KALINGA UNIVERSITY

RAIPUR | INDIA

SCHEME OF EXAMINATION & SYLLABUS

For
Bachelor of Vocational Studies
(B. Voc.)
(Printing Technology)

NAAC GRADE B+ Accredited University

nirf RANKING 2022 Ranked in Top 101-150 Universities

Kalinga University, Naya Raipur, Chhattisgarh

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B. VOC. (PRINTING TECHNOLOGY)

Semester I							
Code No.	**Paper**	**L**	**T/P**	**Credits**	**End Semester Exam**	**Internal Marks**	**Total Marks**
BVPT101	Fundamentals of Computer and Programming	3	0	3	70	30	100
BVPT102	Graphic Design and Reproduction	3	0	3	70	30	100
BVPT103	Offset Printing Technology	3	0	3	70	30	100
BVPT104	Communication Skills	2	1	3	70	30	100
	OPEN ELECTIVE-I (Select any one)	3	0	3	70	30	100
BVPT105A	Applied Mathematics						
BVPT105B	Aptitude & Logical Reasoning						
	GENERAL ELECTIVE-I (Select any one)	2	0	2	70	30	100
BVPT106A	Human Values and Professional Ethics						
BVPT106B	Personality Development & Behavioural Science						
	PRACTICAL/VIVA VOCE						
BVPT107P	Fundamentals of Computer and Programming Lab	0	3	3	30	20	50
BVPT108P	Graphic Design and Reproduction Lab	0	3	3	30	20	50
BVPT109P	Offset Printing Technology Workshop	0	4	4	30	20	50
BVPT110P	Typesetting and Publishing Lab	0	3	3	30	20	50
BVPT111P	Vocational Workshop-I (Pre-Press Software Lab)	0	3	3	30	20	50
	Total	**16**	**17**	**33**	**570**	**280**	**850**

NOTE:
There are five industrial trainings to be carried out by the student(s) in B.Voc course. Industrial Trainings I, III and V will be with weightage of two credits each. These trainings are to be carried out during winter vacations for the duration of two weeks. Industrial Trainings II and IV will be with weightage of four credits each. These trainings are to be carried out during summer vacations for the duration of four to six weeks. These training may be done from industry/Skill Knowledge Providers (SKPs) /Sector Skill Councils (SSCs) / Training Centers/Institutes. Student should submit training report during evaluation. Industrial Training done at the end of the semester will be evaluated in the subsequent semesters.

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Semester II

Code No.	Paper	L	T/P	Credits	End Semester Exam	Internal Marks	Total Marks
BVPT201	Printing Material Science	3	0	3	70	30	100
BVPT202	Packaging Technology-I	3	0	3	70	30	100
BVPT203	Environmental Science	3	0	3	70	30	100
BVPT204	**OPEN ELECTIVE-II (Select any one)**	3	0	3	70	30	100
BVPT204A	Basic Electronics						
BVPT204B	Digital Electronics						
BVPT204C	Basics of Electrical Engineering						
	PRACTICAL/VIVA VOCE (Select any one Lab based on OPEN ELECTIVE-II)	0	2	2	30	20	50
BVPT205A(P)	Basic Electronics Lab						
BVPT205B(P)	Digital Electronics Lab						
BVPT205C(P)	Basics of Electrical Engineering Lab						
	PRACTICAL/VIVA VOCE						
BVPT206P	Printing Material Science Lab	0	3	3	30	20	50
BVPT207P	Packaging Technology-I Lab	0	3	3	30	20	50
BVPT208P	Environmental Science Lab / Field work	0	2	2	30	20	50
BVPT209P	Project-I	0	6	3	30	20	50
BVPT210P	Vocational Workshop-II (Web Offset Printing)	**0**	**3**	**3**	**30**	**20**	**50**
BVPT211P	Industrial Training-I	**0**	**0**	**2**	**30**	**20**	**50**
	Total	**12**	**19**	**30**	**490**	**260**	**750**

Semester III

Code No.	Paper	L	T/P	Credits	End Semester Exam	Internal Marks	Total Marks
BVPT301	Digital Pre-press Technology	3	0	3	70	30	100
BVPT303	Gravure Printing Technology	3	0	3	70	30	100
BVPT303	Basic Mechanical Engineering	3	0	3	70	30	100
BVPT304	Packaging Technology-II	3	0	3	70	30	100
	OPEN ELECTIVE-III (Select any one)	3	0	3	70	30	100
BVPT305A	Financial Accounting						
BVPT305B	Organizational Behaviour						
BVPT305C	Operations Research						
BVPT305D	Industrial Management						
BVPT305E	Managerial Economics						
	PRACTICAL/VIVA VOCE						
BVPT306P	Digital Pre-press Technology Lab	0	3	3	30	20	50
BVPT307P	Gravure Printing Technology Workshop	0	3	3	30	20	50
BVPT308P	Basic Mechanical Engineering Workshop	0	3	3	30	20	50
BVPT309P	Packaging Tech-II Lab	0	3	3	30	20	50
BVPT310P	Industrial Training-II	0	2	4	30	20	50
	Total	**15**	**14**	**31**	**500**	**250**	**750**

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Semester IV

Code No.	Paper	L	T/P	Credits	End Semester Exam	Internal Marks	Total Marks
BVPT401	Database Management System	3	0	3	70	30	100
BVPT402	Flexography and Screen Printing Technology	3	0	3	70	30	100
BVPT403	Digital Printing Technology	3	0	3	70	30	100
	CORE ELECTIVE-I (Select any one)	3	0	3	70	30	100
BVPT404A	Packaging Technology-III						
BVPT404B	Book Publishing						
BVPT404C	E-Publishing						
	OPEN ELECTIVE-IV (Select any one)	3	0	3	70	30	100
BVPT405A	Global Warming & Climate Change						
BVPT405B	Entrepreneurship Development and Planning						
BVPT405C	Business Informatics						
	PRACTICAL/VIVA VOCE (Select any one based on the theory)	0	3	3	30	20	50
BVPT406A(P)	Packaging Technology-III Lab						
BVPT406B(P)	Book Publishing Lab						
BVPT406C(P)	E-Publishing Lab						
	PRACTICAL/VIVA VOCE						
BVPT407P	Database Management System Lab	0	3	3	30	20	50
BVPT408P	Flexography and Screen Printing Technology Workshop	0	3	3	30	20	50
BVPT409P	Digital Printing Technology Lab	0	3	3	30	20	50
BVPT410P	Industrial Training-III/Field Work	0	0	2	30	20	50
BVPT411P	Project-II	0	6	3	30	20	50
	Total	**15**	**18**	**32**	**530**	**270**	**800**

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Semester V

Code No.	Paper	L	T/P	Credits	End Semester Exam	Internal Marks	Total Marks
BVPT501	Technical English	3	0	3	70	30	100
BVPT502	Print Finishing and Converting	3	0	3	70	30	100
	CORE ELECTIVE-II (Select any one)	3	1	4	70	30	100
BVPT503A	Speciality and Security Printing						
BVPT503B	Colour Science and Management System						
	CORE ELECTIVE-III (Select any one)	3	0	3	70	30	100
BVPT504A	Printing Ink Technology						
BVPT504B	Print Production Management						
	PRACTICAL/VIVA VOCE (Select as per CORE ELECTIVE-II)	0	4	4	30	20	50
BVPT505A(P)	Speciality and Security Printing Lab						
BVPT505B(P)	Colour Science and Management System Lab						
	PRACTICAL/VIVA VOCE						
BVPT506P	Language Lab	0	3	3	30	20	50
BVPT507P	Print Finishing and Converting Workshop	0	3	3	30	20	50
BVPT508P	Minor Project	0	8	3	30	20	50
BVPT509P	Industrial Training-IV	0	2	4	30	20	50
	Total	**12**	**21**	**30**	**430**	**220**	**650**

Semester VI

Code No.	Paper	L	T/P	Credits	End Semester Exam	Internal Marks	Total Marks
BVPT601	Printing Machine Maintenance	3	0	3	70	30	100
	CORE ELECTIVE-IV (Select any one)	3	0	3	70	30	100
BVPT602A	**Green Printing and Quality Management in Graphic Arts**	3	1	4	70	30	100
BVPT602B	Estimating and Costing						
	CORE ELECTIVE-V (Select any one)						
BVPT603A	Marketing Management	3	0	3	70	30	100
BVPT603B	Fundamentals of Advertising						
	PRACTICAL/VIVA VOCE						
BVPT604P	Printing Machine Maintenance Workshop						
BVPT605P	Printing Quality Control Lab	0	3	3	30	20	50
BVPT606P	**Seminar**	0	3	3	30	20	50
BVPT607P	Industrial Training-V/Field Work	0	3	3	30	20	50
BVPT608P	Major Project#*	0	0	2	30	20	50
	Total	**9**	**35**	**32**	**360**	**190**	**550**

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1ST SEMESTER
FUNDAMENTAL OF COMPUTER AND PROGRAMMING
(BVPT101)

OBJECTIVE:

The objective of the paper is to facilitate the student with applied working knowledge of computers whilst facilitating the student with the basics of programming aspects, using C as the primary language. This course focuses on the programming constructs which are used in other languages as well. This is the first course on programming and does not assume any prerequisite.

UNIT-I
Five Component Model of a Computer, System and Application software (introduction) storage devices, primary (RAM, ROM, PROM, EPROM, cache) Memory and secondary (magnetic tape, hard disk, Compact disks) memory, peripheral devices, printers. Operating Systems: DOS Internal, External commands, Windows (2000 and NT), Overview of architecture of Windows, tools and system utilities including registry, partitioning of hard disk

UNIT-II
Networking Basics: Uses of a network and Common types of networks, Network topologies and protocols, Network media and hardware, Overview of Database Management System, Basics of programming through flow chart, Concept of algorithms, Flow Charts, Overview of the compiler (preferably GCC), Assembler, linker and loader, Structure of a simple Hello World Program in C, Overview of compilation and execution process in an IDE (preferably Code Block)

UNIT-III
Programming using C: Pre-processor Directive, C primitive input output using get char and put char , simple I/O Function calls from library , data type in C including enumeration , arithmetic, relational and logical operations, conditional executing using if, else, switch and break .Concept of loops , for, while and do-while.

UNIT-IV
Arrays: Arrays (one and two dimensional), 2-d arrays used in matrix computation. Concept of Sub-programming, functions. Parameter transmission schemes i.e. call by value and call by reference, Pointers, relationship between array and pointer, Argument passing using pointers Structure and unions , Strings and C string library, File Handling in C Using File Pointers, fopen( ), fclose( ), Input and Output using file pointers, Character Input and Output with Files.

Text Books:-

1. Peter Norton, Introduction to computers, Sixth Edition Tata McGraw Hill (2007).
2. Forouzan Behrouz A. “Computer Science: A Structured Programming Approach Using C, Cengage Learning 2/Ed.

References Books:

1. R.S. Salaria “Application Programming in C”, Khanna Publishers4/e
2. Joiner Associates Staff, Flowcharts: Plain & Simple: Learning & Application Guide, Oriel Inc Yashwant Kanetkar “Test your C Skills”, BPB Publications
3. http://www.codeblocks.org/

GRAPHIC DESIGN AND REPRODUCTION (BVPT102)

OBJECTIVES AND PRE-REQUISITES:

Every printed product should be well designed before it is sent to the printer for executing the work. The print technician should have a clear perspective of the design principles involved in designing a product, as designing on the printing process is to be decided. The aim of this subject is to introduce the study of design as a decision making discipline which controls all the production aspects of printing techniques. Knowledge of Typography, colours, optical science like reflection, transmission, photographic concept, optical density, Printing processes and different printing products is required as pre-requites to study the subject.

Learning outcomes:
The course covers design organization, visual studies, techniques of copy preparation, layouts and dummy for all kinds of job with aim to examine detailed design considerations and incorporate design planning to different types of products and enable the students to apply this knowledge in their professional career. Photo mechanical transfer of images and electronic image generation are the areas of much importance for a student to develop himself/herself, in making printing surfaces. The subject mainly deals with operation and handling of different equipment machinery etc used for reproduction photography technology.

UNIT-I
Design considerations. Alphabet design, alphabet categories. Type copy and art copy, manual image generation. Type measurements, copy fitting. Cropping, scaling art, tints, surprints reverses and bleeds. Basic principles of design. Design steps. Typography and design. Design terms; point, line, space, shape, mass, size, colour, tone, texture and pattern. Typeface, font, type style, family of type, spacing, unit and set width.

UNIT-II
Characteristics of colours. Colour wheel and relations of colour. Various colour schemes. Primary, secondary and territory colours. Production aspect of colours. Layout of book, newspaper and magazine. Materials for layout and paste up, paste up tools, adhesives. Types of originals; line drawings, continuous tone, black and white, and colour originals. Selection of printing process for different job. Possibilities and limitations of binding and finishing operations.
Planning and production.

UNIT-III
Process Camera Process cameras, types, diff parts, functions Colour temperature, Illuminants its classifications Photographic emulsion, exposure, negative, positives Types of origina-line, halftone

UNIT IV
Colour Separation Additive & subtractive, colour principles. Colour separation, filter factor, , screen angles Film Processing Developers Ingredients and there functions stop bath, fixing bath, Image density.

Text Books:

1. Art and Production – By NN Sarkar
2. Printing Technology – By Adam Faux Reiber
3. Introduction to printing and finishing – By Hugh Speirs

Reference Books:

1. Professional prepress, printing publishing – By Frank J. Romano
2. Graphic reproduction photo graphic focal press London

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OFFSET PRINTING TECHNOLOGY (BVPT103)

OBJECTIVES AND PRE-REQUISITES:

Working in printing industry is required to deal with different offset printing machines. These machines have different operational units. Students are required to have a good knowledge and skills of operating these machines, and image carrier preparation. The subject deals with the sheet-fed offset printing machines, web offset printing machines, their operational units. Knowledge of Offset printing process, its principle, consumables are pre-requisite for the subject.

Learning outcomes:
Students after attaining the above subject knowledge will be able to know the offset printing process with the skill to print on sheet fed and web fed offset machine.

UNIT-I

1. Sheet- fed offset printing machines; Basic principle, configuration, three cylinder, five cylinder, classification, Sizes, speed, suitability of single colour, multicolour, and perfecting machine, their mechanical and operational features.
2. Sheet feeding systems; types, single sheet feeder, stream feeder, sheet controls, sheet insertion devices, registration devices.
3. Printing cylinders; plate, blanket and impression cylinders, setting, cylinder bearers, gauge rings, preparation of image carrier and mounting of it and rubber blanket on cylinders.
4. Rubber blanket; kinds, grades, structure, properties, care and storage.

UNIT-II

1. Inking system; types, Design, care/ maintenance and storage.
2. Dampening system; types, fountain solution and its purpose, different elements of conventional system.
3. Delivery system; types, chute delivery to extended delivery, elements of delivery system, setting and operational features.
4. Pre Make-ready, Make -ready and printing of single colour and multi colour jobs, make-ready book, colour sequence, colour mixing and matching.
5. Running Defects; picking, fluffing, show through, ghosting, Hickies, trapping, Mis- register, Doubling, Set off, Glazing, Static electricity, catch up, damper marks, Scuffing.

UNIT-III

1. Web offset machines; their technical specification, various configuration, blanket to blanket, four- high unit, arch type, satellite type, twin satellite, three quarter satellite, combi- satellite.
2. Infeed unit, different elements, reel stand, AGV transport, splicing, web tension control, dancer roller, auto web up.

UNIT IV

1. Printing units, inking, RCI inking and dampening systems, contacting and non- contacting, print register and control, web control, web viewing system.
2. Dryer and chill roll, silicon applicator and folding unit, folding of web folder and folder super structure, open sheet delivery, turner bars, ancillary operations, numbering, punching, etc.
3. Safety precautions, noise protection encapsulation, automatic wash-up procedure, plate changing, ink and dampening solution supply.

Text Books:

1. Printing Technology, 3rd edition, By Adams, Faux and Rieber published by Delmer Publishers Inc. New York.
2. Advanced Pressmanship By Charles W Latham, Published by GATF Inc.

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COMMUNICATION SKILLS (BVPT104)

OBJECTIVES AND PRE-REQUISITES:

Students should have studied General English up to secondary level and the subject aims at developing communication skills in writing, speaking as well as body language. Learning Outcomes: The students should be able to communicate effectively to his/her superiors as well as juniors at work place in his/her professional field.

UNIT-I

Recognizing and Understanding Communication Styles: What is Communication? Passive Communication, Aggressive Communication, Passive-Aggressive Communication, Assertive Communication, Verbal and Non Verbal Communication, Barriers and Gateways to Communication.

UNIT-II

Listening Skills: Types of Listening (theory /definition), Tips for Effective Listening Academic Listening- (lecturing), Listening to Talks and Presentations, Basics of Telephone communication Writing Skills: Standard Business letter, Report writing, Email drafting and Etiquettes, Preparing Agenda and writing minutes for meetings, Making notes on Business conversations, Effective use of SMS, Case writing and Documentation.

UNIT-III

Soft Skills: Empathy (Understanding of someone else point of view), Intrapersonal skills, Interpersonal skills, Negotiation skills, Cultural Aspects of Communication.

UNIT-IV

Group Communication: The Basics of Group Dynamics, Group Interaction and Communication, How to Be Effective in Groups, Handling Miscommunication, Handling Disagreements and Conflicts, Constructive Criticism.

Text Books:

1. Mckay, M., Davis, M. & Fanning, P.(2008). Messages: The Communication Skills Book, New Harbinger Publications
2. Perkins, P.S., & Brown, L. (2008). The Art and Science of Communication: Tools for effective communication in the workplace, John Wiley and Sons

Reference Books:

1. Krizan et al (2010). Effective Business Communication, Cengage Learning.
2. Scot, O. (2009). Contemporary Business Communication, Biztantra, New Delhi.
3. Chaney & Martin (2009). Intercultural Business Communication, Pearson Education
4. Penrose et al (2009). Business Communication for Managers, Cengage Learning.

