



GUJARAT TECHNOLOGICAL UNIVERSITY

Program Name: Engineering

Level: Diploma

Branch: Printing Technology

Course / Subject Code : DI03058041

Course / Subject Name : Binding and Finishing Process

w. e. f. Academic Year:	2024-25
Semester:	3 rd
Category of the Course:	PCC

Prerequisite:	Basic knowledge of Pre press and Printing Processes.
Rationale:	Binding and finishing processes are required in order to transform printed sheets into a usable product such as books, brochures, note books etc. In today's state of art print houses, most of the finishing operations are carried out using machines, the working and principle of these machines is also a part of the course. Hot foil stamping, numbering, perforating, embossing, die cutting, are the various finishing processes that student should know in order to understand how these processes increase the utility and beauty of the product. Printing engineers are required to supervise the binding and finishing process and hence they should also develop skills in this area. Skill development in binding and finishing will also enable them in starting a small scale industry of bindery operation.

Course Outcome:

After Completion of the Course, Student will able to:

No	Course Outcomes	RBT Level
01	Understand the importance of Binding and Finishing Process.	R, U, A
02	Identify the purpose of various raw materials used for binding and finishing.	R, U, A
03	Identify all the stages involved in Book making.	R, U, A
04	Identify types of cutting and folding machines and understand the working of them.	R, U, A
05	Compare various types of binding styles and Finishing Operations	R, U, A

*Revised Bloom's Taxonomy (RBT)

Teaching and Examination Scheme:

Teaching Scheme (in Hours)			Total Credits L+T+ (PR/2)	Assessment Pattern and Marks				Total Marks
L	T	PR		C	Theory		Tutorial / Practical	
			ESE (E)		PA (M)	PA(I)	ESE (V)	
3	0	2	4	70	30	20	30	150



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Course Content:

Unit No.	Content	No. of Hours	% of Weightage
Unit – I Introduction to Binding & Finishing	1.1 Introduction to binding and its type. 1.2 Introduction to Finishing and its application areas. 1.3 Introduction to tools, machinery, equipment's used, and application of each of its type. 1.4 Identifying correct Binding process required for particular job	06	10
Unit – II Materials used in Binding	2.1 Paper- British standard and ISO paper sizes. Multiples and subdivisions of a given size. Advantages and Limitations of different measurement standards. 2.2 Measuring Units for number of paper- Ream, Quire, and Gross. 2.3 Boards – Different types, use, storage effect of humidity 2.4 Securing materials – Thread, Wire, tape, cord etc. 2.5 Covering materials – Binding cloth, Mull cloth, Rexene, Leather etc. 2.6 Adhesives – Glue, Paste, PVA, Hot melt and their properties	08	18
Unit – III Operations in Binding	3.1 Pre – forwarding operations Like: jogging, knocking, counting, folding, bundling, gathering, collating, sewing etc. 3.2 Forwarding operations – Removing the swell, fixing end papers, fraying out the slips, gluing the back, trimming, rounding and backing, fixing head & tail bands, lining the back, edge decoration, cutting the boards, capping up, squaring the board, lacing, covering, setting the joints, pasting down, pressing, jacketing.	07	17
Unit– IV Machinery and Equipment's in Binding	4.1 Cutting machine and its types 4.2 Parts of cutting machine and their functions 4.3 Safety devices, Trim disposal system used in Cutting machine. 4.4 Straw board cutter. 4.5 Construction and working of Knife folding; Buckle folding, Combination folding. 4.6 Hand folding – methods, merits and demerits	08	18
Unit– V Various	5.1 Equipment – gatherer, Feeder, Spine cutter, Gluer, Cover feeder, Trimmer	7	17



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Binding Styles	5.2 Burst binding, Notch binding, Perfect Binding, Stationary binding 5.3 Loose leaf binding - Spiral binding, Wire O binding, Inter screw binding, Metal ring binding, Thong binder, Metal back binder, Comb binding 5.4 Rebinding of Old books		
Unit- VI Securing Methods and Covering Style	6.1 Thread securing methods, Book sewing machine – parts and its functions. 6.2 Case binding, Case making – Manual and Machine 6.3 Covering – Quarter, Half and Full 6.4 Boarding methods – pasting down, split drawn in work, cut flush, extra square, ASTI (All side turned in) 6.5 Types and applications of lamination and varnishing operations. 6.6 Miscellaneous finishing process like: Blocking, Numbering, Perforation, Creasing, Die cutting, Edge decoration, Index cutting, Foil stamping, varnishing etc.	9	20
	Total	45	100

Suggested Specification Table with Marks (Theory):

Distribution of Theory Marks (in %)					
21	U Level	A Level	N Level	E Level	C Level
27	53	20	NA	NA	NA

Where R: Remember; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create (as per Revised Bloom's Taxonomy)

References/Suggested Learning Resources:

(a) Books:

1. Handbook of Print Media: Kipphan, Helmut, Heidelberg Druckmaschinen AG, Springer Heidelberg, ISBN 3-540-67326-1
2. Binding & Finishing: Ralph Lyman, GATF Press, ISBN-13: 978-0883621639
3. Finishing Process in Printing: A.G. Martin, Focal Press Ltd ISBN-13: 978-0803822894
4. Book Binding with Adhesives: Tony Clark, Welbound, ISBN-13: 978-0077094041

(b) Open source software and website:

1. Binding Tools https://www.youtube.com/watch?v=dE_S7auPz48
2. Binding Tools <https://www.youtube.com/watch?v=kOFtLg-NAo>
3. Gold Embossing <https://www.youtube.com/watch?v=mC6XPHu1xCw>
4. Stitching machine <https://www.youtube.com/watch?v=lezUpWtANvI>
5. Sewing Machine <https://www.youtube.com/watch?v=WmIyffh3ev8>



