image carriers used in different printing processes
2. To explain the learner about the process and methods used to prepare image carriers for various printing processes.
3. This course gives the information about various ancillary materials and equipment's required for preparation of image carrier.

Contents:

Sr. No.	Details	Hrs	Marks
1	Unit 1 - Introduction to Image Carrier Image carrier-Letterpress introduction-Different sizes and uses of types-Types of composing-Typecasting machine-Plate as an image carrier	07	14
2	Unit 2 - Image carrier-Offset Structure of plate-Types of plate material-Different types of plates-Processing of offset plate-Computer to plate	10	16
3	Unit 3 - Image carrier-Gravure Introduction-Parts of gravure cylinder-Cell configuration and structure-Types of gravure image carrier-Manufacturing process of gravure cylinder-Gravure Cylinder engraving-Summary of current technology	10	16
4	Unit 4 - Image carrier-flexography Introduction-Structure of flexographic plate-Types of flexo plates-Thickness and Hardness of Plate-Mounting	10	16

	and proofing of flexo plates		
5	Unit 5 - Image carrier-Screen Printing Introduction-Components of image carrier-Different material used in making the screen-Different method of making screen-Image carrier for Pad Printing	08	13
	Total	45	75

References:

1. Eric Chambers, reproduction photography for lithography, GATF.
2. J.W.Burden, Graphic, Reproduction photography, Focal Press, London
3. Hand book of Modern halftone photography, perfect graphic arts, USA
4. Jack Eggleston, Sensitometry for photographers, focal Press, London
5. WoddiffThomas , J R.SPSE handbook of photographic science and engineering, John Wiley & Son
6. J.Michael ADAMS, David D Faux, Lloyd, J.Reiber, Printing Technology, 3E, Delma Publishing
7. PIRA, guide standardized lithographic colour printing
8. Mills southworth, colour separation technique, Graphical arts publishing
9. R.W.G. Hunt, reproduction of colour, Fountain Press
- 10.Principles of cold Reproduction applied to photomechanical reproduction, colour photography and the ink, paper and other related industries, John Wiley & Sons U.K.
11. Graphic Repro, Eaglehead Publishing Ltd. U.K.
12. Dr. R.K. Molla, Electronic colour separation, R.K. printing & Publishing company,USA.
13. Manual for Lithographic Press Operation- A S Porter
14. Lithographic Technology –Edwin A Dennis, OluseganOdesina
15. Introduction to Printing Technology-Hugh M Speirs
16. Sheetfed Press Opertaion-GATF
17. Offset Technology-C S. Mishra.

COURSE NAME : B.VOC. IN WEB PRINTING TECHNOLOGY
SEMESTER : SECOND
SUBJECT TITLE : OFFSET PRINTING TECHNOLOGY
CONTENTS : THEORY
SUBJECT CODE : BVWPT123
MARKS : 75 MARKS
TOTAL HRS : 45

Rationale:

There are many different Offset presses in the market today with many minute operational differences. The purpose of this course is not to provide a general operational manual, but to deal with the fundamental understanding that will enable the student to run any offset duplicator or single and multi-color sheet-fed offset printing press after studying the manufacturer's operating manual.

This course covers the information necessary to run an offset press and to give important information on press trouble-shooting concerns also.

Objectives:

The student will be able to:

1. Understand working of sheet fed and web-fed offset printing machine.
2. Identify the troubles and Understanding of the possible Remedies.
3. Understanding of the different units of the offset Printing Machines.

Contents:

Sr. No.	Details	Hrs.	Marks
1	Unit -1 Lithographic Machine Study of construction and design of sheet fed and Web fed lithographic offset machine. Working principle, Introduction to different units along with functions used on sheet fed lithographic machines Difference between Sheet fed and web fed Printing.	08	12
2	Unit -2 Sheet Handling Systems Study of construction, working principle and types of feeder mechanism used in sheet control on sheet fed press. Study of	03	8

	constriction, working principle and types of infeed mechanism used in sheet control on sheet fed press.		
3	<p>Unit -3 Printing Unit</p> <p>Plate cylinder</p> <ul style="list-style-type: none"> - Construction, Undercut, Cylinder gap, Bearer contact and bearer clearance, Plate clamps – Types, pin register system., Plate mounting, Cylinder packing – Types, Cylinder gears: comparison of spur and helical gears <p>Blanket cylinder</p> <ul style="list-style-type: none"> - Construction, blanket mounting, packing, Types of Blanket – requirements of an ideal blanket, compressible, non-compressible, Blanket cleaning devices, handling, storage <p>Impression cylinder –</p> <ul style="list-style-type: none"> - Types of grippers – Tumbler, swing arm, rotary feed, roll feed. 	08	12
4	<p>Unit -4 Inking Unit</p> <p>Construction of Inking unit, types of different inking roller, types of Inking system, material and specification for inking roller settings, roller wash up</p>	05	9
5	<p>Unit -5 Dampening system</p> <p>construction of Dampening unit, types of roller used in dampening unit, types of dampening units and controlling systems</p>	05	9
6	<p>Unit -6 Delivery Unit</p> <p>Parts & its function such as-jogger, gripper bar, skeleton wheel, Transfer cylinder, introduction to various drying systems, anti-set-off spray, delivery system and setting.</p>	4	7
7	<p>Unit -7 Machine Configurations.</p> <p>Sheet Fed Machine: Perfecting, Transfer Drum etc.</p> <p>Web Fed Machine: H Type, Y Type, CIC, Stack and Inline etc.</p>	8	11
8	<p>Unit -8 Troubleshooting</p> <p>Sheet jamming, front or side lay variation, creasing, jogging. Gear streaks, slurring, doubling, and uneven impression.</p> <p>Blanket - Loss of sharpness, puncture (low spot), miss registration,</p>	4	7

