

**Ahmednagar Jilha Maratha Vidya Prasarak Samaj's
New Arts, Commerce, and Science College, Ahmednagar
(Autonomous)
(Affiliated to Savitribai Phule Pune University, Pune)**



**National Education Policy (NEP)
Choice Based Credit System (CBCS)**

**Programme Skeleton and Syllabus of
Printing Technology (Minor)**

**Implemented from
Academic Year 2023-24**

Ahmednagar Jilha Maratha Vidya Prasarak Samaj's
**New Arts, Commerce and Science College, Ahmednagar
(Autonomous)**

Board of Studies in Printing Technology

Sr. No.	Name	Designation
1.	Prof.Priyamvada U. Patil	Chairman
2.	Hon.Prof.A.D.Gangarde	Member
3.	Hon.Prof.Abhijeet Jadhav	Member
4.	Hon. Dr.Kamal Chopra	Academic Council Nominee
5.	Hon.Prof.Parag Hase	Academic Council Nominee
6.	Hon.Prof.Madhura Mahajan	Vice-Chancellor Nominee
7.	Hon.Mr.Vineet Chahajed	Alumni
8.	Hon.Mr.Narendra Firodia	Industry Expert
9.	Prof. A.P.Gadhawe	Member (co-opt)
10.	Prof. Neha Kulkarni	Member (co-opt)
11.	Prof. S.V. Pekhale	Invitee
12.	Prof.V.R.Ekshinge	Invitee

Prologue/ Introduction of the programme:

The B. Voc. program is of three-year duration. It has a specific feature of multi point entry and multi point exit provision. Hence a student, who completes one year, shall be awarded Certificate in Diploma subject to the condition of earning the required credit points. Similarly, after completing the second year, Advance Diploma shall be awarded. On successful completion of third year, candidate shall be awarded the degree of Bachelor in Vocational (Printing Technology). If any student desire to take admission to other university at any other stage i.e., on completing first year, he/she may be permitted to take admission to second year in same branch. Similarly, on completing the second year, one can be admitted to the third year of the program.

This program aims to :

- 1:To provide teaching/learning facilities in Printing Technology for easy adaptation to Printing industry and higher Education.
- 2:Provide a platform for self learning to meet the challenges of changing technology .
- 3:Inculcate Ethical values, Entrepreneur and Encourage innovation, team spirit and leadership qualities to succeed in professional career.
- 4:Comprehend the societal needs and environmental concerns in the field of Printing Technology.
- 5:Every student is exposed to the computer lab at the I & II Semesters itself in order to familiarize himself with skills required for keyboard/mouse operation, Internet usage and e-mailing.

2. Programme Outcomes (POs) :

In first year students shall be equipped with the subject knowledge and required skills and training on pre-press technology, offset printing process, printing material science, packaging technology.

In second year students shall learn the subjects of digital pre-press technology, Gravure printing process, Packaging technology, software's in printing with the required practical's in these areas.

In third year, students shall learn the subjects of printing, finishing technology, flexographic printing process, digital and security printing, mechanical maintenance, cost estimation, entrepreneurship with the required practical knowledge in these areas. The practical exposure and training will be provided through a compulsory industrial training, project work, case studies etc. On completion of the Course students will :

- 1: Get Knowledge of pre-press technology, offset printing process, printing material science, packaging technology with the practical aspects involved with it.
- 2: Have the skill of Offset printing process and they will reach the level of Diploma in printing Tech.
- 3: Get knowledge about digital pre-press technology, Gravure printing process, screen, sublimation printing process, packaging technology, Computer science applicable to printing with the practical aspects involved with it.
- 4: Be involved in projects right from project planning to final outcome ready for client Delivery.
- 5: Develop Entrepreneurship skills. Student can gain the skills of setting up their own business.

Credit Distribution: B.Sc. including Minor and OE and other courses.