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APPLIED MATHEMATICS (BVPT105A)

OBJECTIVE:

The objective of the paper is to facilitate the student with the basics of Applied Mathematics that are required for an engineering student.

UNIT- I

Successive differentiation: Leibnitz theorem for nth derivative (without proof). Infinite series: Convergence and divergence of infinite series, positive terms infinite series, necessary condition, comparison test (Limit test), D'Alembert ratio test, Integral Test, Cauchy's root test, Raabe's test and Logarithmic test(without proof). Alternating series, Leibnitz test, conditional and absolutely convergence. Taylor's and Maclaurin's expansion(without proof) of function (ex, log(1+x), cos x , sin x) with remainder terms ,Taylor's and Maclaurin's series, Error and approximation.

UNIT- II

Asymptotes to Cartesian curves. Radius of curvature and curve tracing for Cartesian, parametric and polar curves. Integration: integration using reduction formula for , Application of integration : Area under the curve, length of the curve, volumes and surface area of solids of revolution about axis only .Gamma and Beta functions.

UNIT- III

Matrices: Orthogonal matrix, Hermitian matrix, Skew-Hermitian matrix and Unitary matrix. Inverse of matrix by Gauss-Jordan Method (without proof). Rank of matrix by echelon and Normal (canonical) form. Linear dependence and linear independence of vectors. Consistency and inconsistency of linear system of homogeneous and non homogeneous equations . Eigen values and Eigen vectors. Properties of Eigen values (without proof). Cayley-Hamilton theorem (without proof). Diagonlization of matrix. Quadratic form, reduction of quadratic form to canonical form.

UNIT-IV

Ordinary differential equations: First order linear differential equations, Leibnitz and Bernaulli's equation. Exact differential equations , Equations reducible to exact differential equations. Linear differential equation of higher order with constant coefficients, Homogeneous and non homogeneous differential equations reducible to linear differential equations with constant coefficients. Method of variation of parameters. Bessel's and Legendre's equations (without series solutions), Bessel's and Legendre's functions and their properties.

Text Books:

1. B. S. Grewal, "Higher Engineering Mathematics", Khanna Publications.
2. R. K. Jain and S.R. K. Iyengar, "Advanced Engineering Mathematics", Narosa Publications.

References Books:

1. E. Kresyzig, "Advance Engineering Mathematics", Wiley publications
2. G. Hadley, "Linear Algebra", Narosa Publication
3. N.M. Kapoor, "A Text Book of Differential Equations", Pitambar Publication.
4. Wylie R, "Advance Engineering Mathematics", Tata McGraw-Hill
5. Schaum's Outline on Linear Algebra, Tata McGraw-Hill
6. Polking and Arnold, "Ordinary Differential Equation using MATLAB", Pearson.

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OPEN ELECTIVE-I
APTITUDE & LOGICAL REASONING (BVPT105B)

OBJECTIVES AND PRE-REQUISITES:

At the end of the course the students will be able to

(a) Interpret different data,

(b) Establish relationship between numbers

(c) Solve different logical. To impart students with logical skills to solve problems easily.

UNIT-I
Data sufficiency, Measurement, Time and distance, Arithmetic, Relationship between numbers.

UNIT-II
Basic mathematical relations and formula, Computation, Data interpretation.

UNIT-III
Differences, Discrimination, Decision-making, Judgment, Problem-solving, Analogies, Analysis.

UNIT-IV
Arithmetic reasoning, Relationship concept, Arithmetic number series, Similarities, Verbal and figure classification, Space visualization, Observation.

Text Books:

1. Arun Sharma, "How to prepare for Logical Reasoning for the CAT".
2. A.K. Gupta, "Logical and Analytical Reasoning".

GENERAL ELECTIVE-I
HUMAN VALUES AND PROFESSIONAL ETHICS (BVPT106A)

OBJECTIVE:

This introductory course input is intended

a To help the students appreciate the essential complementarity between 'VALUES' and 'SKILLS' to ensure sustained happiness and prosperity which are the core aspirations of all human beings.

b To facilitate the development of a holistic perspective among students towards life, profession and happiness, based on the correct understanding of the Human reality and the rest of the Existence. Such a Holistic perspective forms the basis of value-based living in a natural way. To highlight plausible implications of such a Holistic understanding in terms of ethical human conduct, trustful and mutually satisfying human behaviour and mutually enriching interaction with Nature.

UNIT-1: Introduction to Value Education

1. Understanding the need, basic guidelines, content and process for value education.
2. Basic Human Aspirations: Prosperity and happiness
3. Methods to fulfil the human aspirations – understanding and living in harmony at various levels.
4. Practice Session – 1.

UNIT-2: Harmony in the Human Being

1. Co-existence of the sentient "I" and the material body–understanding their needs–Happiness & Conveniences.
2. Understanding the Harmony of "I" with the body–Correct appraisal of physical needs and the meaning of prosperity.
3. Programme to ensure harmony of "I" and Body-Mental and Physical health and happiness.
4. Harmony in family and society: Understanding Human-human relationship in terms of mutual trust and respect.
5. Understanding society and nation as extensions of family and society respectively.
6. Practice Session – 02

UNIT-3: Basics of Professional Ethics

1. Ethical Human Conduct – based on acceptance of basic human values.
2. Humanistic Constitution and universal human order – skills, sincerity and fidelity.
3. To identify the scope and characteristics of people – friendly and eco-friendly production system, Technologies and management systems.
4. Practice Session – 03.

UNIT-4: Professional Ethics in practice

1. Profession and Professionalism – Professional Accountability, Roles of a professional, Ethics and image of profession.
2. Engineering Profession and Ethics - Technology and society, Ethical obligations of Engineering professionals, Roles of Engineers in industry, society, nation and the world.
3. Professional Responsibilities – Collegiality, Loyalty, Confidentiality, Conflict of Interest, Whistle Blowing
4. Practice Session – 04

Text Books:

1. Professional Ethics, R. Subramanian, Oxford University Press.
2. Professional Ethics & Human Values: Subhash Bhalchandra Gogate, Vikas publication
3. Professional Ethics & Human Values: Prof. D.R. Kiran, TATA Mc Graw Hill Education.
4. Professional Ethics & Human Values: S.B. Srivasthva, SciTech Publications (India) Pvt. Ltd. New Delhi.

References Books:

1. Success Secrets for Engineering Students: Prof. K.V. SubbaRaju, Ph.D., Published by SMART student.
2. Ethics in Engineering Mike W. Martin, Department of Philosophy, Chapman University and Roland Schinzinger, School of Engineering, University of California, Irvine.
3. Human Values: A. N. Tripathy (2003, New Age International Publishers)
4. Value Education website, http.//www.universalhumanvalues.info[16]
5. Fundamentals of Ethics, Edmond G. Seebauer & Robert L. Barry, Oxford University Press.
6. Human Values and Professional Ethics: R. R. Gaur, R. Sangal and G. P. Bagaria, Eecel Books (2010, New Delhi). Also, the Teachers‟ Manual by the same author.

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GENERAL ELECTIVE-I
PERSONALITY DEVELOPMENT & BEHAVIOURAL SCIENCE (BVPT106B)

OBJECTIVES AND PRE-REQUISITES:

Students should have studied subjects such as General languages, social studies and Moral education at school level. The objective of this subject is to prepare the students to become a good citizen and a professional useful to the society. Learning Outcomes: The knowledge of this subject will give the student a value system which will help him in taking decisions in professional and social life for the benefit of society at large.

UNIT-I

Definition and Basics of Personality, Understanding Traits and Types of Personality, Analyzing strength and weakness (SW), Body Language

UNIT-II

Business Etiquettes and Public Speaking: Business Manners. Body Language Gestures, Email and Net Etiquettes, Etiquette of the Written Word, Etiquettes on the Telephone, Handling Business Meetings; Introducing Characteristic, Model Speeches, Role Play on Selected Topics with Case Analysis and Real Life Experiences.

UNIT-III

How to Make a Presentation, the Various Presentation Tools, along with Guidelines of Effective Presentation, Boredom Factors in Presentation and How to Overcome them, Interactive Presentation & Presentation as Part of a Job Interview, Art of Effective Listening. Resume Writing Skills, Guidelines for a Good Resume, How to Face an Interview Board, Proper Body Posture, Importance of Gestures and Steps to Succeed in Interviews. Practice Mock Interview in Classrooms with Presentations on Self; Self Introduction – Highlighting Positive and Negative Traits and Dealing with People with Face to Face.

UNIT-IV

Coping Management, Working on Attitudes: Aggressive, Assertive and Submissive Coping with Emotions, Coping with Stress

Text Books:

1. McGraw, S. J., (2008), “Basic Managerial Skills for All, Eighth Edition”, Prentice Hall of India.
2. The Results-Driven Manager (2005). Business Etiquette for the New Workplace: The Results-Driven Manager Series (Harvard Results Driven Manager)

Reference Books:

1. Pease, A. & Pease, B. (2006)., “The Definitive Book of Body Language”, Bantam Books.
2. Scannell, E. & Rickenbacher,C. (2010)., “The Big Book of People Skills Games: Quick, Effective Activities for Making Great Impressions, Boosting Problem-Solving Skills and Improving Customer Service”, Mcgraw Hill Education

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PRACTICAL/VIVA VOCE FUNDAMENTALS OF COMPUTER AND PROGRAMMING-LAB (BVPT107P)

NOTE:

The required list of Experiments is provided as under. The example cited here are purely indicative and not exhaustive. Attempt shall be made to perform all experiments. However, at least 8 experiments should be done in the semester. More experiments may be designed by the respective institutes as per their choice.

List of Experiments:

1. WAP to understand operators.
2. WAP to understand IF and IF ELSE statements.
3. WAP to illustrate switch-case statements.
4. WAP to illustrate for loops.
5. WAP to illustrate while and DO-WHILE loops.
6. WAP to illustrate 1-D Array.
7. WAP to illustrate 2-D Array.
8. WAP to illustrate Functions.

PRACTICAL/VIVA VOCE GRAPHIC DESIGN AND REPRODUCTION-LAB (BVPT108P)

NOTE:

The required list of Experiments is provided as under. The example cited here are purely indicative and not exhaustive. Attempt shall be made to perform all experiments. However, at least 8 experiments should be done in the semester. More experiments may be designed by the respective institutes as per their choice.

List of Experiments:

1. Collection and study of various printed products.
2. Construction of a typeface.
3. Layout preparation; interpretation of copy and layout, preparing composite layouts, rough and finished layouts.
4. Prepare layout for title page, letter head, visiting card, envelops, and greetings.
5. Designing of monograms.
6. Designing of logos, trademarks

7. Designing of Book Jacket.
8. Designing for packages
9. Study of colour mixing and matching.
10. Making of line and half tone negative & positive
11. Colour separation from reflection and transmission copy
12. Making positives by contact methods.
13. Pre-press Proofing

PRACTICAL/VIVA VOCE
OFFSET PRINTING TECHNOLOGY WORKSHOP
(BVPT109P)

NOTE:

The required list of Experiments is provided as under. The example cited here are purely indicative and not exhaustive. Attempt shall be made to perform all experiments. However, at least 8 experiments should be done in the semester. More experiments may be designed by the respective institutes as per their choice.

List of Experiments:

1. Introduction to tools, equipments and material used in offset printing workshop.
2. Introduction to detailed technical specification of some important machines.
3. Preparation of plate,
4. Mounting and adjustment of plate and blanket on cylinder.
5. Preparation of fountain solution.
6. Setting of inking and dampening rollers,
7. Lubrication of machine.
8. Make-ready and printing of single colour job and
9. Multicolour job on multicolour machine.
10. Ink rollers wash up, dampers cleaning and storage of plates.
11. Make ready of Infeed unit of web machine and auto reel change
12. Make ready of Folding unit and adjustment
13. Make ready of web offset machine.

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PRACTICAL/VIVA VOCE TYPESETTING AND PUBLISHING-LAB (BVPT110P)

NOTE:

The required list of Experiments is provided as under. The example cited here are purely indicative and not exhaustive. Attempt shall be made to perform all experiments. However, at least 8 experiments should be done in the semester. More experiments may be designed by the respective institutes as per their choice.

Objectives and pre-requisites: printing industry has to deal with different typesetting systems, typography involving different publications. For this an in-depth knowledge and relevant skill are necessary to be imparted. Through this subject principle of different systems, their technology in printing industry shall be dealt with. Relevant practical exercises are incorporated in the subject to develop necessary vocational skills in the students. Knowledge of typography, typesetting, basic colours, layout preparation substrate, publications, brief knowledge of printing processes is required as pre-requisite.

Learning outcome: students after attaining the above subject knowledge, will be able to typeset different printing products with the use of different systems and techniques involved.

List of Experiments:

1. Conventional Typesetting process and equipments, units of measurements.
2. Computer Typesetting in Word processing software, use of various menus- character elements.
3. Typesetting routine: setting various kinds of work- text, table, display work.
4. Typesetting using Page make-up software (Page Maker) , Creating Master page with Header, footer, page insertion, change of page set-up.
5. Typesetting for various publications, its page set-up.
6. Type setting for Book publishing.
7. Text flow and text wrap, manual/computer page make-up for book, magazine etc.
8. OCR technique for typesetting.
9. Display composition, Setting of coloured pages, with lines and tints.
10. Setting of geometric configuration, setting visiting card with the help of gridline, ruler setting.
11. Proof reading and marking.
12. Taking final printout, use of various printers.
13. Imposition up to 32 pages (for centre stitched and section sewn) for upright and oblong pages, sheet work and half sheet work.
14. Layout preparation.

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VOCATIONAL WORKSHOP-I (PRE-PRESS SOFTWARE-LAB) (BVPT111P)

OBJECTIVES AND PRE-REQUISITES:

printing industry has to deal with different typesetting systems, graphic input, graphic editing, designing and output. For this an in-depth knowledge and relevant skill are necessary to be imparted. Relevant practical exercises are incorporated in the subject to develop necessary vocational skills in the students. Knowledge of software based design, editing, corrections and output of printing documents and image generation will be imparted in the subject. Knowledge of computer operation, basic IT knowledge, handling of input and output devices are required as pre-requisite to study the subject.

Learning outcome: students after attaining the above subject knowledge, will be able to use latest software based design, editing, corrections and output of printing documents and image generation.

1. **Photoshop:** Introduction, image input through Flat bed Scanner and Digital Camera pixel based images, Picture editing, colour correction, scanning the picture, converting image formats, resizing the images.
2. **CorelDraw:** Working principles, designing and practicing.
3. **MS-Word:** Justification works, column work, single column, double column, fonts & type style changing, copy & cut & paste command, Word Art.
4. **PageMaker s/w:** (page Maker, Quark):- page make up of advertisements, folders, journals, book work. Picture and text manipulation, Table work setting, tabular work setting.
5. **In Design, Illustrator s/w:** Designing of Poster, Book and magazine cover, preparing Ad-materials etc.
6. **Various outputs –**Various file format, File conversion, File transfer through media for output, Dot matrix, Inkjet printer, Laser printer, Digital printer output, Output to Image setter, CtP system.

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SEMESTER-II
PRINTING MATERIAL SCIENCE
(BVPT201)

OBJECTIVES AND PRE-REQUISITES:

Working in printing industry are required to deal with different printing materials like substrates-paper, polymer, foils etc. ink, consumables etc. These materials have different characteristics and properties. Students are required to have a good knowledge and skills of using these materials according to suitability and applicability. The subject deals with the materials and its science involved in testing and application. The knowledge of printing process and basic knowledge of science of secondary level will suffice the understanding.

Learning outcome:

Students after attaining the above subject knowledge will be able to know the different printing materials, its process of making, properties, characteristics, testing and suitability for particular print application.

UNIT-I Polymers: Monomer and Polymer, Homopolymer and Copolymers Classification of polymer – linear, branched, cross-linked Polymerization- Addition, Condensation and Copolymerization Types of Polymers—Plastic, Thermoplastic, Thermosetting plastic, Rubber-natural, Vulcanized rubber, Synthetic rubber, Fibers, Physical, Chemical and Mechanical properties and characteristics of polymer Application of polymer in printing—printing ink, resin, vehicles, adhesive, film base, cellulose, and gelatin- its Composition and characteristics.

UNIT-II Colloids: Kinds, characteristics and properties, Colloid materials and application in printing industry Surface tension, Contact angle, capillary action Acidity and Alkalinity: pH, pH Scale, ionic concentration and pH value Measurement of pH using indicator, comparator, digital meter. Principle of digital meter Significance of pH control in printing.

UNIT-III Substrates: Fibrous and non-fibrous raw material used in paper and board, their relative properties, Introduction to pulping process-Mechanical, Chemical, sheet formation in machine (Fourdrinier machine), Fillers and loaders addition, Sizing, Calendering, coating and materials required. Paper reinforcement by Polymer addition, Varieties of paper and board, classification and characteristics Testing of Physical, mechanical and optical properties of paper and its significance. Other substrate—metal foil, plastic, cellulose synthetics.

UNIT-IV Printing ink: Constituents of printing ink, role of constituents, Manufacturing of ink- mixing and milling equipments, General characteristics and properties of printing ink-Tack, viscosity, Rheology etc., Printing ink for various printing processes, four colour process ink, Natural drying methods and radiation curing—Infra Red, UV, Electron Beam, Microwave. Special inks: Heat set, quick set, fugitive, metallic, gloss, moisture set, magnetic, inks for ultra violet and infra red, florescent and their suitability in different applications, Eco-friendly inks, Ink Testing.

Text Books:

1. Materials in Printing Process: L.C. Young
2. Engineering Chemistry: Jain & Jain
3. Science and Technology of Printing Materials: Prakash Shetty (MJP Publisher)

Reference Books:

1. Printing ink Manual
2. Hand Book of Paper Technology

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PACKAGING TECHNOLOGY-I (BVPT202)

OBJECTIVES AND PRE-REQUISITES:

Packaging is an important aspect of modern printing and packaging business. A bulk Printing is done for packaging in the Printing Industry. Printing for packaging has emerged as an area of specialization. Hence this course has been included in the curriculum to impart basic knowledge of packaging technology to enable the student to apply the same in his professional career. Knowledge of graphic design, layout preparation and printing process are pre-requisite for the subject.

