For Batch 2015-16 Only
SCHEME OF EXAMINATION

And

SYLLABI

For

BACHELOR OF VOCATION

In

(PRINTING TECHNOLOGY)

5th SEMESTER & 6th SEMESTER

Offered by

University School of Information, Communication &Technology

GURU GOBIND SINGH INDRAPRASTHA UNIVERSITY

Guru Gobind Singh Indraprastha University
Dwarka, Delhi – 110078 [INDIA]
www.ipu.ac.in

The Scheme and Syllabus for B.Voc (Printing Technology) (3rd Year) has been approved in 45th BOS Meeting of USICT held on 16th March, 2017 and 43rd Academic Council Meeting held on 25th May, 2017. The Scheme and Syllabus is applicable for the batch admitted in year 2015-16 Only, w.e.f., 01st August, 2017.

NOMENCLATURE OF CODES GIVEN IN THE SCHEME OF B.VOC

1. **ET** stands for Engineering and Technology.
2. **V** stands for Vocation.
3. **MC** stands for Mobile Communication.
4. **SD** stands for Software Development.
5. **AE** stands for Automobile.
6. **CE** stands for Consumer Electronics.
7. **PT** stands for Printing Technology.
8. **CT** stands for Construction Technology.
9. **RA** stands for Refrigeration & Air-Conditioning.
10. **PD** stands for Power Distribution Management.
11. **ID** stands for Interior Design.
12. **AA** stands for Applied Arts.
13. **CS** stands for Computer Science.
14. **MS** stands for Management Studies.
15. **EN** stands for Environmental Engineering
16. **PH** stands for Physics
17. **AS** stands for Applied Science.
18. **HS** stands for Humanities and Social Sciences.
19. **SS** stands for Social Services.
20. **L/T** stands for Lecture and Tutorial
21. **P** stands for Practicals.
22. **S/D** stands for Drawing/Studio
23. **P/D** stands for Practical/Drawing

BACHELOR OF VOCATION
(PRINTING TECHNOLOGY)
FIFTH SEMESTER EXAMINATION
(LEVEL-VII)

Paper Code	Paper ID	Paper	L	T/P	Credits
THEORY PAPERS					
ETVHS-701		Technical English (Common to all disciplines)	3	0	3
ETVPT-703		Print Finishing and Converting	3	0	3
CORE ELECTIVE-II (Select any one)					
ETVPT-705		Speciality and Security Printing	3	1	4
ETVPT-707		Colour Science and Management System	3	1	4
CORE ELECTIVE-III (Select any one)					
ETVPT-709		Printing Ink Technology	3	1	4
ETVPT-711		Print Production Management	3	1	4
GENERAL ELECTIVE-II (Select any one)*					
ETVSS-751		NCC	0	2	1
ETVSS-753		NSS	0	2	1
ETVSS-755		Sports	0	2	1
ETVSS-757		Community Services	0	2	1
ETVSS-759		ECO Club	0	2	1
ETVSS-761		YOGA	0	2	1
PRACTICAL/VIVA VOCE (Select as per CORE ELECTIVE-II)					
ETVPT-755		Speciality and Security Printing Lab	0	4	4
ETVPT-757		Colour Science and Management System Lab	0	4	4
PRACTICAL/VIVA VOCE					
ETVHS-751		Language Lab (Common to all Disciplines)	0	3	3
ETVPT-753		Print Finishing and Converting Workshop	0	3	3
ETVPT-759		Minor Project	0	8	4
ETVPT-761		Industrial Training-IV	0	2	4
TOTAL			**12**	**24**	**33**

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.

***Non University Examination System (NUES)**

BACHELOR OF VOCATION
(PRINTING TECHNOLOGY)
SIXTH SEMESTER EXAMINATION
(LEVEL-VII)

Paper Code	Paper ID	Paper	L	T/P	Credits
THEORY PAPERS					
ETVPT-702		Printing Machine Maintenance	3	0	3
CORE ELECTIVE-IV (Select any one)					
ETVPT-704		Green Printing and Quality Management in Graphic Arts	3	0	3
ETVPT-706		Estimating and Costing	3	0	3
CORE ELECTIVE-V (Select any one)					
ETVMS-702		Marketing Management	3	0	3
ETVMS-704		Fundamentals of Advertising	3	0	3
PRACTICAL/VIVA VOCE					
ETVPT-752		Printing Machine Maintenance Workshop	0	3	3
ETVPT-754		Printing Quality Control Lab	0	3	3
ETVPT-756		Seminar	0	3	3
ETVPT-758		Industrial Training-V/Field Work	0	2	4
ETVPT-760		Major Project#*	0	24	12
TOTAL			**09**	**33**	**34**

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.