	Type of Courses	III Yr	IV Yrs (Honours)	IV Yrs Research
Major Printing Technology	Discipline-Specific Courses (DSC)	46	74	66
	Discipline Specific Elective (DSE)	08	16	16
	Skill Enhancement Courses (SEC)	06	06	06
	Vocational Skill Courses (VSC)	08	08	08
	On-Job Training (OJT)	04	08	04
	Field Project (FP)	04	04	04
	Community Engagement and Service (CEP)	02	02	02
	Research project	00	00	12
	Research Methodology	00	04	04
	Total (I, II and III Year)	78	122	122
Minor	Minor	20	20	20
Other Courses	Open Elective (OE)/ Multidisciplinary Courses	12	12	12
	Indian Knowledge System	02	02	02
	Co-Curricular Courses	08	08	08
	Ability Enhancement Courses	08	08	08
	Value Education Courses	04	04	04
	Total	132	176	176

Programme Framework (Courses and Credits): B.Voc. Printing Technology (Minor)

Sr. No.	Year	Semester	Level	Course Type	Course Code	Title	Credits
1.	I	I	4.5	MNR-1	BVOC-PT101	Basics of Printing Technology	03
2.	I	II	4.5	MNR-2	BVOC-PT102	Fundamentals of Screen Printing .	03
3.	II	III	5.0	MNR-3	BVOC-PT103	Basics of Offset lithograpgy printing.	03
4.	II	IV	5.0	MNR-4	BVOC-PT104	Fundamentals of Gravure Printing	03
5.	III	V	5.5	MNR-5	BVOC-PT105	Basics of Flexography	04
6.	III	VI	5.5	MNR-6	BVOC-PT106	Basics of Packaging Technology	04
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**Ahmednagar Jilha Maratha Vidya Prasarak Samaj's
New Arts, Commerce and Science College, Ahmednagar
(Autonomous)
Syllabus
B.Voc. Printing Technology (Minor)**

Title of the Course: Basics of Printing Technology								
Year: I				Semester: I				
Course Type	Course Code	Credit Distribution		Credits	Allotted Hours	Allotted Marks		
		Theory	Practical			CIE	ESE	Total
MNR-1	BVOC-PT101 T/P	02	01	03	60	30	70	100

Learning Objectives:

1. Learning and understanding the need and printing basic fundamentals.
2. Understanding importance of color in printing.
3. Understanding basic printing processes and its various types.
4. Understanding materials used for printing.

Course Outcomes (Cos):

1. Understand the basics of printing.
2. Understand design, layout and color requirements for printing processes.
3. Understand basics of screen printing processes.
4. Learn use of mesh and role of thread in screen printing.
5. Understand stretching, gluing and pre-press operations in screen printing process.
6. Understand printing surface preparation in screen printing.

Detailed Syllabus:

Unit 1	Introduction of Basic Elements	06 Hrs.
Printing – Definitions, Brief History and Introduction Pre-Press - Printing Workflow, Typography, 2D and 3D Typefaces, Family, Series of Type, Legibility and Readability of Type, Type Measurement, Type Alignment and Arrangement, DTP,Camera Processing, Types of Originals, Conversion to Film Output - Negative, Positive and Tracing, CTP Technology Press		
Unit 2	Printing Principals	06 Hrs.
Press: Study of working principle, (relief, planography, and intaglio), offset, gravure, flexography, screen printing, digital and letterpress printing etc. Construction Image carriers, advantages and disadvantages and Limitations.		

Post-Press - Binding Techniques, Hard Binding, Paperback Binding, Mechanical Loose Leaf Binding, Finishing Techniques such as Punching, Embossing, Foiling, Lamination, Varnishing, Spot UV

Unit 3	Offset & Screen Printing	07 Hrs.
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Offset: Introduction, Sheet fed machine units- feeding, inking, damping, printing and delivery unit. Definition of Web machine, Difference between sheet-fed and web-fed. Configuration- Blanket to Blanket, Common Impression Cylinder, Stack, Inline Applications and Limitations of offset process.

Screen Printing Process: Basics of Screen Printing –Introduction to Screen Printing, Important Elements Affecting the Process, Frames - Purpose and Requirements , Types of Materials, Types of Sections, Frame Size Selection Criteria, Squeeze – Purpose and Requirements, Types of Squeezes, Applications

Unit 4	Basics of Design, Layout and Color	06 Hrs.
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Design - Introduction to Graphic Design, Fundamentals of Design, Principles of Design Layout – Purpose and Advantages, Layout Styles, Layout Components, Stages in Preparing a Layout, Marking-Up, Dummy, Stages of Layout, Thumbnails, Rough Layout, Comprehensive Layout.