Learning outcome:

Students after attaining the above subject knowledge, will be able to know the basics of packaging, the properties of paper and board, paper based package production, finishing operation.

UNIT – I

1. Definition and function of Packaging
2. Packaging criteria and packaging development
3. Product properties influencing packaging development
4. Shelf life of product and packaging material
5. Types of packaging material and printing techniques for different materials
6. Theory on testing's available for paper and their significance

UNIT - II

1. Definition and History of paper
2. Defects of paper and their detections
3. Manufacturing processes for paper and board
4. Application of paper in packaging
5. Types of paper and their selection criteria

UNIT- III

1. Definition and types of folding board cartons
2. Relevant properties of paper board for carton
3. Manufacturing process and flow chart for carton
4. Type of laminations and special effects for ornamentation available in market
5. Definition of Composite containers and its application
6. Types of composite containers and their manufacturing process

UNIT – IV

1. Definition and types of CFB's
2. Board construction – Liners and Flutes
3. Manufacturing Joints, Coatings, Design and flute selection
4. Box style and their economics
5. Manufacturing process with diagrams
6. Advantages and limitations

Text Books:

1. Modern Food Packaging – By Indian Institute of Packaging
2. Packaging Technology Educational Volume – 1 – By Indian Institute of Packaging
3. Packaging Technology Educational Volume – 2 – By Indian Institute of Packaging

ENVIRONMENTAL SCIENCE (BVPT203)

OBJECTIVE:

1. To learn the importance in conservation of environment and natural resources.
2. To learn causes, effects and control measures of environmental pollution.
3. To understand the concepts of disaster management and preparedness to overcome

UNIT – I General: Environmental segments, environmental degradation, environmental impact assessment. Concept of Ecosystem: Fundamental of Ecology and Ecosystem, components of ecosystem, food-chain, food-web, trophic levels, energy flow, cycling of nutrients, major ecosystem types (forest, grass land and aquatic ecosystem).

UNIT – II Air Pollution: Atmospheric composition, energy balance, classification of air pollutants, source and effect of pollutants – Primary (CO, SOx, NOx, particulates, hydrocarbons), Secondary [photochemical smog, acid rain, ozone, PAN (Peroxy Acetyl Nitrate)], green house effect, ozone depletion, atmospheric stability and temperature inversion, Techniques used to control gaseous and particulate pollution, ambient air quality standards.

UNIT – III Water Pollution: Hydrosphere, natural water, classification of water pollutants, trace element contamination of water, sources and effect of water pollution, types of pollutants, determination and significance of D.O., B.O.D., C.O.D. in waste water, Eutrophication, methods and equipment used in waste water treatment preliminary, secondary and tertiary.

UNIT – IV

Land Pollution & Noise Pollution: Lithosphere, pollutants (agricultural, industrial, urban waste, hazardous waste), their origin and effect, collection of solid waste, solid waste management, recycling and reuse of solid waste and their disposal techniques (open dumping, sanitary land filling, thermal, composting).

Noise Pollution: Sources, effect, standards and control.

UNIT – V

Environmental Biotechnology: Definition, current status of biotechnology in environmental protection, bio-fuels, bio-fertilize, bio-surfactants, bio-sensor, bio-chips, bio-reactors.

Pollution Prevention through Biotechnology: Tannery industry, paper and pulp industry, pesticide industry, food and allied industry.

Text Books:

1. Environment and Ecology by Piyush Kant Pandey and Dipti Gupta (Sum India Publication)
2. A Textbook of Environmental Chemistry and Pollution Control by S.S. Dara (S. Chand and Company)

Reference Books:

1. Masters, G.M. Introduction to Environment Engineering and Science (Prentice Hall of India).
2. Environmental Chemistry by A.K. Dey (Eastern Ltd.).
3. Environmental Chemistry by B.K. Sharma (Krishna Prakashan).
4. Nebel B.J. Environmental Science (Prentice Hall of India-1987).

5. Environmental Biotechnology by S.N. Jogdand (Himalaya Publishing House).
6. Introduction to Environmental Biotechnology by A.K. Chatterji (Prentice Hall of India).

OPEN ELECTIVE-II
BASIC ELECTRONICS
(BVPT204A)

OBJECTIVE:

Objective of the paper is to facilitate the student with the basics of electronic aspects that are required for his understanding and applications in their respective field of study. The pre-requisites are, to have a basic understanding of Applied Physics and Mathematics.

UNIT-I

Evaluation of Electronics: Introduction & Application Of Electronics, Energy Band Theory Of Crystals, Energy Band Structures In Metals, Semiconductors And Insulators, Theory Of Semiconductors: Classification Of Semiconductors, Conductivity Of Semiconductors, Carrier Concentration In Intrinsic & Extrinsic Semiconductors, Properties Of Intrinsic And Extrinsic Semiconductors, Variation In Semiconductors Parameters With Temperature, Fermi-Dirac Function, Fermi Level In A Semiconductor Having Impurities, Band Structure Of Open-Circuited P-N Junction, Drift And Diffusion Currents, Carrier Life Time, Continuity Equation (Elementary Treatment Only).

UNIT-II

Theory of p-n Junction Diode: Diode Current Equation, Diode Resistance, Transition Capacitance, Diffusion Capacitance, (Elementary treatment only), Effect of Temperature on p-n Junction Diode, Switching Characteristics, Piecewise Linear Model, Special Diodes: Zener Diode, Varactor Diode, Tunnel Diode, Photodiode, Light Emitting Diodes, Schottky Barrier Diode, Applications of Diodes: Half-Wave Diode Rectifier, Full-Wave Rectifier, Clippers and Clampers (Elementary treatment only).

UNIT-III

Bipolar Junction Transistor: Introduction of transistor, construction, transistor operations, BJT characteristics, load line, operating point, leakage currents, saturation and cut off mode of operations, Eber-moll's model.

UNIT-IV

Application of BJT: CB, CE, CC configurations, hybrid model for transistor at low frequencies, Introduction to FETs and MOSFETs. Fundamentals of Digital Electronics: Digital and analog signals, number systems, Boolean algebra, logic gates with simple applications, logic gates, karnaugh maps.

Text Books:

1. S. Salivahanan, N. Suresh Kr. & A. Vallavaraj, "Electronic Devices & Circuit", Tata McGraw Hill, 2008.
2. Millman, Halkias and Jit, "Electronic Devices and Circuits" McGraw Hill.
3. Boylestad & Nashelsky, "Electronic Devices & Circuits", Pearson Education, 10th Edition.

Reference Books:

1. Sedra & Smith, "Micro Electronic Circuits" Oxford University Press, VIth Edition.
2. Robert T. Paynter, "Introducing Electronic Devices & Circuits", Pearson Education, VIIth Edition, 2006.

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OPEN ELECTIVE-II
DIGITAL ELECTRONICS
(BVPT204B)

OBJECTIVE:

The objective of the paper is to facilitate the student with the knowledge of Logic Systems and Circuits, thereby enabling the student to obtain the platform for studying Digital Systems and Computer Architecture.

UNIT- I Number Systems and Codes:- Decimal, Binary, Octal and Hexadecimal Number systems, Codes- BCD, Gray Code, Excess-3 Code, ASCII, EBCDIC, Conversion between various Codes. Switching Theory: - Boolean Algebra- Postulates and Theorems, De' Morgan's Theorem, Switching Functions- Canonical Forms- Simplification of Switching Functions- Karnaugh Map and Quine Mc-Clusky Methods. Combinational Logic Circuits:- Review of basic gates- Universal gates, Adder, Subtractor ,Serial Adder, Parallel Adder- Carry Propagate Adder, Carry Look-ahead Adder, Carry Save Adder, Comparators, Parity Generators, Decoder and Encoder, Multiplexer and De-multiplexer, ALU, PLA and PAL.

UNIT- II Integrated circuits: - TTL and CMOS logic families and their characteristics. Brief introduction to RAM and ROM. Sequential Logic Circuits: - Latches and Flip Flops- SR, D, T and MS-JK Flip Flops, Asynchronous Inputs. Counters and Shift Registers:- Design of Synchronous and Asynchronous Counters:- Binary, BCD, Decade and Up/Down Counters, Shift Registers, Types of Shift Registers, Counters using Shift Registers- Ring Counter and Johnson Counter.

UNIT- III Synchronous Sequential Circuits: - State Tables State Equations and State Diagrams, State Reduction and State Assignment, Design of Clocked Sequential Circuits using State Equations. Finite state machine-capabilities and limitations, Mealy and Moore models-minimization of completely specified and incompletely specified sequential machines, Partition techniques and merger chart methods- concept of minimal cover table.

UNIT- IV Algorithmic State Machine:- Representation of sequential circuits using ASM charts synthesis of output and next state functions, Data path control path partition-based design. Fault Detection and Location: Fault models for combinational and sequential circuits, Fault detection in combinational circuits; Homing experiments, distinguishing experiments, machine identification and fault detection experiments in sequential circuits.

Text Book:

1. Zyi Kohavi, "Switching & Finite Automata Theory", TMH, 2nd Edition [T2] Morris Mano, Digital Logic and Computer Design", Pearson
2. R.P. Jain, "Modern Digital Electronics", TMH, 2nd Ed,

Reference Books:

1. A Anand Kumar, "Fundamentals of Digital Logic Circuits", PHI
2. Taub, Helbert and Schilling, "Digital Integrated Electronics", TMH

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OPEN ELECTIVE-II
BASICS OF ELECTRICAL ENGINEERING
(BVPT204C)

OBJECTIVE:

To provide exposure to the students in respects of the basics of different aspects of electrical engineering with emphasis on constructional, measurement and applications of various types of instruments and equipments.

UNIT – I: DC Circuits

Introduction of Circuit parameters and energy sources (Dependent and Independent), Mesh and Nodal Analysis, Superposition, Thevenin's, Norton's, Reciprocity, Maximum Power Transfer and Millman's Theorems, Star-Delta Transformation and their Applications to the Analysis of DC circuits.

UNIT – II: A.C. Circuits

Fundamentals, Phasor representation, Steady State Response of Series and Parallel R-L, R-C and R-L-C circuits using j-notation, Series and Parallel resonance of RLC Circuits, Quality factor, Bandwidth, Complex Power, Introduction to balanced 3-phase circuits with Star- Delta Connections.

UNIT – III: Measuring Instruments

Basics of measuring instruments and their types ,Working principles and applications of moving coil, moving iron (ammeter & voltmeter) and Extension of their ranges, dynamometer- type Wattmeter , induction-type Energy Meter , Two-wattmeter method for the measurement of power in three phase circuits, Introduction to digital voltmeter, digital Multimeter and Electronic Energy Meter.

UNIT – IV: Transformer and Rotating Machines

Fundamentals of Magnetic Circuits, Hysteresis and Eddy current losses, working principle, equivalent circuit, efficiency and voltage regulation of single phase transformer and its applications. Introduction to DC and Induction motors (both three phase and single phase), Stepper Motor and Permanent Magnet Brushless DC Motor.

Text Books:

1. S.N Singh, "Basic Electrical Engineering" PHI India Ed 2012
2. Chakrabarti, Chanda,Nath "Basic Electrical Engineering" TMH India", Ed 2012.

Reference Books:

1. William Hayt "Engineering Circuit Analysis" TMH India Ed 2012
2. Giorgio Rizzoni "Principles and Application of Electrical Engineering" Fifth Edition TMH India.

PRACTICAL/VIVA LAB BASED ON OPEN ELECTIVE-II
BASIC ELECTRONICS-LAB
(BVPT205A (P))

NOTE:

The required list of Experiments is provided as under. The example cited here are purely indicative and not exhaustive. Attempt shall be made to perform all experiments. However, at least 8 experiments should be done in the semester. More experiments may be designed by the respective institutes as per their choice.

List of Experiments:

1. Introduction to C.R.O, Function Generator& Bread Board Kit & to generate different types of waveform with the help of Function Generator & to calculate their frequency, amplitude AC & DC voltage.
2. Identification & testing of Active & passive components
3. To plot V-I characteristics of a semiconductor diode & Calculate Static & Dynamic Resistance
4. To Study the Reverse characteristics of Zener diode
5. To Study the Rectifier circuit.
   a Half Wave Rectifier
   b Centre Tapped Rectifier.
   c Bridge Rectifier.
6. To Study the output waveforms of different Filter Ckts of Rectifier.
7. To Plot Input & Output characteristics CB transistor.
8. To Plot Input & Output characteristics of CE transistor.
9. Realization of basic gates.
10. Implementation of Boolean functions (two or three variables).
11. Few experiments mentioned above to be performed on P-spice.
12. To develop a working model of any electronic circuit.

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PRACTICAL/VIVA LAB BASED ON OPEN ELECTIVE-II DIGITAL ELECTRONICS-LAB (BVPT205B (P))

NOTE:

The required list of Experiments is provided as under. The example cited here are purely indicative and not exhaustive. Attempt shall be made to perform all experiments. However, at least 8 experiments should be done in the semester. More experiments may be designed by the respective institutes as per their choice.

List of Experiments:

1. Realize all gates using NAND & NOR gates
2. Realize Half Adder, Full Adder, Half subtracter, Full subtracter
3. Realize a BCD adder
4. Realize a Serial Adder
5. Realize a four bit ALU
6. Realize Master-Save J K Flip-Flop, using NAND/NOR gates
7. Realize Universal Shift Register
8. Realize Self-Starting, Self Correcting Ring Counter
9. Realize Multiplexer and De-Multiplexer
10. Realize Carry Look ahead Adder / Priority Encoder
11. Simulation of PAL and PLA
12. Simulation Mealy and Moore State machines

PRACTICAL/VIVA LAB BASED ON OPEN ELECTIVE-II BASICS OF ELECTRICAL ENGINEERING-LAB (BVPT205C (P))

NOTE:

The required list of Experiments is provided as under. The example cited here are purely indicative and not exhaustive. Attempt shall be made to perform all experiments. However, at least 8 experiments should be done in the semester. More experiments may be designed by the respective institutes as per their choice.

List of Experiments:

1. To Design the circuit for a given load and selection of its various Components and instruments from the safety point of view

2. Study and applications of CRO for measurement of voltage, frequency and phase of signals.
3. Connection of lamp by
    a ngle Switch Method.
    b Two-way Switch Method.
    c OR Performance comparison of of fluorescent Tube & CFL Lamp.
4. To Verify Thevenin's & Norton's Theorem OR.
5. To Verify Superposition & Reciprocity Theorem OR.
6. To Verify Maximum Power Transfer Theorem.
7. To Measure Power & Power Factor in a Single-Phase A.C Circuit using Three Ammeters or three Voltmeters.
8. To Measure Power & Power Factor in a Balanced Three Phase Circuit using Two Single Phase Wattcmeters.
9. To study of Resonance in a series R-L-C or Parallel R-L-C Circuits.
10. To perform open circuit and short circuit test on 1-phase transformer.
11. Starting, Reversing and speed control of DC shunt Motor.
12. Starting, Reversing and speed control of 3-phase Induction Motor.
13. To Study different types of Storage Batteries & its charging system.
14. To Study different types of earthing methods including earth leakage circuit breaker (GFCI).

PRACTICAL/VIVA
PRINTING MATERIAL SCIENCE-LAB (BVPT206P)

NOTE:

List of Experiments:

1. Measurement of GSM of Paper
2. Tensile strength,
3. Bursting strength and
4. Tearing strength of paper
5. Grain and cross grain direction test of paper
6. Surface oil absorption test of paper
7. Opacity,
8. Brightness and
9. Gloss measurement of paper
10. Viscosity,
11. Tack measurement of ink
12. Dispersion measurement of ink
13. pH measurement for fountain solution, paper

PRACTICAL/VIVA
PACKAGING TECHNOLOGY-I-LAB
(BVPT207P)

NOTE:

The required list of Experiments is provided as under. The example cited here are purely indicative and not exhaustive. Attempt shall be made to perform all experiments. However, at least 8 experiments should be done in the semester. More experiments may be designed by the respective institutes as per their choice.

List of Experiments:

1. Thickness of paper
2. Compression Strength
3. Edge crush test
4. Flat crush test
5. Bulk density of paper
6. Ash content
7. Stiffness
8. Moisture content
9. Tensile Strength
10. Bursting Strength
11. Tearing resistance
12. Folding Endurance
13. Cobb Test

PRACTICAL/VIVA
ENVIRONMENTAL SCIENCE LAB/ FIELD WORK (BVPT208P)

NOTE:

The required list of Experiments is provided as under. The example cited here are purely indicative and not exhaustive. Attempt shall be made to perform all experiments. However, at least 8 experiments should be done in the semester. More experiments may be designed by the respective institutes as per their choice.

List of Experiments

1. Determination of pH, conductivity and turbidity in drinking water sample.
2. Determination of pH and conductivity of soil/sludge samples.

3. Determination of moisture content of soil sample.
4. Determination of Total Dissolved Solids (TDS) of water sample.
5. Determination of dissolved oxygen (DO) in the water sample.
6. Determination of Biological oxygen demand (BOD) in the water sample.
7. Determination of Chemical oxygen demand (COD) in the water sample.
8. Determination of Residual Chlorine in the water sample.
9. Determination of ammonia in the water sample.
10. Determination of carbon dioxide in the water sample.
11. Determination of nitrate ions or sulphate ions in water using spectrophotometer.
12. Determination of the molecular weight of polystyrene sample using viscometer method.
13. Base catalyzed aldol condensation by Green Methodology.
14. Acetylation of primary amines using eco-friendly method.
15. To determine the concentration of particulate matter in the ambient air using High Volume Sampler.