#*The student will submit a synopsis at the beginning of the semester for approval from the departmental committee in a specified format, thereafter he/she will have to present the progress of the work through seminars and progress reports. Seminar related to major project should be delivered one month after staring of Semester. The progress will be monitored through seminars and progress reports. ***The students may be allowed to do Industrial Major Project on-site during 5 days in a week and class work should be completed in 2 working days in the respective institution. If in case, the classes are held during Saturday /Sunday then faculty should be given off in lieu of Saturday/Sunday.***

For Award of Diploma:

1. The total number of the credits of the Diploma (Printing Technology) Programme = 62.
2. Each student shall be required to appear in examinations of all courses. However, to award the Diploma (Printing Technology), a student shall be required to earn a minimum of 60 credits.

For Award of Advanced Diploma:

1. The total number of the credits of the Advanced Diploma (Printing Technology) Programme = 125.
2. Each student shall be required to appear in examinations of all courses. However, to award the Advanced Diploma (Printing Technology) a student shall be required to earn a minimum of 120 credits.

For Award of B.Voc. Degree:

1. The total number of the credits of the Degree B.Voc. (Printing Technology) Programme =192.
2. Each student shall be required to appear in examinations of all courses. However, to award the Degree B.Voc (Printing Technology) a student shall be required to earn a minimum of 180 credits.

TECHNICAL ENGLISH
(Common to all Disciplines)

	L	T/P	C
Paper Code: ETVHS-701			
Paper: Technical English	**3**	**0**	**3**

INSTRUCTIONS TO PAPER SETTER: **MAXIMUM MARKS: 75**

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 25 marks.
2. Apart from Question. No. 1 rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be of 12.5 marks.

Objectives:

- *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.

[T1, T2][No. of Hrs. 12]

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.

[T1, T2][No. of Hrs. 10]

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.

[T1, T2][No. of Hrs. 12]

UNIT-IV

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

[T1, T2][No. of Hrs. 11]

Text Book(s):

[T1] Sides, Charles H., "How to Write and Present Technical Information", Cambridge Univ. Press, 1999.
[T2] Basu, B. N., "Technical Writing", PHI Learning Pvt. Ltd., 2007.

Reference Book(s):

[R1] Beer, David F. and David A. McMurrey, "A Guide to Writing as an Engineer", New York: Wiley, 2005.
[R2] Gibaldi, Joseph, and Walter S. Achtert, "MLA Handbook for Writers of Research Papers, Thesis, and Dissertations", Modern Language Association, 1980.
[R3] Rubens, Philip, "Science and Technical Writing: A Manual of Style", Routledge, 2002.
[R4] 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

Paper Code: ETVPT-703	**L**	**T/P**	**C**
Paper: Print Finishing and Converting	**3**	**0**	**3**

INSTRUCTIONS TO PAPER SETTERS: **MAXIMUM MARKS: 75**

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 25 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be of 12.5 marks.

Objective and Pre-requisite: *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.

[T1, T2][No. of Hrs: 10]

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.

[T1, T2][No. of Hrs: 12]

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.

[T1, T3][No. of Hrs: 10]

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.

[T1, T4][No. of Hrs: 12]

TextBook(s):

[T1] B.D. Mendiratta, "Binding & Finishing I & II"
[T2] Ralph Lyman, "Binding and Finishing"
[T3] T. J. Tedesco, "Binding Finishing Mailing"
[T4] Hugh Speirs, "Introduction to Printing & Finishing"
[T5] A.G. Martin, "Finishing Process in Printing"

SPECIALITY AND SECURITY PRINTING
(Core Elective-II)

Paper Code: ETVPT-705	**L**	**T/P**	**C**
Paper: Speciality and Security Printing	**3**	**1**	**4**

INSTRUCTIONS TO PAPER SETTERS: **MAXIMUM MARKS: 75**

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 25 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be of 12.5 marks.

Objective and Pre-requisite: *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.

[T1, T2, R1][No. of Hrs. 10]

UNIT-II

Security printing materials, Types of security inks-Speciality inks -UV, water based, polymer, metallic, nano, thermo setting inks., Infrared inks, photo chromatic 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).

[T1, T2, R1][No. of Hrs. 11]

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.

[T1, T2, R1][No. of Hrs. 12]

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.

[T1, T2, R1][No. of Hrs. 12]

Text Book(s):

[T1] Narayanan R., "Computer Stationery and MICR Cheque Production", Association for Research and Development in Printing, Madras, 1988.

[T2] Warner Richard D, Adams Richard M, "Introduction to security printing", PIA/GATF, Pittsburgh, 2005.