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6. Perfect Binding Machine <https://www.youtube.com/watch?v=Lm5XtUxMfUw>
7. Gathering Machine https://www.youtube.com/watch?v=P_3UI9xHVNc

Suggested Course Practical List:

S. No.	Practical Outcomes (PrOs)	Unit No.	Approx. Hrs. required
1	Identify tools used for book binding.	I	02
2	Identify different Equipment's used in book binding.	I	02
3	Perform Pre forwarding operations Knocking-jogging and counting.	III	02
4	Perform Folding operations using different hand folding methods.	III	02
5	Perform Pre forwarding operations like gathering and collating.	III	02
6	Prepare Reinforced End paper.	III	02
7	Prepare Cloth joint End paper.	III	02
8	Prepare Made end paper and Zig-Zag End paper.	III	02
9	Perform Forwarding operations like Removing swell, Rounding, Gluing and Fixing Endpaper.	III	02
10	Prepare quarter bound cut flush book.	VI	02
11	Prepare quarter bound cut flush turn-in book	VI	02
12	Prepare quarter bound French stitch.	VI	02
13	Prepare lump binding books	III	02
14	Prepare tear-off and perforated pad.	VI	02
15	Prepare loose leaf file, pocket diary	V	02
16	Prepare half bound book kettle stitch	VI	02
17	Prepare full bound book French stitch	VI	02
18	Perform stitching operations using wire stitching machine.	V	02
19	Identify difference in between case making & casing in machine.	VI	02
20	Perform sewing operations using tapes.	III	02
21	Perform sewing operations using Cords.	III	02
22	Identify working of perfect binding machine	III	02
23	Identify working of paper bag making machine	III	02
24	Identify working of buckle folding	IV	02
25	Identify working of knife folding	IV	02
26	Identify working of gathering machine.	IV	02
27	Identify working of lamination machine	IV	02
28	Perform finishing operations using different process such as foil stamping embossing etc.	III	02
Minimum 14 Practical Exercises			28 Hrs.



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Suggested Project List: -

1. Prepare list of different covering materials used in book binding.
2. Collect data on eco-friendly book binding.
3. Collect information on spot lamination.
4. Prepare report on estimation of book binding.
5. Prepare list of machine manufactures of paper bag machine.
6. Collect information on different adhesion techniques used in book binding adhesives
7. Collect information on carton making machine manufactures.
8. Collect information regarding different covering materials used in book binding

List of Laboratory/Learning Resources Required:

S. No.	Equipment Name with Broad Specifications	PrO.No.
1	Tabletop folder <ul style="list-style-type: none">• Heavy volume• 500 sheet hopper• Paper Size 3.5" x 5" to 11" x 17"	1 to 20
2	Paper cutting machine <ul style="list-style-type: none">• Cutting width 820mm• Cutting depth 820mm• Clamp opening 130mm• multi-function touch panel• Knife stroke: 42times/min• Knife dimensions: 995×130×11.1mm• Main motor: 2.2kw	1 to 20
3	Table top perfect binder <ul style="list-style-type: none">• Binding Type: Cover Binding, Tape Binding, Pad Binding• Book Block Size: Spine Length x Fore-edge Length Max. 315 x 210 mm or 12.4" x 8.2" Min. 210 x 148 mm or 8.3" x 5.9"• Book Block Thickness: Max. 25 mm or 0.9"• Cover Size: Length × Width Max. 315 x 445 mm or 12.4" x 17.5" Min. 210 x 297 mm or 8.3" x 11.7"• Cover Weight Range: 82 to 210 gsm, 22 to 60 lb• Cycle Speed: 22 seconds per cycle (Cover Binding)	4 to 6
4	Nipping press & different binding Tools	1 to 20



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S. No.	Equipment Name with Broad Specifications	PrO.No.
	<ul style="list-style-type: none">Nipping Press Material: Cast IronPlaten size of 18" x 14", with daylight of 2 to 5".Binding Tools like: Folder, Needle, Saw, Bodkin, Eyelet Punch, Brushes, Hammer, Scale, L-Square, Scissors, Binder's Knife, Fillet.	
5	Laminating machine <ul style="list-style-type: none">Type: Hot Pouch laminatorMaximum laminating width: \approx 320mm (A3 Size)Laminating thickness: \approx 75 microns to 250 micronsLamination Speed: \approx 1000mm/minute	19 & 20
6	Mechanical binding: Spiral, Comb, Twin loop binding machines. <ul style="list-style-type: none">Machine Dimension: 460 x 430 x 205 mmPunching Capacity: 15 Sheets (32/34 Holes Wire), 20 Sheets (19/21 Holes Comb), 2 Sheets (PVC 0.2mm Cover)Binding Capacity: O-Wire 5-28 mm (250 Sheets), Plastic Comb 6-51 mm (500 Sheets)	1 to 10
7	Perforation Machine <ul style="list-style-type: none">Material: MetalAutomation Grade: Manual	1 to 20

Suggested Activities for Students:

Students should perform following activities in group and prepare reports of about 5 pages for each activity. They should also collect/record physical evidences for their (student's) portfolio which may be useful for their placement interviews:

1. List developments in die punching operations
2. List developmental stages in modern book binding.
3. Collect ten different samples of covering materials used in book binding.
4. Collect ten different samples of securing material used in book binding.
5. Collect ten different samples of reinforcing materials used in book binding.
6. Collect information of different lamination methods and materials.
7. Collect information of different types of board used in binding.
8. Collect samples of different types of paper used in binding.

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