For better understanding of various aspects of environment visits to local areas, depending upon easy access and importance may be planned to any nearby river, forest, grassland, hills and students should write a report based on their observations.

Suggested Books:

1. A. I. Vogel, G. H. Jeffery, Vogel's Text Book of Quantitative Chemical Analysis, Published by Longman Scientific & Technical, 5th Edition, 1989.
2. dst.gov.in/green-chem.pdf (monograph of green chemistry laboratory experiments).
3. S. Chawla, Essentials of Experimental Engineering Chemistry, Dhanpat Rai & Co., 3rd Edition, 2008.
4. S. Rattan, Experiments in Applied Chemistry, Published by S.K.Kataria& Sons, 2nd Edition, 2003.
5. W. Cunningham and M. A. Cunningham, Principles of Environment Science: Enquiry and Applications, Tata McGraw Hill Publication, N. Delhi, 2003.
6. A. Kaushik and C. P. Kaushik, Perspectives in Environment Studies, 4th Edition, New Age International Publishers, 2013.

PROJECT-I (BVPT209P) PRACTICAL/VIVA VOCATIONAL WORKSHOP-II (WEB OFFSET PRINTING) (BVPT210P)

OBJECTIVES AND PRE-REQUISITES:

Working in printing industry are required to deal with web offset printing machines for the printing of Newspaper, magazines, book printing and packaging. These machines have different operational units. Students are required to have a good knowledge and skills of operating these machines involving the setting of various units on these machines. The subject deals with the web offset printing machines, their operational units. Knowledge of Offset printing process, its principle, folding process, signatures, consumables are pre-requisite for the subject.

Learning outcome:

Students after attaining the above subject knowledge will be able to operate and print the web offset printing press and its general upkeep.

List of Experiments:

1. Study of detailed technical specification of important web offset machines
2. Study of tools, equipment required in work shop.
3. Cleaning and lubrication of machine.
4. Study of Web tension control and registration unit
5. Clamping of plate on plate cylinder of machine.
6. Setting of rollers of Inking and Dampening unit.
7. Mounting of reel and paper feeding up to folder unit.
8. Setting of folder for tabloid, jaw folding and chopper folding.
9. Setting of dryer chamber and chiller unit.
10. Pre make ready operations on machine.
11. Make ready operations on machine.
12. Printing and folding of newspaper.
13. Printing of Computer Stationery with suitable machine.
14. Printing and folding of book/ magazine work
15. Ink cleaning and washing of dampeners.

PRACTICAL/VIVA
INDUSTRIAL TRAINING-I
(BVPT211P)

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SEMESTER-III
DIGITAL PRE-PRESS TECHNOLOGY (BVPT301)

OBJECTIVES AND PRE-REQUISITES:

Every printed product is consisting of graphics and text. The composition of text and graphics are created, processed, designing work are done mostly in electronic digital environment now a days. This subject will cover the input systems, software involved, digital work flow, outputting and equipments used for the process.

Learning outcome:

After completing this subject student will be able to know the process of text and graphics creation in a electronic digital environment, the system required for the process. Students shall be able to know specific application of various pre-press software, output the final pages, various intermediate conversion required for the process and its output through different equipments.

UNIT-I Colour systems Desktop Computer System- Processor, Basic component. Display System-Raster scan and random scan display, colour display, TFT, LED. bit depth and colour production, Storage system-types of storage system-Magnetic, Optical. HD, CD/DVD, USB Flash drive, external HDD. Principle of read/write, deleting data.

UNIT-II

Scanning and graphics input Flat bed Scanner-principle, optical resolution, image enlargement and reduction, gray scale and true colour scanning, Digital camera- Principle, types, application. Internet-system, component, application in printing. Colour correction, Colour separation, basic steps of separation, Colour Look-up table Desktop Publishing Softwares - Word processing, page make -up, graphic software-pixel based and vector based, other softwares, elements of vector image, features and applications of softwares. Digital font- PS, True type. Text and graphics integration. File format of digital images- TIFF, PDF,JPEG,EPS. Image compression, Zip.

UNIT-III Digital Workflow and Post Script Language Files- component, consolidated, colour management, PostScript file creation, PDF file, Raster image processor, PS printer description file PS Levels, PS model (User space, device space), colour space - device dependent, device independent, PS colour processing , PS output devices. Difference between PS and PDF. Networking, Network Infrastructure, OPI server, colour management system, Trapping, Outputting PS, EPS file.

UNIT-IV

File Output Items to check for output, link file and problems, fonts, EPS file editing, avoiding output problem, PS interpreter and raster image processing (RIP) and its function. Basic concept of colour management. Image proofing, Colour printer, Post script printer, Image setter, Plate setter.

Text/Reference Books:

1. Professional Pre-press, Printing & Publishing by Romano. Prentice Hall
2. Digital Colour Printing by B Chakravarty. Asian Books P Ltd

GRAVURE PRINTING TECHNOLOGY (BVPT302)

OBJECTIVES AND PRE-REQUISITES:

For faster printing works and jobs of huge quantities such as news-papers, magazines, package printing etc., web fed machines are required. These machines are also suitable for multi- colour works. This subject deals with the operational features of presses of gravure printing. An understanding of application of these machines/processes is very essential for a vocational student.

Workings in printing industry are required to deal with different printing process and Gravure printing process is one of the important processes. Students are required to have a good knowledge and skills of operating these machines, and image carrier preparation. The subject deals with the different gravure printing machines, their operational units. Knowledge of recess printing process, its principle, consumables are pre-requisite for the subject.

Learning outcome:

Students after attaining the above subject knowledge will be able to know the gravure surface preparation, printing process with the skill to print on sheet fed and web fed machine.

UNIT-I

History of gravure printing, Gravure products and markets, publication gravure and product gravure. Gravure cylinder preparation; various methods like diffusion etch, direct transfer and electromechanical, Laser cutting, Chrome plating and its advantages, Defects in Gravure cylinder preparation and remedy, cell configuration, cylinder correction, well formation and variables.

UNIT-II

Balancing and re-use of cylinders. Doctor blades; types, mounting, distance, angle etc. Gravure impression roller; function, covering and pressure.

UNIT-III

Gravure press: Principle, kinds, sizes, classification, sheet fed and web fed. Operational features of gravure machine, colour printing, registration control devices, folders, inking unit, doctor blade, drying system.

UNIT-IV

Mounting of cylinder, minor corrections, pre-proofing, gravure package printing, changing and storage of gravure cylinders. Trouble shooting printing defects with their causes and remedies like Drag out, haze, skipping, picking, screening, snow flaking, volcanoes. Gravure substrates; paper, non paper or filmic, foils.

Reference Books:

1. Printing Technology by Adam, Faux, Reiber
2. Hand Book of Print Media, Published by Heidelberg

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BASIC MECHANICAL ENGINEERING (BVPT303)

OBJECTIVES AND PRE-REQUISITES:

The purpose of introducing this subject in this course is to expose the student with the fundamental knowledge about some engineering materials, transmission of power by belts and gears, machine components like Cams, Gears, Coupling and Bearing used in the Printing machines and equipments like offset printing machine, gravure and flexo machine. Students shall be able to know various mechanism employed in mechanical systems. Basic workshop process like brazing soldering welding, fitted and machine operations like turning shaping grinding and drilling and working of wood working machines will further enrich the knowledge of student for practical application in the world of work. Basic knowledge physical science like force, power, motion, torque, Work done, machine elements etc. are required as pre-requisite.

Learning outcome: Students shall learn about engineering materials and its properties, mechanism of machines, power transmission system, basic workshop operation etc.

UNIT-I

Introduction to Engineering Materials, classification of materials, properties of material, Cast Iron, Steel, Alloy steel Iron-carbon diagram, purpose of Heat treatment, Heat treatment methods-Annealing, Normalizing, tempering, hardening methods, TTT diagram. Hook's Law, Stress –Strain diagram.

UNIT-II

Mechanism Links, Kinetic Pair, Mechanism and Structure, Types of Kinetic Chain, Four bar linkages. Single slider Crank chain, Inversion of single slider crank, rocker arm mechanism, Slider crank, Inversion of single slider crank, swinging block; oscillating arm quick return mechanism; Pawl & Ratchet. Cams and followers-terminology and classification, Cam profile.

UNIT-III

Permanent and detachable fastening- bolts, nuts, screw, keys. Thread and its type. Studs and Rids Shaft couplings, Types of coupling, Flange and Flexible coupling, bearings, types of bearing, journal, Ball, roller and thrust bearing. Selection of bearing. Welding and its type, Brazing and Soldering.
Machine operation- Turning, shaping, grinding, drilling.

UNIT-IV

Transmission of Power Transmission of power through belt, Flat and U belts, rope and chain drive. Pulleys, Gears-gear terminology, spur gears, helical and bevel gears, rack and pinions, worm gears; Simple and epicyclic gear train, compound gear drive, velocity of ratio.

Text/ Reference Books:

1. Material Science by O P Kanna
2. Theory of Machine by R S Khurmi
3. Elements of Mechanical Engineering by S B Mathur and S Domkundwar. [T4] Workshop Practice by Swam Singh

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PACKAGING TECHNOLOGY-II (BVPT304)

OBJECTIVES AND PRE-REQUISITES:

Packaging is an important aspect of modern printing and packaging business. A bulk Printing is done for packaging in the Printing Industry. Printing for packaging has emerged as an area of specialization. Hence this course has been included in the curriculum to impart basic knowledge of packaging technology to enable the student to apply the same in his professional career. Knowledge packaging concept, various hazards involved, package elements, materials required are pre-requisite for the subject.

Learning outcome:

Students after attaining the above subject knowledge, will be able to know package design process, its testing, development, various packaging materials and its formation, packaging management concept.

UNIT-I Package Design and Testing:

Elements of Package Design: Factors influencing design of a package, Packaging cycle, product package relationship, product life curve, Hazards on package, Tests on package - mechanical, climatic. Corrosion: Types, cause, corrosion prevention methods. Desiccants types, properties and applications, Cushioning materials: Functions, properties. Classifications, cushion Design - Design procedure, cushion curve. Aerosols typical aerosol system, aerosol valve operation, Introduction to Plastic Moulding: Conversion methods- Principles & Applications Sheet Extrusion, Blown Film Extrusion & Co-extrusion, Blow Moulding, Injection Moulding, Injection Stretch Blow Moulding, Combined Forming, Thermoforming, Compression Moulding, Transfer Moulding, Vacuum Forming, Pressure Forming.

UNIT-II

Packaging Materials Properties tensile strength & elongation, tear strength, impact strength, heat seal strength, coefficient of friction, haze and gloss, environmental stress crack resistance (ESCR), chemical properties, Melt Flow Index, Oxygen Transmission Rate, Gas Transmission Rate, Water Vapor Transmission Rate, Moulding processes. Adhesives and adhesive tapes - types, properties and applications. Flexible packaging laminates: Purpose, properties of laminates structural, performance, barrier, aesthetics and other properties. Laminating processes wet bonding, dry bonding, hot-melt bonding. Specifying laminates, advantages of laminates.

UNIT-III

Packaging Development Packaging in modern society, Packaging and marketing, Package Designers role. packaging specifications, Quality Control and quality assurance, Paper, Paper boards, Structural design - Types of paper and paper board, Working with paper and boards, Folding cartons, Types and applications, Corrugated containers, Designing and manufacturing, testing corrugated containers, stacking strength, Rigid packaging: glass containers, aerosols, metal tubes, plastic tubes, and the aerosol can, Environmental: implications of packaging and Solid waste disposal, Packaging regulations, laws and regulations, recycling of packaging materials, Latest trends in packaging- Advancements in package designing tools, Smart packaging technologies, Aseptic packaging, Advancements in packaging machineries.

UNIT-IV

Packaging Management Packaging production planning and control: Production planning, scheduling and control, material purchasing, inventory and quality control. Work allocation, scheduling dynamics. Packaging management solution and workflow JDF, PDF and CIP3/CIP4. Equipment planning, investing and management. Packaging supply chain management: Introduction, objectives, decision phases, performance drivers and management strategy. Demand forecasting, Judgment techniques, Inventory control types, reasons, inventory models and control.ERP. Packaging Quality Management: Introduction to quality and quality control, Scientific quality management tools, Value stream mapping, Packaging costing and work measurement: Quality and cost, Costs associated with packaging design, production and transportation, Solid Waste Management.

Text/ Reference Book(s): Packaging Design

1. Sudhir Gupta: Hand Book of Packaging Tech, Engineers India Research Institute, New Delhi
2. Brody Aaron L, The Wiley Encyclopaedia of packaging Tech, John Wiley & Sons Packaging Material
3. Natarajan S, Fundamentals of Packaging Tech, PHI, New Delhi Management
4. Martand T Telsang: Production Management, S Chand & Co. Packaging Design and Development
5. Hanlon Joseph F: hand Book of Package Engineering
6. Prakash Shetty: Science and Technology of Printing Materials, MJP Publisher

OPEN ELECTIVE-III FINANCIAL ACCOUNTING (BVPT305A)

OBJECTIVES AND PRE-REQUISITES:

The primary objective of the course is to familiarize the students with the basic accounting principles and techniques of preparing and presenting the accounts for user of accounting information.

UNIT-I Meaning and Scope of Accounting: Objectives and Nture of Accounting, Definition and Functions of Accounting, Book Keeping and Accounting, , Interrelationship of Accounting with other Disciplines, Branches of Accounting, Limitation of Accounting, Accounting Equation. Accounting Principles and Standards: Accounting Principles, Accounting Concepts and Conventions, Accounting cycle system of accounting Introduction to Accounting Standards Issued by ICAI. Journalizing Transactions: Journal, Rules of Debit and Credit, Sub Division of Journal: Cash Journal, Petty Cash Book, Purchase Journal, Purchase Return, Sales Journal, Sales Return Journal, Voucher System.

UNIT-II Ledger Posting and Trial Balance: Ledger, Posting, Rules Regarding Posting, Trial Balance. Capital and Revenue: Classification of Income, Classification of Expenditure, Classification of Receipts, Difference between Capital Expenditure & Capitalized, Expenditure. Inventory Valuation: Meaning of Inventory, Objectives of Inventory Valuation, Inventory Systems, Methods of Valuation of Inventories, Depreciation Provisions and Reserves: Concept of Deprecation, Causes of Depreciation, Basic Features of Depreciation, Meaning of Depreciation Accounting, Objectives of Providing Depreciation, Fixation of Depreciation Amount, Method of Recording Depreciation, Methods of Providing Depreciation, Depreciation Policy, AS-6 (Revised) Provisions and Reserves, Change of Method of Depreciation.
(by both Current and Retrospective Effect).

UNIT-III Shares and Share Capital: Introduction to Joint Stock Company, Shares, Share Capital, Accounting Entries, Under Subscription, Oversubscription, Calls in Advance, Calls in Arrears, Issue of Share at Premium, Issue of Share at Discount, Forfeiture of Shares, Surrender of Shares, Issue of Two Classes of Shares, Right Shares, Re- issue of Shares. Debentures: Classification of Debentures, Issue of Debentures, Different Terms of Issue of Debentures, Writing off Loss on Issue of Debentures, Accounting Entries, Redemption of Debentures.

UNIT-IV Company Final Accounts: Preparation of Final Accounts, Manufacturing Account; Trading Account, Profit and Loss Account; Balance Sheet (with adjustments), Contents of Corporate Annual Reports with Annexures.

Text Books:

1. Tulsian, P.C., (2015), Financial Accountancy, Pearson Education.

2. Maheshwari, S.N. and Maheshwari, S. K., (2015), An Introduction to Accountancy, Vikas Publishing House.

Reference Book:

1. Bhattacharyya, Ashish K., (2015), Essentials of Financial Accounting, Prentice Hall of India.
2. Rajasekran, (2015), Financial Accounting, Pearson Education.
3. Bhattacharya, S.K. and Dearden, J., (2015), Accounting for Manager – Text and Cases, Vikas Publishing House.
4. Glautier, M.W.E. and Underdown, B., (2015), Accounting Theory and Practice, Pearson Education.

OPEN ELECTIVE-III
ORGANIZATIONAL BEHAVIOUR
(BVPT305B)

OBJECTIVE:

The aim of this paper is to provide managerial skills in the students.

UNIT-I Introduction: Concept and nature of Organizational Behaviour; Contributing disciplines to the field of O.B.; Models; Need to understand human behaviour; Challenges and Opportunities, Management functions, Tasks and responsibilities of a professional manager; Managerial skills.

UNIT-II Individual & Interpersonal Behaviour: Biographical Characteristics; Ability; Values; Attitudes-Formation, Theories, Organization related attitude, Relationship between attitude and behaviour; Personality – determinants and traits; Emotions; Learning-Theories and reinforcement schedules, Perception –Process and errors.

UNIT-III Organization Structure and Process: Organizational climate and culture, Organizational Structure and Design, Managerial Communication, Motivation, Stress and its management, Decision Making: Organizational Context of Decisions, Decision Making Models; Problem Solving.

UNIT-IV Interactive Aspects of Organizational Behaviour: Interpersonal Behaviour: Johari Window; Transactional Analysis – ego states, types of transactions, life positions, applications of T.A, Group Dynamics; Management of Organizational Conflicts; Leadership Styles.

Text Books:

1. Luthans Fred., “Organizational Behaviour”, McGraw Hill, 2010, 12th ed.
2. Robbins & Judge (15th ed.), “Essentials of Organizational Behaviour”, Pearson 2012.

References Books:

1. Stoner, R. James A.F., Edward Freeman Daniel R Gilbert Jr., Management 6TH Ed, PHI.
2. George, J. M. & Jones, G.R. (2009). Understanding and Managing Organizational Behaviour, 5th Edition, Pearson Education.
3. Green Berg, J. and Baron, R.A. (2008), Behaviour in Organization. Prentice Hall of India.
4. Mcshane, S.L., Von Glinow, M.A., Sharma, R.R. (2006) Organizational Behaviour. Tata McGrawHill.