References Book(s):

[R1] EIRI Board of consultants and engineers, "Hand Book of Printing Technology", Engineers India research Institute, New Delhi.

COLOUR SCIENCE AND MANAGEMENT SYSTEM
(Core Elective-II)

	L	T/P	C
Paper Code: ETVPT-707			
Paper: Colour Science and Management System	**3**	**1**	**4**

INSTRUCTIONS TO PAPER SETTERS: **MAXIMUM MARKS: 75**

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 25 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be of 12.5 marks.

Objective and Pre-requisite: *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.

[T1, T2, R1][No. of Hrs. 10]

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

[T1, T2, R1][No. of Hrs. 12]

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.

[T1, T2, R2][No. of Hrs. 10]

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.

[T1, T2, R2][No. of Hrs. 12]

Text Book(s):

[T1] B Chakravarty, "Digital Colour Printing", Asian Books Pvt. Ltd
[T2] Romano, "Professional Pre-press, Printing & Publishing", Prentice Hall
[T3] Mark D. Fairchild, "Color Appearance Models", John Wiley Sons Ltd, England, 2005
[T4] Asim Kumar Roy Choudhury, "Modern concept of Color and Appearance", Oxford & IBH Publishing Co Pvt. Ltd, New Delhi, 2000.

References Book(s):

[R1] John A. C. Yule, "Principles of Color Reproduction"
[R2] "Understanding Digital Color", GATF Press

PRINTING INK TECHNOLOGY
(Core Elective-III)

	L	T/P	C
Paper Code: ETVPT-709			
Paper: Printing Ink Technology	**3**	**1**	**4**

INSTRUCTIONS TO PAPER SETTERS: **MAXIMUM MARKS: 75**

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 25 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be of 12.5 marks.

Objective and Pre-requisite*: 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.

[T1, T2, R1][No. of Hrs. 10]

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. P^H 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.

[T1, T2, R1][No. of Hrs. 12]

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.

[T1, T2, R2][No. of Hrs. 12]

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.

[T1, T2, R3][No. of Hrs. 10]

Text Book(s):

[T1] R.H. Leach, "Printing Ink Manual", Kluwer Academic Publishers.
[T2] L C Young, "Materials in Printing Process".

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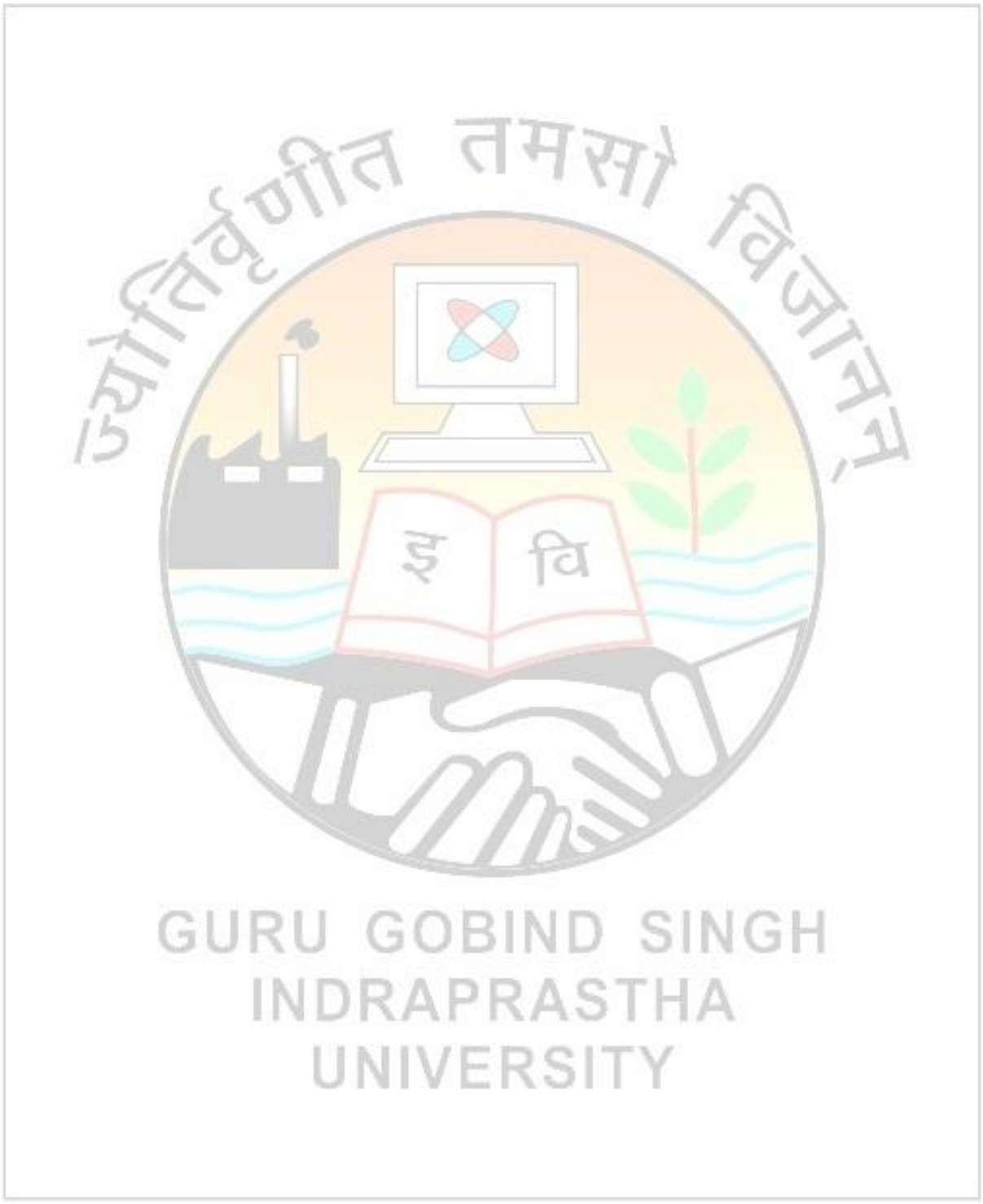
References:

[R1] Bob Thompson, "Printing Materials Science and Technology", PIRA, UK, 1998.
[R2] Ronald E.T, "Printing ink formulation principles, manufacture and control testing procedures", PIRA International, UK, 2000.
[R3] Nelson R.E. and Terry Scarlett, "What the printer should know about ink", GATF, USA, 1990.



PRINT PRODUCTION MANAGMENT
(Core Elective-III)

Paper Code: ETVPT-711	**L**	**T/P**	**C**
Paper: Print Production Management	**3**	**1**	**4**

INSTRUCTIONS TO PAPER SETTERS: **MAXIMUM MARKS: 75**

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 25 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be of 12.5 marks.

Objective and Pre-requisite: *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.

[T1, T2, R1][No. of Hrs. 12]

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.

[T1, T2, R1][No. of Hrs. 10]

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.

[T1, T3, R2][No. of Hrs. 12]

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.

[T2, T3, R2][No. of Hrs. 10]

Text Book(s):

[T1] R.D. Aggarwal, "Organization and Management", Tata McGraw Hill Publishing Ltd., New Delhi
[T2] T.A. Saifuddin, "Management Aspects of Printing Industry", 1st Edition, Nirmal Sadanadn Publishers, Mumbai,
[T3] G.G. Field, "Printing Production Management", Graphic Arts Publishing,

Reference Book(s):

[R1] Ruggles, "Printing Estimating Principles and Practices", Delmer Publication.
[R2] Joseph G. Monks, "Operations Management – Theory and Problems", McGraw Hill Intn'l Ltd., 2003.

NCC/ NSS/ SPORTS/ COMMUNITY SERVICES/ ECO CLUB
(General Elective-II)

Paper Code: ETVSS-751/ 753/ 755/ 757/ 759	**L**	**T/P**	**C**
Paper: NCC/NSS/ Sports/ Community Services/ ECO Club	**0**	**2**	**1**

Students should actively participate in either of the above activities of the institute during academic session. Credits shall be awarded accordingly based on final assessment by internal institute committee constituted by the Principal/ Director of the respective institutes. Students are encouraged organize events and awards if any shall be distributed to students during annual day/ specific function day accordingly

YOGA
(General Elective-II)

Paper Code: ETVSS-761	**L**	**T/P**	**C**
Paper: Yoga	**0**	**2**	**1**

INSTRUCTIONS TO PAPER SETTERS: **MAXIMUM MARKS: 75**

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 25 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be of 12.5 marks.

Introduction: Yoga education in Schools/Colleges/ Institutions/ Organizations/Universities etc. can immensely contribute to health of children by disseminating knowledge and awareness about the value of health, inculcating and nurturing health promoting habits and life style.

The Paper on YOGA has been initiated by USET for the students in a new skill development programme known as B.Voc programme. Currently, launched in 09 Govt. Institutions affiliated to GGSIP University.

Aim and Objectives:

The aim of the Paper is to introduce Yoga. The specific objectives are:

- To impart Yoga education in schools/colleges/Institutions for prevention of disease and promotion of health;
- To train faculty members in Yogic principles and practices.
- To prepare and distribute standardized Yoga teaching and training materials with reference to institute health.