	Mottling, dot gain, set-off, hickeys, ghost image, emulsification, , trapping, plate-blinding, scum		
	Total	45	75

Learning Resources:

Books:

Sr. No.	Author	Title	Publisher
1	Ian Faux	Modern Lithography	Macdonald & Evans
2	Latham,	Litho Offset press operating	GATF
3	L. C. Young	Materials in Printing Processes	Focal Press, London

COURSE NAME : B.VOC. IN WEB PRINTING TECHNOLOGY
SEMESTER : SECOND
SUBJECT TITLE : BASIC MECHANICAL ENGINEERING
CONTENTS : PRACTICAL
SUBJECT CODE : BVWPT124
MARKS : 75 MARKS
TOTAL HRS : 45

List of the Practical's

1. Study of Heat treatment process
2. Study of metallurgical microscope
3. Study of four bar chain mechanism and its inversion
4. Study of different types of Cams/followers (Spatial cam, eccentric cam, Plate cam, Cylinder)
5. Construction of Cam Profile on drawing sheet
6. Study of gears- spur, helical, bevel gear and differential gear tooth meshing.
7. Study of various drives for transmission of powers. Model of belts, pulleys, chains.
8. Study of Mechanical Joints- permanent and temporary and its elements.
9. Study of mechanical system for rotating shaft/cylinder.

Workshop Practice

1. Introduction to Lathe, Job Mounting, and Tool holding devices
2. Turning practice-Straight and Step turning
3. Study and practice on Carbon arc welding
4. Study and practice on gas welding
5. Practice on shaping machine

Learning Resources:

Sr. No.	Author	Title	Publisher
1	P. K Nag	“Thermodynamics”	Tata McGraw-Hill Publishing Co. Ltd Hajra-Chaudhari “ Workshop Technology”
2	Arora and Domkunwar	“Thermal Engineering”	DhanpatRai and Sons.
3	R. K. Rajput	“Heat transfer”	S Chand Publication, Delhi.

4	V. B. Bhandari	“Design of Machine Elements”	Tata McGraw-Hill Publishing Co. Ltd
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COURSE NAME : B.VOC. IN WEB PRINTING TECHNOLOGY
SEMESTER : SECOND
SUBJECT TITLE : PRACTICAL BASED ON DIGITAL PREPRESS LAB
CONTENTS : PRACTICAL
SUBJECT CODE : BVWPT125
MARKS : 75 MARKS
TOTAL HRS : 45

List of the Practical's

1. Production of text, table and tabular matter in Page make-up software- Page maker, Quark Xpress.
2. Text wrap, automatic page make-up, graphics integration
3. Creating colour pages
4. Scanning of photograph and colour correction in Photoshop, Proofing
5. Designing of Logos, Pages including cover pages in Coral Draw/other design software
6. Design of Book, Magazine cover, Advertisement etc. in Design software.
7. Page make-up
8. File compression and transporting
9. Film output of pages
10. Digital printing output
11. Plate setter output
12. Handling and Care of Printers and others systems

Books:

1. Advertising Art and Ideas – Mr.Rege
2. Jahiratiche Jag (Marathi) – ShobhaBhagwat
3. Charles J. Driksen and other- Advertising principles, problems and cases
4. David A. Aker and John G. Myers- Advertising Management
5. B .s. Rathor-Advertising management

COURSE NAME : B.VOC. IN WEB PRINTING TECHNOLOGY
SEMESTER : SECOND
SUBJECT TITLE : PRACTICAL'S ON OFFSET PRINTING
CONTENTS : PRACTICAL
SUBJECT CODE : BVWPT126
MARKS : 75 MARKS
TOTAL HRS : 45

List of the Practical's

1. Introduction to offset machine.
2. Feeder setting for various stocks.
3. Mounting of plate with packing.
4. Mounting of blanket with packing.
5. Gripper setting of impression cylinder.
6. Setting of dampening roller.
7. Preparation of fountain solution.
8. Cleaning & washing of dampening and Inking system.
9. Make ready operation
10. Premake ready operation
11. Ink flow setting according to job.
12. Multicolor printing.

Learning Resources:

Books:

Sr. No.	Author	Title	Publisher
1	Ian Faux	Modern Lithography	Macdonald & Evans
2	Latham,	Litho Offset press operating	GATF
3	L. C. Young	Materials in Printing Processes	Focal Press, London