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OPEN ELECTIVE-III
OPERATIONS RESEARCH
(BVPT305C)

OBJECTIVE:

The objective of the paper is to acquaint the student with mathematical techniques being adopted in industry which help managers in decision taking.

UNIT-I Linear Programming: Formulation of LP Problem. Graphical method, Simplex method for maximization and minimization LP Problems. Duality in Simplex Problems, Queuing Theory: Introduction to probability concept for queuing problems. Basic structure, Terminology, Classification, Birth and Death Process. Queuing Models.

UNIT-II Transportation Models: MODI method for optimality check, North West Corner Method, Least-cost Method and Vogel's Approximation Method (VAM) for solving balanced and unbalanced transportation problems. Problems of degeneracy and maximization. Assignment Models: Assignment model for maximization & minimization problems. Travelling Salesman Problems, Industrial Problems.

UNIT-III Sequencing Theory: Processing of n-jobs through m-machines with each job having same processing order. Processing of two jobs through m-machines with each job having different processing order. Decision Theory: Decision making under uncertainty and under risk, Multistage decision making, Multi criteria decision making.

UNIT-IV Network Models: Introduction to PERT and CPM. Fundamental concept of Network models and construction of network diagrams. Activity time estimates. Critical path and project time duration. Probability of completing the project on or before specified time. Concept of Float and slack. Game Theory: Two person zero-sum games. Minimax and Maximin principle. Arithmetic, Algebraic, Matrix Algebra method. Solution by Dominance, Subgame, Graphical method, Linear programming method.

Text Books:

1. Hira and Gupta, "Operation Research" S. Chand Publications
2. H.A. Taha, "Operations Research", Prentice-Hall India, 6th Edition, 2004.

Reference Book:

1. S.Kalavathy, "Operations Research", Vikas Publication, 4th Edition, 2013.
2. N.D. Vohra, "Operations Research", Tata McGraw Hill, 2004.
3. Richard Bronson, Govindasami Naadimuthu, "Operations Research", Tata McGraw Hill, 2004
4. A.P. Verma, "Operations Research", S.K. Kataria & Sons, 2004.
5. J.K. Sharma, "Operation Research", Macmillan India Ltd. 2005.

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OPEN ELECTIVE-III
INDUSTRIAL MANAGEMENT
(BVPT305D)

OBJECTIVE:

The course provides a broad introduction to some aspects of business management and running of business organization.

UNIT-I Industrial relations- Definition and main aspects. Industrial disputes and strikes. Collective bargaining. Labour Legislation- Labour management cooperation/worker's participation in management. Factory legislation. International Labour Organization.

UNIT-II Trade Unionism- Definition, Origin, Objectives of Trade Unions. Methods of Trade unions. Size and finance of Indian Trade unions-size, frequency distribution, factors responsible for the small size. Finance-sources of income, ways of improving finance.

UNIT-III Work Study- Method study and time study. Foundations of work study. Main components of method study. Time study standards. Involvement of worker's unions. Work Sampling. Application of work study to office work.

UNIT-IV Quality Management- What is Quality? Control Charts. Quality is everybody's job. Taguchi Philosophy. Service Quality. What is Total Quality Management (TQM)? Roadmap for TQM. Criticism of TQM. Six Sigma.

Text Book:

1. Sinha, P.R.N., Sinha I.B. and Shekhar S.M.(2013), Industrial Relations, Trade Unions and Labour Legislation. Pearson Education
2. Chary, S.N. (2012), Production and Operations Management. Tata McGraw Hill Education.

Reference Books:

1. Srivastava, S.C. (2012), Industrial Relations and Labour Laws, Vikas Publishing
2. Shankar R (2012), Industrial Engineering and Management. Galgotia Publications
3. Telsang, M. (2006), Industrial Engineering and Production Management. S.Chand
4. Thukaram, Rao (2004), M.E. Industrial Management. Himalaya Publishing House.

OPEN ELECTIVE-III
MANAGERIAL ECONOMICS
(BVPT305E)

OBJECTIVE:

The objective of this subject is to give understanding of the basic concepts and issues in economics and their application in business decisions.

UNIT-I Introduction: Nature, Scope and Significance of Managerial Economics, its Relationship with other Disciplines,

Role of Managerial Economics in Decision Making; Opportunity cost Principle, Production Possibility Curve, Incremental Concept, Cardinal and Ordinal Approaches to Consumer Behaviour: Equi- marginal principle, Law of Diminishing Marginal Utility, Indifference curve Analysis.

UNIT-II Demand Analysis and Theory of Production: Demand Function, Determinants of Demand, Elasticity of Demand, Demand Estimation and Forecasting, Applications of Demand Analysis in Managerial Decision Making; Theory of Production: Production Function, Short Run and Long Run Production Analysis.

UNIT-III Theory of Cost and Market Structures: Traditional and Modern Theory of Cost in Short and Long Runs, Economies of Scale and Economies of Scope; Market Structures: Price-Output decisions under Perfect Competition, Monopoly, Monopolistic Competition.

UNIT-IV Introduction to Macro Economics: Nature and Importance; Economic Growth and Development, Methods of Measurement of National Income; Inflation: meaning, Theories, and Control measures.

Text Book:

1. Samuelson, Paul and Nordhaus, William, (2016), Economics, McGraw Hill Education.
2. Dwivedi, D.N., (2015), Managerial Economics, Vikas Publishing House.

Reference Book:

1. Salvatore, Dominick, (2015), Managerial Economics in a Global Economy, Oxford University Press.
2. Kreps, David, (2015), MicroEconomics for Managers, Viva Books Pvt. Ltd.
3. Peterson, Lewis and Jain, (2016), Managerial Economics, Pearson Education.
4. Colander, David, C., (2015), Economics, McGraw Hill Education.

PRACTICAL/VIVA
DIGITAL PRE-PRESS TECHNOLOGY-LAB (BVPT306P)

NOTE:

The required list of Experiments is provided as under. The example cited here are purely indicative and not exhaustive. Attempt shall be made to perform all experiments. However, at least 8 experiments should be done in the semester. More experiments may be designed by the respective institutes as per their choice.

List of Experiments:

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.

PRACTICAL /VIVA
GRAVURE PRINTING TECHNOLOGY WORKSHOP (BVPT307P)

NOTE:

The required list of Experiments is provided as under. The example cited here are purely indicative and not exhaustive. Attempt shall be made to perform all experiments. However, at least 8 experiments should be done in the semester. More experiments may be designed by the respective institutes as per their choice.

List of Experiments:

1. Safety precautions to be observed in lab.
2. Study of various gravure printing machines
3. Study of various components
4. Cylinder transport system and mounting of cylinder
5. Pre-make ready of Gravure machine
6. Make ready of feeding system
7. Make- ready of gravure machine
8. Surface preparation for gravure machine with Electromechanical process
9. Surface preparation for gravure machine with laser cutting process
10. Taking proof in proof press
11. Cylinder correction.
12. Printing on different substrate.
13. Make- ready of gravure machine
14. Study of different running on problems and trouble shooting

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PRACTICAL/VIVA
BASIC MECHANICAL ENGINEERING WORKSHOP (BVPT308P)

NOTE:

The required list of Experiments is provided as under. The example cited here are purely indicative and not exhaustive. Attempt shall be made to perform all experiments. However, at least 8 experiments should be done in the semester. More experiments may be designed by the respective institutes as per their choice.

List of Experiments:

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.

PRACTICAL/VIVA
PACKAGING TECHNOLOGY-II-LAB (BVPT309P)

NOTE:

The required list of Experiments is provided as under. The example cited here are purely indicative and not exhaustive. Attempt shall be made to perform all experiments. However, at least 8 experiments should be done in the semester. More experiments may be designed by the respective institutes as per their choice.

List of Experiments:

1. Cushion Factor determination

2. Fragility factor determination
3. Drop test
4. Vibration test
5. Rolling test
6. Inclined impact test
7. Rain test
8. Tensile and percentage elongation
9. Tear propagation
10. Izod impact test
11. Heat seal strength
12. Coefficient of friction
13. Environmental stress crack resistance
14. Haze and Transparency
15. Gloss

PRACTICAL/VIVA
INDUSTRIAL TRAINING-II
(BVPT310P)

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SEMESTER-IV
DATABASE MANAGEMENT SYSTEM
(BVPT401)

OBJECTIVES AND PRE-REQUISITES:

The objective of the paper is to facilitate the student with applied working knowledge of data management in computer environment. Electronic and digital Pre-press technology use a number of software for page composition, designing, graphics editing, final page making and printing. Digital printing and on demand printing require the direct access of files for printing from computer to suitable substrate through printer. The subject shall deal with data management and controlling.

Outcome:

Basic knowledge of computer, software, operating system which students have already got the knowledge at first year. This subject shall deal with method of organizing huge volume of data in terms of storage and retrieval. Duplication of information, data security to prevent data loss by means of power failure, unwanted external interruption, and unauthorized access on the data base. Handling of multiple request as a back end tool and open data base.

UNIT-I Introduction to Databases and Transactions: What is database system, purpose of database system, view of data, relational databases, database architecture, transaction management. Data Models: The importance of data models, Basic building blocks, Business rules, the evolution of data models, Degrees of data abstraction.

UNIT-II Database Design, ER Diagram and Unified Modelling Language: Database design and ER Model overview, ER Model, Constraints, ER-Diagrams, ERD Issues, weak entity sets, Codd's rules, Relational Schemas, Introduction to UML Relational Database Model: Logical view of data, keys, integrity rules. Relational Database Design: Features of good relational database design, atomic domain and Normalization (1NF, 2NF, 3NF, BCNF).

UNIT-III MS- Access: Database Basics, Working with Database Objects, Tour of a Table, Adding, Editing and Deleting Records, Tour of a Form, Tour of a Query, Tour of a Report, Previewing and Printing a Database Object, Selecting Data Cutting, Copying and pasting Data Using Undo and Redo, Checking Your Spelling, Using the Zoom Box.

UNIT-IV Finding, Filtering and Formatting Data: Finding and Replacing Data, Sorting Records, Using Common Filters, Filtering by Selection, Filtering by Form, Creating an Advanced Filter, Adjusting and Rearranging Rows and Columns, Changing Gridline and Cell Effects, Changing the Datasheet Font, Freezing a Column.

Text/ Reference Book:

1. Database System concepts by Abraham Silver Schatz.
2. Fundamentals of Database Systems by Elmasri and S Navathe.

FLEXOGRAPHY AND SCREEN PRINTING TECHNOLOGY (BVPT402)

OBJECTIVES AND PRE-REQUISITES:

For faster printing works and jobs such as package printing, labels, stationery etc. Flexography printing is used widely. These machines are also suitable for multi-colour works. Screen printing is also used for printing on small size substrate and three dimensional surfaces can be printed by this process. This subject deals with the operational features of presses of Flexographic machine and Screen printing machine. An understanding of application of these machines/processes is very essential for a vocational student.

Working in printing industry is required to deal with different printing process and Flexography printing process is one of the important processes. Screen printing is also used for wide range of substrate and efficient for printing of small quantity. Students are required to have a good knowledge and skills of operating these machines, and image carrier preparation for these printing processes. The subject deals with the flexographic printing machines, their operational units. Knowledge of relief printing process, its principle, consumables are pre-requisite for the subject.

Learning outcome: students after attaining the above subject knowledge will be able to know the Flexographic surface preparation, printing process with the skill to print on Flexographic machine. In addition they will be able to know preparation of image carrier for screen printing and its equipments and machineries.

UNIT-I Introduction to Flexography: Definition, history, market Flexography Plate Making: Both rubber flexographic plates and polymer plate making. Kinds and methods of preparation, care and handling, Defects in flexography plate making and remedy. Mounting of flexography plates. Latest trends in flexo surface preparation.

UNIT-II Screen Printing Surface Preparation: Basic concept, classification of stencils, screen fabrics, frame preparation, fabric treatment, type of stencils, brief outlines of preparing hand cut stencils, touché and glue method and photographic stencils.

UNIT-III

Flexography Printing; Principle, kinds, configuration-stack, common impression, in-line, tension control, sizes of flexo machines. Basic parts of flexo machine, fountain, anilox inking, reverse angle doctor blade, plate cylinder, impression cylinder, registration control and drying system. Safety devices and quality control Trouble shooting printing defects with their causes and remedies like pin holing, halo, etc.

UNIT-IV

Screen Printing; Introduction to manual printing, make ready and printing on semi automatic machines,
Automatic machine, Cylindrical screen, 3D surface printing. Troubleshooting clogged screens, care and storage of screens, screen inks, its kinds, and ink drying methods.

Text/ Reference Book:-

1. Printing Technology by Adam, Faux, Reiber
2. Hand Book of Print Media, Published by Heidelberg

DIGITAL PRINTING TECHNOLOGY (BVPT403)

OBJECTIVES AND PRE-REQUISITES:

The latest technology use the direct printing on paper or other substrate from a output device. The digital printing technology is different from a conventional process of printing. Once the page is finalized the computer is capable to print on required substrate in multiple copies with the use of toner. This subject will cover various process of digital printing, consumables required for the process.

Learning outcome: After completing this subject students will be able to know the various digital printing process, digital printing machineries and use of consumables for the process, its merits and demerits. Also they will learn the scope and application of digital printing.

UNIT-I Digital Colour Management: Colour reproduction, source and destination profile, obtaining profile, adjusting profile, device calibration, process of calibration of devices, device dependent profile, device independent colour space, colour lookup tables, PS colour processing, CIE based colour space Digital Proofing: technologies used for digital proofing, hard proofing, soft proofing, halftones simulation (dot proofing), remote proofing, preflight.

UNIT-II

Digital printing technologies overview of digital printing Defining digital printing processes- electrostatic printing, ink-jet (thermal, piezoelectric, continuous), phase change, computer-to-press (direct imaging DI) etc.

UNIT-III

Ink jet ink Dry toner/ liquid toner Printing substrate Digital Printing Machines: The Xeikon digital press and Indigo E-print 1000 Problems of digital machines Limits of toner based technology.

UNIT-IV Variety of Applications: customization and direct marketing, Print-on-Demand (POD), variable data printing (VDP), wide-format printing, specialty applications (particularly of inkjet) like 3D printing Trends in Digital Printing: evolution of technologies, promising developments (e.g. Xerox iGen3, HP Z-series inkjet printers with in-built spectrophotometer etc), future trends, eco-friendliness.

Text/ Reference Books:-

1. Professional Pre-press, Printing & Publishing by Romano. Prentice Hall.
2. Digital Colour Printing by B Chakravarty. Asian Books P Ltd.

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CORE ELECTIVE-I
PACKAGING TECHNOLOGY-III
(BVPT404A)

OBJECTIVES AND PRE-REQUISITES:

Packaging is an important aspect of modern printing and packaging business. A bulk packaging is done for food packaging. Hence this subject has been included in the curriculum to impart basic knowledge of biological effect, preservation, food packaging technology, materials. Knowledge of packaging concept, various hazards involved, package elements, materials required are pre-requisite for the subject.

Learning outcome: Students after attaining the above subject knowledge, will be able to know biological aspect of food packaging, its preservation, food packaging materials etc.

UNIT-I

Introduction:

Packaging design and development, Packaging specifications and standards, Package Design using computers Food Bio deterioration and Methods of Preservation

Introduction, Agents of food bio deterioration, Enzymes, Microorganisms, Non-enzymic bio-deterioration

Food preservation methods, High temperatures, Low temperatures, Drying and water activity control, Chemical preservation, Fermentation,

Modified atmosphere Packaging (MAP), Controlled atmosphere packaging (CAP)

Other techniques and development.

UNIT-II

Packaged Product Quality and Shelf Life:

Introduction, Factors affecting product quality and shelf life, Chemical/biochemical processes, Oxidation, Enzyme activity Microbiological processes, Examples where packaging is key to maintaining microbiological shelf life, Physical and physico-chemical processes, Physical damage, Insect damage, Moisture migration, Barrier to odour pick-up, Flavour scalping, Migration from packaging to foods, Migration from plastic packaging, Migration from other packaging materials, Factors affecting migration from food contact materials, Packaging selection to control migration and packaging taints, Methods for monitoring migration.

UNIT-III

Metal Packaging:

Overview of market for metal cans, Container performance requirements, Container designs, Raw materials for can-making, Steel, Aluminium, How steel and aluminium are used in metal packaging Can-making processes, Three-piece welded cans, Two-piece single drawn and multiple drawn (DRD) cans, Two-piece drawn and wall ironed (DWI) cans, Two-piece impact extruded cans, Coatings, film laminates and inks, Processing of food and drinks in metal packages Plastics in Food Packaging Introduction, Use of plastics in food packaging, Types of plastics used in food packaging, Manufacture of plastics packaging Introduction to the manufacture of plastics packaging, Plastic film and sheet for packaging, Pack types based on use of plastic films, laminates, etc., Rigid plastic packaging.

UNIT-IV

Plastics in Food Packaging:

Types of plastic used in packaging, Polyethylene (PE), Polypropylene (PP), Polyethylene Terephthalate (PET or PETE), Polyethylene naphthalene dicarboxylate (PEN), Polycarbonate (PC), Ionomers, Ethylene vinyl acetate (EVA), Polyamide

(PA), Polyvinyl chloride (PVC), Polyvinylidene chloride (PVdC), Polystyrene (PS), Styrene butadiene Rubber (SBR), Acrylonitrile butadiene styrene (ABS), Ethylene vinyl alcohol (EVOH), Polymethyl pentene (TPX), High nitrile polymers (HNP), Fluoropolymers, Cellulose-based materials, Polyvinyl acetate (PVA) Coating of plastic films: Types and properties, Introduction to coating, Acrylic coatings, PVdC coatings, PVOH coatings, Low-temperature sealing coatings (LTSCs), Metallising with aluminium, SiOx coatings, DLC (Diamond-like coating),Extrusion coating with PE Secondary conversion techniques, Film lamination by adhesive, Extrusion lamination, Thermal lamination.