UNIT-I

- Brief introduction to origin of Yoga, Psychological aspects leading to origin of Yoga, Hindu Mythological concepts about origin of Yoga
- History and Development of Yoga
- Etymology and Definitions of Yoga, Aim and Objectives of Yoga, Misconceptions about Yoga, True Nature of Yoga
- General Introduction to Schools of Yoga
- Principles of Yoga, Yoga Practices for Health and Harmony

UNIT-II

Yoga Traditions and Classical Schools of Yoga.

- Yoga's Traditional Source
- Different's traditions of Yoga.
- Contemporary Yoga Practice.
- Concepts and Practices of Yoga in others religions.

UNIT-III

Experimental Study Yoga:

- Aasan, Surya Namaskar, Pranayam, Sukshm-Kriya, Dhyan-Mudra.Shatkarma

UNIT-IV

Yoga and You

- **Concept of Health-** Aahaar, Nidra, Bharmacharaya, Viyayaam.
- **Aarogya -** Prevention, Cure and Remedies.
- Life Management and Development.

Reference Book(s)

[R1] Singh S. P & Yogi Mukesh, "Foundation of Yoga", Standard Publication, New Delhi, 2010
[R2] Radhakrishnan S,"Indian Philosophy", (Vol. I & II) II Edition, Oxford University, UK, 2008.
[R3] Swami Devvarata, "AshtangYog", 119, Guttam Nagar.
[R4] Prof. Ram Harsh Singh, "Swasth Viritam"
[R5] Swami Prabhavanand, "Spiritual Heritage of India (English)", Sri Ramkrishna Math, Madras, 2004

The Scheme and Syllabus for B.Voc (Printing Technology) (3rd Year) has been approved in 45th BOS Meeting of USICT held on 16th March, 2017 and 43rd Academic Council Meeting held on 25th May, 2017. The Scheme and Syllabus is applicable for the batch admitted in year 2015-16 Only, w.e.f., 01st August, 2017.

YOGA PRACTICAL
I.A

I. RECITATION OF HYMNS & HASTA MUDRA

1.1 Recitation of Pratah-smaran and Shanti Mantras

1.2 Recitation of Pranava Japa and Soham Japa

1.3 Recitation of Hymns from Upanishad & Yoga Texts

1.4 Hasta Mudra: Chin, Jnana, Hridaya, Bhairav, Yoni

II. SHATKARMA

2.1 Dhauti (Kunjal, Vamana Dhauti, Vastra Dhauti)

2.2 Neti (Jalneti, Sutraneti)

2.3 Kapalbhati and its variants

2.4 Agnisara

III. BREATHING PRACTICES

3.1 Breath Awareness: Shwas-prashwas Sanyaman

3.2 Abdomen, Thoracic & Clavicular Breathing, Abdomen + Thoracic Breathing, Abdomen + Thoracic + Clavicular Breathing

3.3 Yogic Breathing: Pause Breathing (Viloma Pranayama), Spinal Passage Breathing (Sushumna Breathing)

3.4 Practice of Puraka, Rechaka & Kumbhaka (Antar & Bahya Kumbhaka)

YOGA PRACTICAL
I.B

YOGIC SUKSMA AND STHULA VYAYAMA, NABHI PAREEKSHA

1.1 YOGIC SUKSMA VYAYAMA

1. Uccharana-sthalatatha Vishudha-chakra-shuddhi (for throat and voice)
2. Prarthana (Prayer)
3. Buddhi-tatha-dhritishakti-vikasaka (for developing will power)
4. Smaranashakti-vikasaka (for improving the memory)
5. Medhashakti-vikasaka (for improving the intellect and memory)
6. Netrashakti-vikasaka (for the eyes)
7. Kapolashakti-vardhaka (for the cheeks)
8. Karnashakti-vardhaka (for the ears)
9. Grivashakti-vikasaka (for the Neck) (i) (A & B)
10. Grivashakti-vikasaka (for the Neck) (ii) (A & B)
11. Grivashakti-vikasaka (for the Neck) (iii)
12. Skandha-tatha-bahu-mulashakti-vikasaka (for the shoulders)
13. Bhuja-bandhashakti-vikasaka
14. Kohinishakti-vikasaka
15. Bhuja-vallishakti-vikasaka
16. Purna-bhujashakti-vikasaka (for the arms)
17. Mani-bandhashakti-vikasaka
18. Kara-prsthashakti-vikasaka
19. Kara-talashakti-vikasaka
20. Anguli-mulashakti-vikasaka (for the fingers) (A & B)
21. Anguli- shakti-vikasaka (for the fingers) (A & B)
22. Vaksa-sthalashakti-vikasaka (for the chest) (1)
23. Vaksa-sthalashakti-vikasaka (for the chest) (2)
24. Udarashakti-vikasaka (for the abdomen) (i)
25. Udarashakti-vikasaka (for the abdomen) (ii)
26. Udarasakti-vikasaka (for the abdomen) (iii)
27. Udarashakti-vikasaka (for the abdomen) (iv)
28. Udarashakti-vikasaka (for the abdomen) (v)
29. Udarashakti-vikasaka (for the abdomen) (vi)
30. Udarashakti-vikasaka (for the abdomen) (vii)
31. Udarashakti-vikasaka (for the abdomen) (viii)
32. Udarashakti-vikasaka (for the abdomen) (ix)
33. Udarashakti-vikasaka (for the abdomen) (x) (A, B & C)
34. Kati shakti-vikasaka (for the waist) (i)
35. Kati shakti-vikasaka (for the waist) (ii)
36. Kati shakti-vikasaka (for the waist) (iii)