Color - Definition of Color, Light, Electromagnetic Spectrum, Additive Color Theory, Subtractive Color Theory

Unit 5	Printing Materials	04 Hrs.
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Page layout and margin, print area and type-setting, different publications. Paper; its different types and sizes available, gsm, suitability factors for printing process, ISO paper sizes. Imposition; definition, classification and general rules, regular schemes up to 16 page.

Suggested Readings/Material:

Sr. No	Title	Author	Publisher
1	Printing Technology	Adams, Faux and Rieber	Delmar publishers
2	Art and Production	N. N. Sarkar	Sagar publishers
3	Screen Printing B. D. Mendiratta	B. D. Mendiratta	
4	Handbook of Print Media	Helmut Kippan	

Detailed List of Experiments:

Assignment Numbers	List of Experiments	30 Hrs.
	<ol style="list-style-type: none">1. Introduction to offset machine.2. Feeder setting for various stocks.3. Mounting of plate with packing.4. Mounting of blanket with packing.5. Gripper setting of impression cylinder.6. Setting of dampening roller.7. Preparation of fountain solution.8. Cleaning & washing of Dampening and Inking system.9. Inking unit setting according to job.10. Setting – joggers, skeleton wheels, delivery anti set-off spray.11. Single Color printing.12. Multicolor printing.13. Troubleshooting and maintenance	

New Arts, Commerce and Science College, Ahmednagar (Autonomous)

Syllabus

B.Voc. Printing Technology (Minor)

Title of the Course: Fundamentals of Screen Printing								
Year: I				Semester: I				
Course Type	Course Code	Credit Distribution		Credits	Allotted Hours	Allotted Marks		
		Theory	Practical			CIE	ESE	Total
MNR-1	BVOC-PT102 T/P	02	01	03	60	30	70	100

Learning Objectives:

1. Understanding the basics of screen printing process.
2. Understanding materials used for screen printing process.
3. Understanding substrates and inks used for screen printing process.
4. Learning advancements in screen printing.
5. Learning types of screen printing process.

Course Outcomes (Cos):

1. Identify different press elements affecting screen process.
2. Analyze the effect of mesh geometry on ink transfer and dot reproduction.
3. Understand stretching, gluing and pre-press operations in screen printing.
4. Able to prepare screen and print basic jobs
5. Understanding multi color printing by manual and using machnies.

Detailed Syllabus:

Unit 1	Introduction of Screen Printing	06 Hrs.
Screen Printing History, Need of Screen Printing, Types of printing process, Scope of Screen printing technology etc. Types of inks used for screen , importance of Screen in printing industry etc., its types importance.		
Unit 2	Screen Printing Principals	09 Hrs.
Study of working principle, (Grayscale Printing, Simulated Process Printing),Types of Mesh, Mesh Count,DPI, LPI, PPI, Flat printing etc. Construction and working of Screen Printing advantages and disadvantages and Limitations.		
Unit 3	Substrates and Techniques	09 Hrs.
Different types of substrates used to screen printing, Different inks used for screen printing, Glass Printing, Cup Printing,T-Shirt Printing. screen stretching, squeegee, off contact. Stencil-Direct, indirect Screen printing- Manual operation. Applications and limitations. Automation in Screen Printing.		

Unit 4	Machines in Screen Printing	06 Hrs.
Machines used for screen Printing , Substrate wise flexiability in Screen printing. Screen printing tools and techniques including printing on alternate materials, equipment and tool care, health and safety, image generation techniques: stencils, drawing fluid, masking, photo emulsion, drawing and painting on mylar, registration, color mixing, color theory, studio protocol, research and ideation, aesthetics etc.		

Suggested Readings/Material:

Sr. No	Title	Author	Publisher
1	Silkscreen Masters	Rieber	Kendar publishers
2	Art and Production	J.N. Noinda	Nitin publishers
3	Screen Printing B. D. Mendiratta	B. D. Mendiratta	

Detailed List of Experiments:

Assignment Numbers	List of Experiments	30 Hrs.
	<ol style="list-style-type: none">1. Study of screen printing equipment and materials.2. Screen Frame Making3. Determining optimum exposure for various stencil methods.4. Screen preparation and printing by direct method.5. Screen preparation and printing by indirect method.6. Manual Registration Method7. To print single color image by screen printing on paper8. To print two color image by screen printing on paper9. Product printing: Visiting card, Letterhead, Office File, Pen, Envelope Textile - T-Shirt, Nonwoven.10. Multi color printing/ process color printing.	