Text/ Reference Books:

1. Food and Beverage Packaging Tech, Second Edition, Wiley-Blackwell Publishing
2. Anne Emblem and Henry Emblem: Packaging Tech Fundamentals, Materials and Process, Woodland Publishing Ltd.

CORE ELECTIVE-I
BOOK PUBLISHING
(BVPT404B)

OBJECTIVES AND PRE-REQUISITES:

A major application of printing is in the area of publication printing like books, magazine, periodicals etc. It is important to make understand about types of publications, activities and editorial process, publication norms, laws, production, pricing etc. Typography, layout design, size of publication, printing process etc. are pre-requisite for the subject.

Learning outcome: Students will be able to know types of publication, editorial process and activities, publication norms and related laws, production and pricing etc.

UNIT-I

Publishing House:

Definition and concept, parts of a book, basic steps in book publishing, areas of publishing - general publishing, educational publishing, professional publishing and reference publishing. Publishing House: The role of commissioning editor, the desk editor, the designer, the production manager, the sale/marketing manager, the publicity manager, the warehouse or distribution department, the accounts department, the management.

UNIT-II

Kinds of Publishing:

Standard and non-standard format of a book, copy preparation, Typography, Publishing of different kinds of books, magazines, journals, newspapers etc., Press Organization Hierarchy: Editorial organization, mechanical aspects of organization - composition, printing, basic operations business aspects of organization, flowcharts of staff in organization. Editorial Process: Role of editor in publishing, types of editors, editorial process, editorial functions, editorial techniques, basic requirements of editors, editor-author relationship. Magazines: Definition, Types. Developing the magazine, Editorial concepts, Article editing, Selection of write-ups, photographs and arts, Production planning, Wraps, Inserts and tip-ins, Different types of cover and their procedures, requirements and problems, author – publisher relationship.

UNIT-III

Production of Books:

Definition and formats of books Designing the text, Preparing illustrations, Preparing covers and jackets, Typesetting the text, , designing , lay-outing and preparation of graphics, illustrations, house style, originating and making up the illustrations,

Arranging for final films and CRC, Proofing the cover or jacket, Choosing and using paper, selection of production process, selection of paper , styles of binding. Selection of printer, Printing the book (printing processes and print quality control), Inks, Binding styles, Finishing operations, coordination with editorial and sales. Pricing and Cost Estimation

Pricing formula, preparation of preliminary cost estimates and final costing, gestation period and break-even- point calculation.

UNIT-IV

Promotion, Marketing and Distribution:

Dispatch and distribution. Circulation and Advertisement departments, distribution channels.Types of markets, promotion and marketing techniques, publicity campaigns, import and export of books, book review, role of wholesales bookshops, GOC (good offices committees) book sellers associations and book fairs, methods of distribution, their characteristics and economics. Subsidy Schemes: Importance and need of subsidy in publication of books, subsidy schemes, salient features of subsidy schemes and the process of getting subsidy. Publishing Laws: Imprint, ISBN, copyright, public domain and other laws relating to publishers, royalty and commission agreements between author/distributors and publishers.

Text/ Reference Books:

1. An Introduction to Book Publishing by D. Raghavan
2. The Book Publishing Manual by M.N. Rao.
3. The Book Industry in India Edited by Sukumar Das

CORE ELECTIVE-I
E-PUBLISHING
(BVPT404C)

OBJECTIVES AND PRE-REQUISITES:

A major publications like books, magazine, news paper etc. now a days are made online. It is important to make understand about online publishing process, elements of online publishing, editorial process, publishing norms, laws etc. Typography, layout design, computer fundamentals etc. are pre- requisite for the subject.

Learning outcome: Students will be able to know online publishing process, creating elements of publishing, editorial process and activities, publication norms and related laws etc.

UNIT-I Fundamental of Publishing & Publication Media: Publishing Process, Standards, Publishers' and Metadata. Offline, Online and hybrid publication Media Content and content formats: Types, Text, Formats. E-publishing Models. Book: E-book content, delivery formats, components, producing E-books, E-books and metadata, E-books and encryption, managing E-book content. Digital Library: Scope, Uses, Challenges, Features, Formats. Digital Asset Management: Systems, Functionality, Infrastructure, Types, and Benefits. Document Management System: Capture, Indexing & Retrieval, Annotations, Storage and Archival, Distribution and workflow. Digital Rights Management: Aim, Need, Legal requirements, Approach, Challenges, Limitations, Applications, Process. Intellectual Property Rights and Copyrights: Issues, Contracts, Challenges and applications. E-publishing formats: HTML, SGML, XML, PDF and Latex. Media Law and Ethics.

UNIT-II

Graphics and Web Designing:

Multimedia and components, Overview of Multimedia Software Tools, Music Sequencing and Notation, Digital Audio Graphics and Image Editing, Video Editing, Animation, Multimedia Authoring Multimedia drawing algorithms, Filling algorithms, clipping algorithms, 3D graphics, 3D modelling, Transformations. Image and its representation, Colour Images, Colour System, Popular File Formats Basics of Digital Audio, Fundamental Concepts in video, Types of Video Signals, Chroma Sub-sampling Video standards Multimedia Data Compression, Basics of Information theory, basic lossless and lossy compression techniques, JPEG, Basic Video Compression Techniques, MPEG I, MPEG II, Multimedia Communication, Computer and Multimedia Networks, Basics of Computer and Multimedia Networks, Multimedia over IP. Multimedia Application Development, Software life cycle, Conceptualization, Content Collection and Processing, Story, Flow line, script, story board, Implementation, authoring metaphors, testing and feedback case study.

UNIT-III

Newspaper Technology:

Editorial Workflow: Introduction to newspaper organization. The policy of newspaper. Flow of stories into a newspaper office; the various sources for each page. Human Resource for Newspaper Organization. Facsimiles copy & photographs. Editorial content and news. The OP-ED page. Newspaper layout & design: The language of Layout & Design. Laying out pages. Working in modules. Elements of newspaper. Specialized applications ingc design. Quality control of Newsprint: Structural, optical and mechanical characteristics and testing. Establishing quality control system. ISO 9000 and SNAP. Newsprint Management: Reel and Core Characteristics. Reel Handling, transport and Storage. Web handling: Reel stands, components, operation and web control devices. Press: Configurations and settings. Standardization and optimization. Digital presses. Press folders & Mailroom: Folders- Configuration and setting. Mailroom operations.

UNIT-IV

Publishing Science:

Publishing and its process, Types of Publishing, Media: Writing for mass media, styles of reporting, editorials, features. Components of a story, Design & Editing: Significance, techniques and functions. Editing tools and symbols for mass media. Advertising Key Principles for promotional writing, Specialized reporting for Science and technology. Publishing Laws: Types of Publishers, Legal Issues: Intellectual Property Rights, Copy Rights, Trademark, Privacy Policies, Licensing, Memorandum of Understanding. Plagiarism and other malpractices. Electronic media versus print media. Case study. Recent advances and future trends in publishing.

Text/ References Books:

1. Carina Rogobete, Georg Peters and Jan Seruga, “Cross Media and E-Publishing”, International Journalof u- and e-Service, Science and Technology Vol. 5, No. 2, 2012.
2. “Electronic Publishing: Impact of ICT on Academic Libraries”, ArchanaSaxena, ICAL, 2009.
3. Document Management Overview, “Document Imaging in the new millennium”, Compulink Management Center, Inc., 2007.
4. “Intellectual Property Rights Issues of Digital Publishing - Presence and Perspectives”, Hamburg University, Scripted, Volume 2, Issue 2, 2005.
5. Wayne Overbeck and Genelle Belmas, “Major Principles of Media Law”, Wadsworth - Cengage Learning, USA, 2010

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OPEN ELECTIVE-IV
GLOBAL WARMING & CLIMATE CHANGE (BVPT405A)

OBJECTIVES AND PRE-REQUISITES:

To study concepts of global warming & climatic change. To study factors responsible for global warming, impact of climatic change, national and international policies. To study and understand Kyoto mechanism. Basic knowledge of environmental studies subject is a pre requisite.

Learning outcomes: Understanding of philosophy of global warming and climatic change. Able to realize the factors responsible for global warming and corresponding climatic change. Understanding the importance and nuances of Kyoto mechanism.

UNIT-I The Climate system: Sun, Atmosphere, Ocean, Ice and energy balance of the earth, history of climate change, human-caused climate change, impacts of climate change on human well-being and the natural world.

UNIT-II

Key concepts of global warming, climate change, greenhouse gas effect, Interrelationship between these three phenomenon, Green-House Effect as a Natural Phenomenon and increase in Greenhouse gas effect because of anthropogenic activities, Green House Gases (GHGs) and their Emission Sources, Global Warming Potential (GWP) of GHGs, Past Present and Future trends of global warming.

UNIT-III

Impacts of climate change Extreme weather events, Temperature Rise, Sea Level rise, Coastal Erosion and landslides; future impacts of global warming, global warming and the hydrological cycle, climate change impact on ecosystems and agriculture.

UNIT-IV Possible remedies of global warming- various mitigation and adaptation measures taken/ proposed to combat global warming; National and International policies to combat global warming and climate change-UNFCC- Kyoto Protocol, Paris agreement its role in Climate Change; IPCC- its role in global climate protection Role of countries and citizens in containing Global Warming.

Text Books:

1. Current trends in Global Environment by A.L. Bhatia (2005) Energy Sources
2. Global Warming – A Very Short Introduction, Mark Maslin, oxford.
3. UNFCC & IPCC reports (www.unfccc.int & http://www.ipcc.ch/)

Reference Books:

1. Global Warming The Complete Briefing - John T Houghton Cambridge press
2. Climate Change: A Multidisciplinary Approach, by William James Burroughs, Cambridge press
3. Contemporary climatology-Robinson, Taylor and Francis group

NOTE:

Seminars/ discussions should be carried out on issues pertaining to global warming and climate change among the students.

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OPEN ELECTIVE-IV ENTREPRENEURSHIP DEVELOPMENT AND PLANNING (BVPT405B)

OBJECTIVE:

The Course Aims at Instituting Entrepreneurship Skills in the Students by giving an overview of the process of entrepreneurship. The Course aims at inculcating entrepreneurial spirit among the students.

UNIT-I Foundations of Entrepreneurship: What is an Entrepreneur? The benefits of Entrepreneurship. The power of small business. Class exercise- case discussion on entrepreneurs like - Dhirubhai Ambani, Karsenbhai Patel, Ramesh Babu, Kailash Katkar, Patricia Narayan etc.

UNIT-II Launching Entrepreneurial Ventures: Creativity and innovation. Methods to initiate ventures. Legal challenges in Entrepreneurship ventures. The search for Entrepreneurial capital. Class exercise- Survey your locality and come up with at least one entrepreneurial venture. Discuss in class about ways to enhance the business in most innovative manner.

UNIT-III Formulation of the Entrepreneurial Plan: The assessment functions with opportunities. The marketing Aspects of new ventures. Business plan preparation for new ventures. Class Exercise- Building your own Business Plan.

UNIT-IV Institutions Supporting Small Business Enterprises: Central level institutions. State level institutions. Other agencies. Industry Associations. Class exercise- discussions on current government schemes supporting entrepreneurship and finding out which scheme will most suit the business plan devised by the student.

Text Books:

1. Kuratko, D.F. & Rao T.V. (2012). Entrepreneurship: A South Asian Perspective. Cengage
2. Charantimath, P. (2009). Entrepreneurship Development: Small Business Enterprises. Pearson

References Books:

1. Naggendra S.and Manjunath V.S. (2009). Entrepreneurship and Management. Pearson.

OPEN ELECTIVE-IV BUSINESS INFORMATICS (BVPT405C)

OBJECTIVE:

The objective of this paper is to provide understanding of business processes and managing these processes through improved information management and better use of business intelligence systems Learning Outcomes: After this course the student is expected to understand how the information in the organizations can be handled effectively using various information types of information systems.

UNIT-I Foundations of Information Systems in Business: Data, Information and Knowledge, Information system and its components, Uses of IS in Business, Types of Information systems, Using Information Systems for competitive advantage, Porter's competitive forces model.

UNIT-II Functional Business Systems: Overview of system analysis and design; Role of Information systems in marketing, Human Resource Management, Accounting and Finance, manufacturing.

UNIT-III Enterprise Business Systems: Customer Relationship Management -Benefits and Challenges of CRM, Trends in CRM; Supply Chain Management-Benefits and Challenges of SCM, Trends in SCM; Enterprise Resource Planning-Benefits and Challenges of ERP, Causes of ERP failures, Trends in ERP;e-Commerce-Categories of e- commerce, Essential e-Commerce processes, Electronic payment processes.

UNIT-IV Decision Support in Business: Management Information Systems, Decision Support Systems, Online Analytical Processing, Executive Information Systems, Knowledge Management Systems, Expert Systems.

Text Books:

1. James A O'Brien, George M Marakas and Ramesh Behl (2013). Management Information Systems, Tenth Edition, Tata McGraw Hill Education, New Delhi.
2. Ken Laudon and Jane Laudon (2014). Management Information Systems, Twelft Edition, Pearson, New Delhi.

Reference Book:

1. D.P.Goyal (2014). Management Information Systems-Managerial Perspectives, Fourth Edition, Vikas Publishing House, New Delhi.
2. Waman S Jawadekar(2009). Management Information Systems. Fourth Edition, Tata McGraw Hill, New Delhi

PRACTICAL/VIVA LAB BASED ON OPEN ELECTIVE-IV
CORE ELECTIVE-I
PACKAGING TECHNOLOGY-III-LAB (BVPT406A (P))

NOTE:

The required list of Experiments is provided as under. The example cited here are purely indicative and not exhaustive. Attempt shall be made to perform all experiments. However, at least 8 experiments should be done in the semester. More experiments may be designed by the respective institutes as per their choice.

List of Experiments:

1. Shelf life studies
2. Exposure studies
3. Migration studies
4. Package design
5. Microbiological studies
6. Metal container testing
7. Food package testing
8. Identification of plastics
9. Odour pick up test
10. Leakage test

PRACTICAL/VIVA LAB BASED ON OPEN ELECTIVE-IV
CORE ELECTIVE-I
BOOK PUBLISHING-LAB
(BVPT406B (P))

NOTE:

The required list of Experiments is provided as under. The example cited here are purely indicative and not exhaustive. Attempt shall be made to perform all experiments. However, at least 8 experiments should be done in the semester. More experiments may be designed by the respective institutes as per their choice.

List of Experiments:

Students shall be assigned a Book production project. Through this project they will perform various practical aspects as mentioned below:

1. Preparation of layout
2. Estimation of pages/ copy fittings
3. House style
4. Typesetting
5. Proof reading
6. Illustration/ graphics preparation
7. Page Makeup
8. Colour scheme of forms
9. Design of Cover/Jacket
10. Production cost estimation
11. Printing and finishing operation.

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PRACTICAL/VIVA LAB BASED ON OPEN ELECTIVE-IV
CORE ELECTIVE-I
E-PUBLISHING-LAB
(BVPT406C (P))

NOTE:

The required list of Experiments is provided as under. The example cited here are purely indicative and not exhaustive. Attempt shall be made to perform all experiments. However, at least 8 experiments should be done in the semester. More experiments may be designed by the respective institutes as per their choice.

List of Experiments:

1. Exercise on Preparing Postscripts Files for Printing on Presses.
2. Exercise on managing linked graphics, bitmap image and output resolution.
3. Exercise on creation using navigational structures and modification by adding page actions of pdf documents.
4. Exercise on designing web pages using HTML tags.
5. Exercise on linking of webpage using HTML from different ways.
6. Exercise on defining XML tags, import and export XML tags from another document.
7. Exercise using SGML to achieve the separation of the structure and the appearance of a document.
8. Practice exercise on creating different types of images using coral draw.
9. Practice exercise on creation and modification of images using adobe Photoshop.

PRACTICAL/VIVA
DATABASE MANAGEMENT SYSTEM-LAB
(BVPT407P)

NOTE:

The required list of Experiments is provided as under. The example cited here are purely indicative and not exhaustive. Attempt shall be made to perform all experiments. However, at least 8 experiments should be done in the semester. More experiments may be designed by the respective institutes as per their choice.

List of Experiments:

1. Practice on creating a table using Design view and wizard
2. Practice on adding , modifying and deleting records
3. Practice on creating a simple query and running a query
4. Practice on sorting query results i.e ascending and descending
5. Practice on structured query language (SQL) - SELECT command to generate queries.
6. Practice on structured query language (SQL) - SELECT command with WHERE clause.
7. Practice on creating a form to add, update and delete records in a table.
8. Practice on preparing a report with headers, footers, page numbers, group the information, background colours and charts

PRACTICAL/VIVA
FLEXOGRAPHY AND SCREEN PRINTING TECHNOLOGY-LAB
(BVPT408P)

NOTE:

The required list of Experiments is provided as under. The example cited here are purely indicative and not exhaustive. Attempt shall be made to perform all experiments. However, at least 8 experiments should be done in the semester. More experiments may be designed by the respective institutes as per their choice.

List of Experiments:

1. Safety precautions in lab.
2. Preparation of rubber plates
3. Preparation of liquid polymer plates
4. Study of different tools, materials and equipments used in screen printing
5. Preparation of screen stencil in direct photographic stencil process and reproduction through it
6. Preparation of screen stencil in indirect photographic stencil process and reproduction through it
7. Mounting and registering of flexo image carrier.
8. Make ready and printing on flexography machine.
9. Printing i. two color, ii. four color on flexography machine
10. Printing a various substrates i. LDPE, ii. HPDE, iii. Paper, iv. Aluminium foil.
11. Studying modern flexo machines with inline operations.
12. Make-ready and printing on screen printing machine.
13. Printing of multicolour job on screen printing machine.
14. Printing of 3D surface on Screen printing machine

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PRACTICAL/VIVA
DIGITAL PRINTING TECHNOLOGY-LAB (BVPT409P)

NOTE:

The required list of Experiments is provided as under. The example cited here are purely indicative and not exhaustive. Attempt shall be made to perform all experiments. However, at least 8 experiments should be done in the semester. More experiments may be designed by the respective institutes as per their choice.