37. Kati shakti-vikasaka (for the waist) (iv)
38. Kati shakti-vikasaka (for the waist) (v)
39. Muladhara-chakra-suddhi (for the rectum)
40. Upasthatatha-svadhisthana-chakra-suddhi (for the genital organs)
41. Kundalinishakti-vikasaka (for the kundalini)
42. Janghashakti-vikasaka (for the thighs) (i) (A & B)
43. Janghashakti-vikasaka (for the thighs) (ii) (A & B)
44. Janushakti-vikasaka (for the knees)
45. Pindalishakti-vikasaka (for the calves)
46. Pada-mulashakti-vikasaka (A & B)
47. Gulpha-pada-pristha-pada-tala-shakti-vikasaka (for the ankles and the feet)
48. Padangulishakti-vikasaka (for the toes)

1.2 YOGIC STHULA VYAYAMA

1. Rekha-gati (Walking in a Straight line)
2. Hrid-gati (Injanadaur – the Locomotive Exercise)
3. Utkurdana (Jumping Exercise)
4. Urdhva-gati (Upward Movement)
5. Sarvanga-pusti (Developing the Entire body) &

1.3 NABHI PAREEKSHA

II. SURYA NAMASKARA

III. YOGASANA (Standing Postures and body alignment)

3.1 Tadasana, Vrikshasana, Urdhva-Hastottanasana, Kati Chakrasana

3.2 ArdhaChakrasana, Paada Hastasana

3.3 Trikonasana, Parshva Konasana

3.4 Veerabhadrasan and its variations

YOGA PRACTICAL
II.A

I. SHATKARMA

1.1 Dhauti

1.2 Neti

1.3 Nauli Madhyama, Vama, Dakshina and Nauli Chalana

1.4 Trataka (Jatru and Jyoti)

II. PRANAYAMA

2.1 Nadi Shodhana (Technique 1: Same Nostril Breathing)

2.2 Nadi Shodhana (Technique 2: Alternate Nostril Breathing)

2.3 Nadi Shodhana (Technique 3: Alternate Nostril Breathing + Antar Kumbhak)

2.4 Nadi Shodhana (Puraka + Antar Kumbhak + Rechaka + Bahya Kumbhak) (1:4:2:2)

2.5 BHRAMARI PRANAYAMA

III. PRACTICES LEADING TO MEDITATION

3.1 Pranav and Soham Japa

3.2 Yoga Nidra (1, 2, 3)

3.3 Antarmauna

3.4 Ajapa Dharana (Stage 1, 2, 3)

YOGA PRACTICAL
II.B

I. YOGASANA (Sitting Postures)

1.1 Dandasana, Swastikasana, Padmasana,Vajrasana, Supta Vajrasana

1.2 Kagasana, Utkatasana, Gomukhasana,Ushtrasana, Shashankasana,

1.3 Janusirasana, Paschimottanasana, Bhramacharyasana, Mandukasana, Utthana Mandukasana

1.4 Vakrasana, Ardha Matsyendrasana, Marichayasana, Simhasana

II. YOGASANA (Supine lying Postures)

2.1 Pavanamuktasana

2.2 Utthana-padasana, Ardha Halasana,

2.3 Halasana

2.4 Setubandha Sarvangasana

2.5 Sarvangasana

2.6 Matsyasana

2.7 Chakrasana

2.8 Shavasana

III. YOGASANA (Prone lying Postures)

3.1 Makarasana

3.2 Bhujangasana

3.3 Shalabhasana

3.4 Dhanurasana

3.5 Kapotasana

3.6 Raja Kapotasana

YOGA PRACTICAL
III.A

I. BANDHA

- Jivha Bandha
- Jalandhara Bandha
- Uddiyana Bandha
- Mula Bandha
- Maha Bandha
- Tri Bandha