List of Experiments:

1. Colour specification and colour management tools
2. Calibration of input system
3. Calibration of output system
4. Digital proofing
5. Digital printing- electrostatic
6. Inkjet printing-thermal
7. Inkjet printing-drop on demand
8. Inkjet printing-phase change
9. Inkjet printing- continuous jet
10. Problem and remedies of Digital printing machine
11. Booklet printing
12. Variable data printing

PRACTICAL/VIVA
INDUSTRIAL TRAINING-III/FIELD WORK (BVPT410P)

PRACTICAL/VIVA
PROJECT-II (BVPT411P)

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SEMESTER-V
TECHNICAL ENGLISH (BVPT501)

OBJECTIVE:

- To equip students to recognize, explain, and use the rhetorical strategies and the formal elements of specific genres of technical communication, such as technical abstracts, data based research reports, instructional manuals, technical descriptions etc.
- To help students understand the process of collection, analysis, documentation, and reporting of research clearly, concisely, logically, and ethically and understand the standards for legitimate interpretations of research data within scientific and technical communities.
- To initiate students into critical and creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information towards meaningful and effective communication
- To help students understand ethical considerations in technical and professional writing, realizing the consequences of various communication acts. Learning Outcomes: Upon successful completion of the course the student shall be able to:
- Understand and demonstrate composing processes through invention, organization, drafting, revision, editing, and presentation as evidenced in satisfactory completion of all the written, visual, web-based, and oral discourses to be submitted in this course.
- To recognize and use the rhetorical and stylistic elements necessary for the successful practice of scientific and technical communication;
- Create various products most frequently used in scientific and technical communication.
- Develop ethical problem-solving communication skills in professional situations.

UNIT-I Technical Writing: Definition, Purpose and Characteristics of Technical Writing.
Technical Writing Skills: Methods and means of the Pre-writing stage, the Writing Stage and the Post-writing Stage.

UNIT-II Formal Formatting: Arrangement of Formal Elements, Front Material, Format Devices in the Body of Formal Report-Heading, Pagination, End Material – Citations, References and Bibliography, Appendix.

UNIT-III Writing and Designing for Electronic Media: Use of Internet as a Writing tool; designing and writing for multimedia applications and the World Wide Web.

UNIT-IV Research and Writing Ethics: Explaining Forms and Consequences of Plagiarism, Introduction to Intellectual Property Right and Copy Right Laws.

Text Books:

1. Sides, Charles H., “How to Write and Present Technical Information”, Cambridge Univ. Press, 1999.
2. Basu, B. N., “Technical Writing”, PHI Learning Pvt. Ltd., 2007.

Reference Books:

1. Beer, David F. and David A. McMurrey, “A Guide to Writing as an Engineer”, New York: Wiley, 2005.
2. Gibaldi, Joseph, and Walter S. Achtert, “MLA Handbook for Writers of Research Papers, Thesis, and Dissertations”, Modern Language Association, 1980.
3. Rubens, Philip, “Science and Technical Writing: A Manual of Style”, Routledge, 2002.
4. Anderson, Marilyn, Pramod K. Nayar, and Madhucchandra Sen, “Critical Thinking, Academic Writing and Presentation Skills”, Pearson. 2010.

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PRINT FINISHING AND CONVERTING (BVPT502)

OBJECTIVES AND PRE-REQUISITES:

Working in Printing press is required to deal with different Binding style, binding equipments and tool etc. Objectives of the subject are to know various finishing operations, equipments, Quality control and use of consumables. Student should have prior knowledge of paper size, imposition, printing machine, folding scheme etc. Learning outcome: After attending the above subject knowledge will be able to know the binding & finishing techniques, securing methods, defects, estimating.

UNIT-I

Binding classification, Binding tools and Equipment, Book binders material, Paper size, Planning impositions, Advantages and application.
Pre-forwarding and Forwarding Operations-In-board and out-board forwarding, different kinds of binding and styles of covers. Introduction to publishers, library style and stationery binding. Gluing the back, rounding and backing, objects, care and precautions, reducing swell at the back, back lining, flat back, loose back and tight back. Styles of cover - Quarter, Half, Three quarter and full binding.

UNIT-II

Machine Binding- Operational and mechanical features of binding machines, folding machines, bundling machine, gathering machine, wire stitching machine, thread sewing machine, three-knife trimmer, back gluing machine, rounding and backing machine, back lining machine, banding machine, case making machine, creasing and embossing machine, casing-in machine, gang stitcher – its operation and use.

Processing of hard bound book, physical parts of hard bound books, Machine folding – Principle, Machines, Tipping-in attachment of plates, End paper-Purpose, Kinds, Steps in processing hard bound books, Adhesive, Adhesive binding, Type, Construction and technical considerations. Adhesive binding glue option – EVA, PVA

& PUR binding, Testing method, Perfect binding. Modern guillotines, Covering – types of covers, covering style, Publisher case binding operation and machine, On demand booklet binding.

UNIT-III

Securing methods-Wire stitching – saddle stitching, Side stitching, Wire stitching machine, French tape, Chord and Whip sewing. Different kinds of sewing, End Papers – Kinds and purposes, Plates - kinds of plates, methods of fixing plates Hard bound books-Sequence of operations, preparing cloth joint end paper, tape sewing, rounding and backing, fixing boards, back lining, covering for half binding and finishing.

UNIT-IV

Mechanical binding- Spiral, Wiro–o, Post binder, Ring metal and plastic comb binding, Finishing and converting process. Edge decoration. Production, Planning and Quality Control-Production, planning and layout preparation for a modern binding unit, modern production techniques, work-flow sequence, quality control, stages of quality control. Cover decoration, Print finishing operation, Film lamination UV and Press applied coating. Binding Defects-Defects in the manual and mechanical binding operations, un-squared trimming, bleeding, bolts, puckering, missing pages, stepping at fore-edge, warping, wrinkles & bubbles in pasting, blurred tooling, gilding without lusture, etc. Material Consumption and Calculation-Calculation of paper and board, estimating covering materials, thread, stitching wire, adhesives.

Text Books:

1. B.D. Mendiratta, “Binding &Finishing I &II”
2. Ralph Lyman, “Binding and Finishing”
3. T. J. Tedesco, “Binding Finishing Mailing”
4. Hugh Speirs, “Introduction to Printing & Finishing”
5. A. G. Martin, “Finishing Process in Printing”

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CORE ELECTIVE –II
SPECIALITY AND SECURITY PRINTING (BVPT503A)

OBJECTIVES AND PRE-REQUISITES:

A variety of specialty and security printing product are made for commercial use like mailer, integrated cards, flyer and envelopes and security product like currency notes, postage stamps, cheques etc. Producing specialty items require special equipments and adjustment of machineries, for security products it requires special materials. Students will be able to know the above things. Student should have prior knowledge of printing process, printing materials science, printing press and accessories.

Learning Outcome: After completing this subject student will be able to know producing specialty printing items, equipments involved, incorporating security features etc., and also use of special materials like substrate, inks etc.

UNIT-I Continuous stationery forms and application: Integrated cards, affixed cards, OMR sheets, Multi part mailer and flyers. Materials for continuous stationery forms: Paper mapilitho, art, MICR grade, sticker, coated, carbon less, thermal. Designing, printing & finishing process for continuous stationery forms: Machine configuration job make ready. Speciality printing processes Work flow, Machineries, construction, substrate requirements, substrate treatments.

UNIT-II

Security printing materials, Types of security inks - Speciality inks - UV, water based, polymer, metallic, nano, thermo setting inks., Infrared inks, photochromatic inks, security papers-MICR, NMICR, uncoated, toner fused paper, Special papers, Techniques In Security Printing-Watermark –Technique, Micro printing, Security threads, Magnetic ink, Anti - copying marks , Fluorescent dyes. Serial number-Application of serial numbering, Serial number arithmetic, Magnetic ink character recognition, Different printing processes- Intaglio, Letterpress, Dry offset, Simultan presses, Intaglio (print making).

UNIT-III

Cheques, security paper, Security colour, Printing process, Quality control, products of security printing- Paper currency, Securities, Postage stamps, Other products of security printing.

Security features of various products- Clear window, Polymer substrate, See – through registration device, Shadow image, Intaglio Printing, Background Print (offset), Micro printing, Fluorescent Ink properties, Design, Printing, Security, Security printing application-Government and corporation document, Brand protection and asset management.

Printing of financial documents and value documents, Accreditation bodies.

UNIT-IV

Security printing in packaging - Security packaging, Facts on counterfeiting, Security printing, Barcode and reader, Scanner/ Symbology interaction, Publishing barcode types, Material types- Poly asset – Extra durable, Poly break – Destructible, Poly check, Tamper evident seals, Poly void, Barcode uses, Retail barcodes, Packaging barcodes, Current developments, Barcodes for non – retail labels. Hologram, Types of Hologram- Dot matrix, CLR (convert laser readable) image, Computer Synthesized 2D/3D images, True Colour images, E – BEAM & 12,000 dpi, Holographic reconstruction process, Hologram recording process.

Text Books:

Narayanan R., “Computer Stationery and MICR Cheque Production”, Association for Research and Development in Printing, Madras, 1988.
Warner Richard D, Adams Richard M, “Introduction to Security Printing”, PIA/GATF, Pittsburgh, 2005.

References Books:

EIRI Board of Consultants and Engineers, “Hand Book of Printing Technology”, Engineers India research Institute, New Delhi.

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CORE ELECTIVE –II
COLOUR SCIENCE AND MANAGEMENT SYSTEM
(BVPT503B)

OBJECTIVES AND PRE-REQUISITES:

Every printed product is consisting of graphics and text. The graphics are created, processed, digital colour output are taken in electronic digital environment now a days. This subject will cover the fundamentals of colour, colour reproduction, colour conversion system, modern systems for colour handling and management, standard output for digital colour printing etc. Student should have prior knowledge of reproduction technology, additive and subtractive theory of colour, colour systems, digital work flow for colour production etc.

Learning outcome: After completing this subject student will be able to know fundamentals of colour, colour reproduction, colour conversion system, modern systems for colour handling and management, standard output for digital colour printing etc.

UNIT-I

Fundamentals of Color, Importance of Definitions of color: Hue, Brightness and Lightness, Colorfulness and Saturation, Elementary Principles of Color, Elementary Principles of Color Reproduction, Color Measurement.

UNIT-II

Chromaticity Diagrams, CIE Color Spaces, Color-Difference Specification, Digitizing Color, Color Conversion and Separation, Tone Reproduction and Color Balance, Spectral Sensitivities for Color Separation

UNIT-III

Additivity and Proportionality of Densities, Four-Color Printing and the Black Printer, Color matching and mixing, Color proof. The need for color management systems and their architectures, Closed-loop color, Characterization and calibration of devices.

UNIT-IV

Color Standards, Color notation systems, Color processing of digital photographs, Color gamut, Color management in digital film post-production. Creating and evaluating device Profiles, Color Management Tools.

Text Books:

1. B Chakravarty, “Digital Colour Printing”, Asian Books Pvt. Ltd
2. Romano , “Professional Pre-press, Printing & Publishing”, Prentice Hall
3. Mark D. Fairchild, “Color Appearance Models”, John Wiley Sons Ltd, England, 2005
4. Asim Kumar Roy Choudhury, “Modern concept of Color and Appearance”, Oxford & IBH Publishing Co Pvt. Ltd, New Delhi, 2000.

References Books:

1. [R1] John A. C. Yule, “Principles of Color Reproduction”
2. [R2] “Understanding Digital Color”, GATF Press

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CORE ELECTIVE –III
PRINTING INK TECHNOLOGY (BVPT504A)

OBJECTIVES AND PRE-REQUISITES:

Working in printing industry is required to deal with different printing processes and consumable materials like printing inks and other materials. The properties of ink vary with the process and change of substrate. Students are required to have a good knowledge and skills of using these materials according to suitability and applicability. The subject deals with the in-depth knowledge of printing inks – properties, characteristics, printability and its science involved in testing and application. The knowledge of printing process, different substrate used in printing, applications are pre-requisite for this subject.

Learning outcome: students after attaining the above subject knowledge will be able to know the various raw materials required for printing ink, manufacturing, properties of ink as per the different printing process and printability with different substrate, testing of inks etc.

UNIT-I

Raw material – Pigments-types, Sources. Dye Staffs – Types and properties. Oil – different types of oil, source. Resin – Types, sources. Solvents-types and application. Plasticizer, waxes-types. Driers-Types. Miscellaneous additives. Rheology of Printing ink – Newtonian and non- Newtonian, ideal plastics substance, pseudo-plastic, Dileatamery Thixotropy. Viscometers-flow cups, rotational, cone and plate, Falling bar, Tack, measurement of Tack.

UNIT-II

Letterpress ink- General characteristics, raw material, ink related problem, special purpose applications. Lithographic inks- Introduction, Physical properties-rheology-viscosity, thixotropy, flow. Tack. Newspaper ink-cold set, heat set. PH and conductivity. General Characteristics-Cold set, heat set, Quick set inks. Ink related problems – scrumming, stripping, piling, rheology problem, tack and stability Problem, drying problem, sheet fed inks, tin printing ink and related problems. Radiation curing ink characteristics, radiation curing equipments.

UNIT-III

Gravure inks- General characteristics, physical properties, Inks and vanishes for lamination, coating, Packaging inks for paper and board, Foil inks, inks for various films, printing ink faults. Development on ecological considerations. Flexo inks-General characteristics, physical properties, water based ink, constituents, specific use/purpose – ink related problems. Dry offset ink – Dry offset inks for plastic, drying methods, General Characteristics, Application and post- application problem.

UNIT-IV

Screen inks-characteristics, constituents, inks for special purpose-Metal Sign, containers, sheet plastic, glass, plastic containers. Specialty screen inks - Thermochromic ink, phosphorescent inks, printing problem. Ink manufacture-Mixing, Milling machine. Testing and Quality- fineness of grind gauge. Resistance test-heat, soap, alkali, acid, deep freeze. Dye testing- solvent, basic, acid, reactive and direct dyes. Resin – acid value, hydroxyl value. Short term ink testing- dispersion, rheology, oil inks and liquid inks.

Text Books:

1. R.H. Leach, “Printing Ink Manual”, Kluwer Academic Publishers. [T2] L C Young, “Materials in Printing Process”.

References Books:

1. Bob Thompson, “Printing Materials Science and Technology”, PIRA, UK, 1998.
2. Ronald E.T, “Printing ink formulation principles, manufacture and control testing procedures”, PIRA International, UK, 2000.
3. Nelson R.E. and Terry Scarlett, “What the printer should know about ink”, GATF, USA, 1990.

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CORE ELECTIVE –III
PRINT PRODUCTION MANAGMENT (BVPT504B)

OBJECTIVES AND PRE-REQUISITES:

This subject will cover to understand the concepts of scheduling and its importance in the printing Industry. Should have complete knowledge of the various applications of inventory and project, management with respect to the Printing Industry. Student should have prior knowledge of printing process, organizational structure, work flow, machine and equipments involved etc.

Learning Outcome: After completing this subject student will be able to understand the operations of a printing press, apply various management concepts in managing a print establishment, Critically analyze the function of print organization and the print operations, management concepts to solve management problems in a printing press.

UNIT-I

Introduction, Organization Structure – Sole Proprietor, Partnership, Limited Company, Administrative office routine, Forms used Processing orders. Business Environment – Printing Industry in India & Abroad. Impact of globalization & IT. Management– Nature scope and importance of Management, Functions of Management–Scientific, Management.

UNIT-II

Production and operations Management – Locations and Layout of plant, Maintenance management. Quality assurance, Total quality management (TQM), ISO. Inventory Management - Definition & purpose, Inventory classification, EOQ, Materials handling & Warehousing.

UNIT-III

Work flow and organizational structure in a printing press.
Network Models - Introduction, PERT & CPM models, Network construction, Problems, Resource analysis & allocation, Replacement analysis, Application & case studies.
Human resource management: Manpower planning – recruitment, selection, Training performance appraisal Wage and salary administration.

UNIT-IV

Marketing Management – Marketing and its functions, distribution channels, salesmanship and advertising. Financial Management- Nature, Scope objectives and functions of Financial Management. Cost Accounting: Cost concept, cost sheet, B.E.P. Analysis, Cost reduction and cost control. Depreciation - Introduction to different methods and their comparison.

Text Books:

1. R.D. Aggarwal, “Organization and Management”, Tata McGraw Hill Publishing Ltd., New Delhi
2. T.A. Saifuddin, “Management Aspects of Printing Industry”, 1st Edition, Nirmal Sadanadn Publishers, Mumbai,
3. G.G. Field, “Printing Production Management”, Graphic Arts Publishing,

Reference Books:

1. Ruggles, “Printing Estimating Principles and Practices”, Delmer Publication.
2. Joseph G. Monks, “Operations Management – Theory and Problems”, McGraw Hill Intn’l Ltd., 2003.

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PRACTICAL/VIVA CORE ELECTIVE – II SPECIALITY AND SECURITY PRINTING-LAB (BVPT505A (P))

NOTE:

The required list of Experiments is provided as under. The example cited here are purely indicative and not exhaustive. Attempt shall be made to perform all experiments. However, at least 8 experiments should be done in the semester. More experiments may be designed by the respective institutes as per their choice.

List of Experiments:

1. Design of Continuous stationery forms.
2. Accessories and attachments for continuous stationery.
3. Printing of Continuous stationery.
4. Study of various security features of financial and other printing products.
5. Production of security patterns, backgrounds.
6. Study of security features of Security printing items.
7. Design of security printing products.
8. Study of Raw materials required for security printing.
9. Printing of various security printing items.