II PRANAYAMA (with Antar & Bahya Kumbhaka)

2.1 Surya-bhedi and Chandra-bhedi Pranayama
2.2 Ujjayi Pranayama
2.3 Sheetali Pranayama
2.4 Shitkari Pranayama
2.5 Bhastrika Pranayama

III. PRACTICES LEADING TO MEDITATION

3.1 Ajapa Dharana (Stage 4,5,6)
3.2 Yoga Nidra (4,5)
3.3 Practices leading to Breath Meditation
3.4 Practices leading to Om Meditation
3.5 Practices leading to Vipassana Meditation

Practices leading to Preksha Meditation

YOGA PRACTICAL
III.B

I. YOGASANA

1.1 Siddhasana, Bhadrasana,

1.2 Baddha Padmasana, Uttitha Padmasana,

1.3 Bhunamanasana, Hanumanasana

1.4 Bakasana, Kukkutasana, Garbhasana

1.5 Matsyendrasana, Marjariasana,

1.6 Padangusthasana, Hastapadangusthasana

1.7 Garudasana, Vatayanasana, Natarajasana

1.8 Mayurasana, Padma Mayurasana

1.9 Sirshasana and its variations

1.10 Ekapada and Dwipada Kandarasana

II. MUDRAS

2.1 Yoga Mudra

2.2 Maha Mudra

2.3 Shanmukhi Mudra

2.4 Shambhavi Mudra

2.5 Kaki Mudra

2.6 Tadagi Mudra

2.7 Vipareet Karni Mudra

2.8 Simha Mudra

SPECIALITY AND SECURITY PRINTING LAB
(Core Elective-II)

Paper Code: ETVPT-755	**L**	**T/P**	**C**
Paper: Speciality and Security Printing Lab	**0**	**4**	**4**

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.

COLOUR SCIENCE AND MANAGEMENT SYSTEM LAB
(Core Elective-II)

Paper Code: ETVPT-757	**L**	**T/P**	**C**
Paper: Colour Science and Management System Lab	**0**	**4**	**4**

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.

LANGUAGE LAB
(Common to all Disciplines)

Paper Code: ETVHS-751	**L**	**T/P**	**C**
Paper: Language Lab	**0**	**3**	**3**

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

PRINT FINISHING AND CONVERTING WORKSHOP

Paper Code: ETVPT-753	**L**	**T/P**	**C**
Paper: Print Finishing and Converting Workshop	**0**	**3**	**3**

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.

PRINTING MACHINE MAINTENANCE

Paper Code: ETVPT-702	**L**	**T/P**	**C**
Paper: Printing Machine Maintenance	**3**	**0**	**3**

INSTRUCTIONS TO PAPER SETTERS: **MAXIMUM MARKS: 75**

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 25 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be of 12.5 marks.

Objective and Pre-requisite: *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.

[T1, T2, T3][No. of Hrs. 10]

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.

[T1, T2, T3][No. of Hrs. 12]

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.

[T1, T2, T3][No. of Hrs. 12]

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.

[T1, T2, T3][No. of Hrs. 10]

Text/ Reference Book(s):

[T1] Rizzo Kenneth E, "Total Production Maintenance", GATF, USA, 2002.
[T2] Khurmi R.S., "Machine Design", S. Chand and Company, New Delhi, 2002.
[T3] Garg H.P., "Industrial Maintenance", S. Chand and Company, New Delhi, 1999.

GREEN PRINTING AND QUALITY MANAGEMENT IN GRAPHIC ARTS
(Core Elective-IV)

Paper Code: ETVPT-704	**L**	**T/P**	**C**
Paper: Green Printing and Quality Management in Graphic Arts	**3**	**0**	**3**

INSTRUCTIONS TO PAPER SETTERS: **MAXIMUM MARKS: 75**

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 25 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be of 12.5 marks.

Objective and Pre-requisite: *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 standard. 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.

[T1, T2, R1][No. of Hrs. 12]

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.

[T1, T2, R1][No. of Hrs. 10]

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.

[T3, R2][No. of Hrs. 12]

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.

[T3, R2][No. of Hrs. 10]

Text Book(s):

[T1] Kipphan Helmut, "Hand Book of Print Media", Springer, Germany, 2001.
[T2] Jones Gary A, "Air Pollution engineering Guide for Graphic Arts Industry", GATF, 1993.
[T3] Bhat K.S., "Total quality Management", Himalaya Publication House

References Book(s):

[R1] John Geis A and Paul Addy L, "Materials handling for the Printer", GATF Press, Pittsburgh, 1999
[R2] Herschel L.A., "Implementing TQM in Graphics Art", Pira and GATF, Pittsburg, 1995.

ESTIMATING AND COSTING
(Core Elective-IV)

Paper Code: ETVPT-706	**L**	**T/P**	**C**
Paper: Estimating and Costing	**3**	**0**	**3**

INSTRUCTIONS TO PAPER SETTERS: **MAXIMUM MARKS: 75**

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 25 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be of 12.5 marks.

Objective and Pre-requisite*: 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.

[T1, T2, R1][No. of Hrs. 12]

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.

[T1, T2, R1][No. of Hrs. 10]

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.

[T1, T2, R1][No. of Hrs. 10]

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.

[T1, T2, R1][No. of Hrs. 12]

Text Book(s):

[T1] B.D. Mendiratta, "Printers Costing and Estimating", Printrade Indian Publication Pvt. Ltd. New Delhi.
[T2] "Estimating for Printers", BPIF, London,

Reference Book(s):

[R1] Philip Kent Ruggles, "Printing Estimating Principles and Practice", California Polytechnic State University.
[R2] Sadhri Sorale , "Business Ethics Concepts and Cases".

MARKETING MANAGEMENT

Paper Code: ETVMS-702	**L**	**T/P**	**C**
Paper: Marketing Management	**3**	**0**	**3**

INSTRUCTIONS TO PAPER SETTERS: **MAXIMUM MARKS: 75**

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 25 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be of 12.5 marks.

Objective and Pre-requisite*: 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

[T1, T2][No. of Hrs. 12]

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.

[T1, T2][No. of Hrs. 12]

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.

[T1, T2][No. of Hrs. 12]

UNIT-IV

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

[T1, T2][No. of Hrs. 09]

Text Book(s):

[T1] Kotler, P., Keller, K.L. Koshy, A. and Jha, M., "Marketing Management: A South Asian Perspective", 13th Edition, Pearson Education, New Delhi, 2009.

[T2] Etzel, M., Walker, B., Stanton, W. and Pandit A., "Marketing Management", Tata McGraw Hill, New Delhi, 2009

Reference Book(s):

[R1] Ramaswamy, V.S and Namakumari, S., "Marketing Management: Global Perspective Indian Context", 4th Edition, Macmillan Publishers India Ltd., New Delhi, 2009

[R2] Saxena, Rajan, "Marketing Management", Fourth Edition, Tata McGraw Hill Education Pvt. Ltd. New Delhi, 2009

[R3] Louis E. Boone and David L. Kurtz, " Principles of Marketing", 12th Edition, Cengage Learning, 2007.

[R4] Pride, William, M., and O.C. Ferrell, "Marketing Planning, Implementation and Control", Cengage Learning, New Delhi, 2010.

FUNDAMENTALS OF ADVERTISING

	L	T/P	C
Paper Code: ETVMS-704			
Paper: Fundamentals of Advertising	**3**	**0**	**3**

INSTRUCTIONS TO PAPER SETTERS: **MAXIMUM MARKS: 75**

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 25 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be of 12.5 marks.

Objective and Pre-requisite*: 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.

[T1, T2, R1][No. of Hrs. 11]

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.

[T1, T3, R2][No. of Hrs. 10]

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.

[T2, T3, R2][No. of Hrs: 12]

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.

[T2, T3,R1][No. of Hrs: 12]

Text Book(s):

[T1] Wells William, "Advertising", Prentice Hall, New Delhi, 2002.
[T2] Wilmshurst Jhon and Mackay Adrian, "Fundamentals of Advertising", MGH, Boston, 1999.
[T3] Varshney R.L. and Gupta S. L, "Marketing Management", Sultan Chand and Sons, New Delhi, 2004.

Reference Book(s):

[R1] Jefkins Frank and Yadin Daniel, "Advertising", Prentice Hall, New Jersey, 2000.
[R2] Philip Kotler, "Marketing Management Analysis, Planning, Implementation and Control", Prentice Hall of India Private Limited, New Delhi, 2000.

PRINTING MACHINE MAINTENANCE WORKSHOP

	L	T/P	C
Paper Code: ETVPT-752			
Paper: Printing Machine Maintenance Workshop	**0**	**3**	**3**

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.

PRINTING QUALITY CONTROL LAB

	L	T/P	C
Paper Code: ETVPT-754			
Paper: Printing Quality Control Lab	**0**	**3**	**3**

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. 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.