PRACTICAL/VIVA CORE ELECTIVE – II COLOUR SCIENCE AND MANAGEMENT SYSTEM-LAB (BVPT505B (P))

NOTE:

The required list of Experiments is provided as under. The example cited here are purely indicative and not exhaustive. Attempt shall be made to perform all experiments. However, at least 8 experiments should be done in the semester. More experiments may be designed by the respective institutes as per their choice.

List of Experiments:

1. FM Hue Test.
2. Impact of Illumination on color perception.
3. Characterization and calibration of monitor.
4. Characterization and calibration of scanner.
5. Characterization and calibration of printer.
6. Measuring Hue error, contrast & Greyness.
7. Measuring Dot gain from CIE Lab values.
8. Effect of screen angles and dot shape on color (Lab readings) and comparing with standard.
9. Gray balance using G7.

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PRACTICAL/VIVA LANGUAGE-LAB (BVPT506P)

NOTE:

The required list of Experiments is provided as under. The example cited here are purely indicative and not exhaustive. Attempt shall be made to perform all experiments. However, at least 8 experiments should be done in the semester. More experiments may be designed by the respective institutes as per their choice.

List of Exercises:

1. **Fundamentals of Inter-personal Communication and Building Vocabulary**
   - Self introduction and introducing others
   - Situational Dialogues: Starting a dialogue and responding relevantly & appropriately
   - Role-Play-Expressions in various situations
   - Social and Professional Etiquette: greetings, apologies, requests etc
   - Telephone Etiquette.
2. **Non-verbal Communication**
   - Gesture, posture and body language
   - Facial Expressions.
   - Paralinguistic Skills
   - Proxemics
   - Eye Gaze.
   - Haptics
   - Appearance.
3. **Reading Comprehension and Listening Exercise**
   - General vs Local Comprehension
   - Skimming, Scanning
   - Inference drawing
   - Critical reading
   - Listening , Hearing
4. **Presentation Skills**
   - Oral presentation
   - Seminar/ conference Paper Presentation
   - PPTs and Written presentation through poster/projects/reports/e-mails/assignments etc
   - Camera ready presentation
5. **Group Discussion**
   - Dynamics of Group Discussion
   - Intervention
   - Summarizing
   - Body Language and Voice, Intonation
6. **Interview Skills**
   - Interview etiquette
   - Body posture and body language
   - Voice, intonation and modulation

- Fluency and organization of ideas
- Rubrics for evaluation: Concept and process, pre-interview planning, opening strategies, answering techniques,
- Interview through tele-conferencing and video-conferencing
- Mock interview
- Campus placement interview

7. **Public and Professional Speaking**
   - Extempore
   - Public Speech
   - Professional speech/lecture
8. **Articulation and Management**
   - Time management
   - Articulation and expression
   - Assertiveness
   - Psychometrics
   - Stress management

PRACTICAL/VIVA
PRINT FINISHING AND CONVERTING WORKSHOP (BVPT507P)

NOTE:

The required list of Experiments is provided as under. The example cited here are purely indicative and not exhaustive. Attempt shall be made to perform all experiments. However, at least 8 experiments should be done in the semester. More experiments may be designed by the respective institutes as per their choice.

List of Experiments:

1. Study of binding room equipments, binding room tools and materials.
2. Folding techniques & methods.
3. Care & handling of guillotine machine, safety precaution.
4. Making of end papers.
5. Methods of sewing.
6. Adhesive binding.
7. Sewing on tapes, cords.
8. Making of hard bound books.
9. Study of binding machines.
10. Edge decoration of hard case book, and print finishing.

MINOR PROJECT (BVPT508P)
INDUSTRIAL TRAINING-IV (BVPT509P)

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SEMESTER – VI
PRINTING MACHINE MAINTENANCE (BVPT601)

OBJECTIVES AND PRE-REQUISITES:

Students in printing technology have to work on various machines in the printing industry. It is important to make them understand about mechanism, maintenance and relevant technical specification of various machines. This subject aims at providing necessary information about various machines along with practical exercises towards, repair and maintenance of these machines. Students should have prior knowledge about printing machines, its type, mechanical system and mechanism, various pre and post press equipments etc.

Learning Outcome: After attending the subject students will be able to know about mechanical maintenance of printing machineries, system of maintenance, scheduling, tools and equipments required, lubricants and application etc.

UNIT-I

Maintenance concept, philosophy, objective, Economic life cycle of machine maintenance instructions, status of machines, understanding of machine drawings and manuals. Factors affecting size, types, approaches, classifications.Mechanical Drivers: chains, sprockets, roller chain types, Belt & pulleys, cams-types, types of roller follower, gears advantages, factors affecting the selection of gears, gear failure-wear & tear.

UNIT-II

Tools, equipments and material for maintenance, maintenance kit. Systems of Maintenance: predictive, preventive, periodic, planned/ scheduled, corrective, break down and its merits and demerits, application of system in a plant. Lubrication system: lubrication and maintenance, force feed, gravity feed, centralized lubrication, lubricants used, oils, grease, synthetic, solid, their kinds, grades and properties, periodicity, colour coding. Lubricating system safety precautions, lubricating film conditions.

UNIT-III Bearings: Brushing &bearing selection, classification, lubrication, oil-less bearings. Bearing failures, causes and cure, bearing damages. Pneumatics: Introduction, advantages, Maintenance of pump and compressor; various elements compressor type. Centralized and decentralized compressed air system. accessories of compressors. hydraulics in printing, advantages & disadvantages. , potential areas of machine wear and tear.

UNIT-IV

Installation of machine, repair technique, overhaul, Annual maintenance contract. Comprehensive maintenance contract. Zero maintenance concept. Maintenance and troubleshooting. Sample problems and their rectification; Mis-registration, gear streaks, roller streaks, irregular sheet feeding, plate wear, etc.

Text/ Reference Books:

1. Rizzo Kenneth E, “Total Production Maintenance”, GATF, USA, 2002.
2. Khurmi R.S., “Machine Design”, S. Chand and Company, New Delhi, 2002.
3. Garg H.P., “Industrial Maintenance”, S. Chand and Company, New Delhi, 1999.

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CORE ELECTIVE-IV
GREEN PRINTING AND QUALITY MANAGEMENT IN GRAPHIC ARTS (BVPT602A)

OBJECTIVES AND PRE-REQUISITES:

Green printing: Working in Printing press are required to deal with different consumable materials like bio-degradable, non-biodegradable and other volatile compounds which subsequently create pollution to environment. This subject will teach students to know about bio-degradable and non-biodegradable materials, use of biochemical based material and thus encouraging greener production with limiting pollution. Student should have prior knowledge of printing process, conventional materials required for each process and nature of hazards involved etc.

Learning Outcome: Green printing-After attending the above subject knowledge will be able to know the use of bio-degradable and non-biodegradable materials, reducing pollution, use of more eco-friendly and bio- chemical based materials etc. in printing.

Quality Management in Graphic Arts: All printing products must maintain a quality standards. The basic objective of the subject is to ensure the quality aspects of printing products, measuring quality parameters, how to achieve quality, TQM model, ISO standards, establishing quality control programme etc. Students should have prior knowledge of basic printing process, required materials, basic quality parameter of printing etc. Quality management in Graphic arts- The learning outcome of the subject is to ensure the quality aspects of printing products, measuring quality parameters, achieving quality, TQM model, standards, establishing quality control programme etc.

GREEN PRINTING

UNIT-I

Overview, Biodegradable material, Necessity, Advantage, Printing wastes – characteristics, type, life cycle of waste, pre-press, press and post-press wastes, Material input and typical waste output in Printing Industry, List of chemical in Printing industry activities, Waste segregation, Petrochemical need in Printing industry. Toxic compound, Environmental issues in Printing facilities- emission to air, waste water, Voc emission, Sources of VOC, Environmental effect of VOC, Steps to reduce voc emission, Avoiding or minimizing VOC loss.

UNIT-II

Implementing secondary control, Biochemical based cleaning solvents Biochemical enhance worker safety.Waste reduction recycling and reuse. Pollution Prevention and Cleaner Production. Particulate matter- Reduction, removal, collection, Contribution by products, Waste material, Chemical hazards, Inhalation, hazardous material management hazards-prevention and control. Environment Management System – accounting concepts, data collection, evaluation and process operations, ISO 14000 and Life – cycle concepts.

QUALITY MANAGEMENT FOR GRAPHIC ARTS

UNIT-III

Introduction: Definition, basic elements, characteristics, Quality Control as an attitude and management tool, management's responsibility, organization and personnel functions, TQM models. Quality Control procedures and methods. Brief Introduction to ISO: 9000 (2000), ISO: 14000, QS: 8000 standards. Statistical Process Control: Introduction, SPC tools.

UNIT-IV

Process capability indices, DOE, OVAT, OEE, Case study and problems. Team approach: introduction, basic assumption,

quality improvement teams, quality team effort, quality-oriented projects, Establishing Quality control programme in different departments of printing organization. Data collection, principles and analysis. Measurement of critical print variables.

Text Books:

1. Kipphan Helmut, "Hand Book of Print Media", Springer, Germany, 2001.
2. Jones Gary A, "Air Pollution engineering Guide for Graphic Arts Industry", GATF, 1993.
3. Bhat K.S., "Total quality Management", Himalaya Publication House.

References Books:

1. John Geis A and Paul Addy L, "Materials handling for the Printer", GATF Press, Pittsburgh, 1999
2. Herschel L.A., "Implementing TQM in Graphics Art", Pira and GATF, Pittsburg, 1995.

CORE ELECTIVE-IV ESTIMATING AND COSTING (BVPT602B)

OBJECTIVES AND PRE-REQUISITES:

In the industry job estimate is a important role for customer point of view. It is with this back-ground that elements of costing and estimating are essential for this work. For publishing industry costing plays an important role for price determination. This subject covers elements of cost, costing system, finding out the consumption of materials, fixed cost, variable cost, finding out the machine hour rates etc. Students should have the prior knowledge of pre-press processing, printing process, printing finishing process and the materials involved.

Learning Outcome: After completing the subject students will be able to know about the elements of cost, finding machine hour rates, calculating consumption of various materials, estimating of printing job etc.

UNIT-I

Introduction:

Introduction to Indian and Federation Costing System, importance of costing and estimating in printing trade, definition of cost, price and profit. Estimating: Estimating and its inter-relationship with purchasing, sales and management. Importance of accurate estimating, requirement, qualification and tools of an estimator. Estimating errors – their causes and remedies, estimating on the basis of price lists, past works charge, standard catalogues, etc. Estimating on the basis of operational times and hourly rates.

UNIT-II

Calculation of paper board, securing materials and adhesives Estimating for the warehouse operations

Estimating for typesetting, processing and planning, various methods of surface preparation, machining for different processes of printing. Operational times and current market rates. Estimating ink. Job Estimates: Making of estimates of complete jobs, computer aided estimating and relevant software's.

UNIT-III Costing: Definition, purpose and function, aims and objects of costing. Elements of cost, principles of a scientific costing system, Types of costing system-Time rate, work rate Foundations of costing system, classes of departments, allocation and apportionment of expenses, basis of apportionment. Direct and Indirect cost, Calculation of hourly rates, recovery of elements of cost, distribution of expenses.

UNIT-IV

Fixed cost, variable cost, total cost and unit cost and their inter-relationship. Principles of costing stages, developing forms and specimens used by small, medium and large printers, costing and standard press routine. Type Setting (DTP) Process-Casting off, Copy fitting. Preparing offset plate, machine operation (Offset), Binding and finishing process.

Text Books:

1. B.D. Mendiratta, "Printers Costing and Estimating", Printrade Indian Publication Pvt. Ltd. New Delhi.
2. "Estimating for Printers", BPIF, London,

Reference Books:

1. Philip Kent Ruggles, "Printing Estimating Principles and Practice", California Polytechnic State University.
2. Sadhri Sorale , "Business Ethics Concepts and Cases".

CORE ELECTIVE-V MARKETING MANAGEMENT (BVPT603A)

OBJECTIVES AND PRE-REQUISITES:

The course aims at making students understand concepts, philosophies, processes and techniques of managing the marketing operations of a firm.

UNIT-I Introduction to Marketing: Meaning and Scope of Marketing; Marketing Philosophies; Marketing Management Process-An Overview; Concept of Marketing Mix; Understanding Marketing Environment; Consumer and Organization Buyer Behavior; Demand Forecasting; Market Segmentation, Targeting and Positioning.

UNIT-II Product and Pricing Decisions: Product Concept; Types of Products; Product Levels; Major Product Decisions; Brand Management; Product Life Cycle, New Product Development Process; Pricing Decisions: Determinants of Price; Pricing Process, Policies and Strategies.

UNIT-III Promotion and Distribution Decisions: Communication Process; Promotion Tools-Advertising, Personal Selling, Publicity and Sales Promotion; Emerging Channels of Distribution, Distribution Channel Decisions-Types and Functions of Intermediaries; Channel Design; Selection and Management of Intermediaries.

UNIT-IV Emerging Trends and Issues in Marketing: Consumerism, Rural Marketing, Social Marketing; Direct Marketing; Online Marketing, Green Marketing.

Text Books:

1. Kotler, P., Keller, K.L. Koshy, A. and Jha, M., "Marketing Management: A South Asian Perspective", 13th Edition, Pearson Education, New Delhi, 2009.
2. Etzel, M., Walker, B., Stanton, W. and Pandit A., "Marketing Management", Tata McGraw Hill, New Delhi, 2009.

Reference Books:

1. Ramaswamy, V.S and Namakumari, S., "Marketing Management: Global Perspective Indian Context", 4th Edition, Macmillan Publishers India Ltd., New Delhi, 2009.
2. Saxena, Rajan, "Marketing Management", Fourth Edition, Tata McGraw Hill Education Pvt. Ltd. New Delhi, 2009.
3. Louis E. Boone and David L. Kurtz, " Principles of Marketing", 12 th Edition, Cengage Learning, 2007.
4. Pride, William, M., and O. C. Ferrell, "Marketing Planning, Implementation and Control", Cengage Learning, New Delhi, 2010.

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CORE ELECTIVE-V
FUNDAMENTALS OF ADVERTISING
(BVPT603B)

OBJECTIVES AND PRE-REQUISITES:

Through this subject students learning about fundamentals of advertising and get knowledge about advertising types, design and corporate advertising etc. Learning Outcomes: After learning about fundamentals of advertising, students can utilize his/her knowledge at printing and advertising agencies/ industries like newspaper, magazines and other publication houses.

UNIT-I Introduction to Advertising: Advertising Theory, advertising as a tool of communication, Role of advertising in public relations. Functions of advertising, Benefits of advertising, Advertising as a Marketing Tool, Advertising as a PR Tool, Advertising Theories.

UNIT-II

Consumer product advertising; Industrial product advertising; Government advertising/ public service advertising; Financial advertising; Industrial or corporate advertising. Advertising management: The publication advertising department.

UNIT-III

Advertising design, layout, visualization, principles of advertising design, contribution of visual elements, what to picture, how to choose color, test of a good layout, production of print advertising, copy testing criteria, types of copy testing, validity and reliability of copy test.

UNIT-IV

Types of Advertising agency and types of services offered, structure of ad agencies, planning and development, creative process and tactics, media planning, Advertising Medias – television networks, magazines, newspapers, radio, selection and buying media time and space. Support media internet, interactive medias, out-door, in-store, direct mail, miscellaneous and transit advertising, case studies.

Text Book:

1. Wells William, “Advertising”, Prentice Hall, New Delhi, 2002.
2. Wilmshurst Jhon and Mackay Adrian, “Fundamentals of Advertising”, MGH, Boston, 1999.
3. Varshney R. L. and Gupta S. L, “Marketing management”, Sultan Chand and Sons, New Delhi, 2004.

Reference Books:

1. Jefkins Frank and Yadin Daniel, “Advertising”, Prentice Hall, New Jersey, 2000.
2. Philip Kotler, “Marketing Management Analysis, Planning, Implementation and Control”, Prentice Hall of India Private Limited, New Delhi, 2000.

PRACTICAL/VIVA VOCE PRINTING MACHINE MAINTENANCE WORKSHOP (BVPT604P)

NOTE:

The required list of Experiments is provided as under. The example cited here are purely indicative and not exhaustive. Attempt shall be made to perform all experiments. However, at least 8 experiments should be done in the semester. More experiments may be designed by the respective institutes as per their choice.

List of Experiments:

1. Study of different functions of machine through drawings.
2. Introduction to Tools, equipments and material required for maintenance.
3. Study of detailed technical specification of important printing machines.
4. Study of different lubrication systems, lubrication points and lubricants.
5. Periodic maintenance of machine parts.
6. Preparation of maintenance schedule for preventive maintenance.
7. Preparation of maintenance schedule for predictive maintenance.
8. Rectification of faults like, mis-registration, irregular sheet feeding etc.
9. Maintenance of pneumatic and hydraulic parts and equipments.
10. Maintenance of electrical panel board, relay, contactors.
11. Maintenance of pre-press and post-press equipments.

PRACTICAL/VIVA VOCE PRINTING QUALITY CONTROL-LAB (BVPT605P)

NOTE:

The required list of Experiments is provided as under. The example cited here are purely indicative and not exhaustive. Attempt shall be made to perform all experiments. However, at least 8 experiments should be done in the semester. More experiments may be designed by the respective institutes as per their choice.

List of Experiments:

Quality Control: Measurement and control of print quality viz.

1. Print Contrast
2. Solid Ink Density
3. Hue error

4. Grayness.
5. Sequential priorities of multi-color print.
6. Trapping, etc. using Densitometers.
7. Measurement of Dot gain/loss.
8. Measurement of ink film thickness.
9. Test a printed sheet - proof printing and measurement of colour using spectro photometer,
10. Resistance testing of prints.
11. Continuous and discrete data presentation – statistical process.

PRACTICAL/VIVA VOCE SEMINAR (BVPT606P)

PRACTICAL/VIVA VOCE INDUSTRIAL TRAINING –V/ FIELD WORK (BVPT607P)

PRACTICAL/VIVA VOCE MAJOR PROJECT#* (BVPT608P)

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