



SYLLABUS

Class – B.A. (HONS.) MASS COMMUNICATION

IV Semester

Subject – DESIGN AND GRAPHICS

UNIT – I	Brief History of Printing Difference between Daily/ Weekly/ Fortnightly/ Magazines & Newspaper (A) Style (B) Format.
UNIT – II	A Brief History of Typography & Composition Kinds of proofs: proof reading symbols, essential qualification of proofreader
UNIT – III	A Brief History of Printing press & Process Screen printing: Organization and functions of printing department
UNIT – IV	Principles of design and layout Photo editing Dummy page make-up Colours and their production aspects
UNIT – V	Kinds of printing papers Introduction to various types of print publications: Leaflets/ hand bills, booklets and books, folders, posters, brochures/ souvenirs, posters. Assignments: Wall newspapers, house magazines, editing and production of Prayog, Visit to Printing Press



UNIT-I

Introduction:

The printing press is considered one of the most important inventions in history. This device has made it possible for books, newspapers, magazines, and other reading materials to be produced in great numbers, and it plays an important role in promoting literacy among the masses. It was developed based on early principles of printing, and it has undergone many modifications over the years to meet the needs of people in different eras. The earliest documented evidence of printing dates back to the 2nd century when the ancient Chinese started using wooden blocks to transfer images of flowers on silk.

The history of printing begins in the 1450s with the development, by Johannes Gutenberg, of the hand press. Gutenberg's press was in some respects less an "invention" than it was a clever synthesis of existing technologies, including letterpress printing (in which the impression of an inked block is pressed upon a piece of paper) and the use of a hand-powered press. Nonetheless, his introduction of reusable "moveable type," the development of a rapid hand-powered screw press, and employment of cast lead type revolutionized the public dissemination of information in the Early Modern world. Within decades, use of the hand press had spread throughout Germany, and, soon after, to the rest of Western Europe. The new availability of relatively cheap mass-produced works had a social impact that was both liberating and destabilizing, as new texts and new ideas spread at a greatly accelerated pace through an expanding readership that would have found much more expensive manuscript books well beyond their means.

The hand press developed by Gutenberg remained, in its fundamentals, virtually unchanged for 350 years, but by the beginning of the 19th century new technologies, and the need to produce ever larger print runs for a rapidly expanding and voracious reading public, brought about important changes in the tools and processes of printing. The replacement of wooden presses with iron ones was paralleled by the first applications of steam-power to the process. Driven by the demands of the newspaper industry, printing technology next saw the introduction of cylindrical platens, which could much more quickly impress ink upon paper than flat platens, and the use of rolls of paper rather than single sheets. The invention of monotype and linotype at the end of 19th century made the setting of type for printing a much more efficient and rapid process.

Around the 4th century, woodblock printing on cloth was practiced in Roman Egypt. The Chinese began printing on paper in the 7th century, and they created the *Diamond Sutra*, the first complete printed book, in 868. The first movable type printing system was invented by Pi Sheng in China around 1040. This printing device used movable metal type pieces to produce prints, and it made the process of printing more efficient and flexible. Nonetheless, since it was made of clay, it broke easily. In the 13th century, the Koreans created a metal type movable printing device, which applied the typesetting method that was used in coin casting.

By mid-15th century, a number of print masters in Europe were getting closer to perfecting movable metal type printing techniques, and one of them was Johannes Gutenberg, a former goldsmith and stone cutter from Mainz, Germany. Gutenberg created an alloy that was made up of tin, lead, and antimony. This alloy melted at low temperature, and it was excellent for die casting and durable in the printing press. It made it possible for separate type pieces to be used and reused. Instead of carving entire words and phrases, Gutenberg carved the mirror images of individual letters on a small block. The letters could be moved easily and arranged to form words. This device was the printing press, and it revolutionized the printing industry. In 1452, Gutenberg started printing his most famous project, the Gutenberg Bible. He managed to produce a total of two hundred copies of the bible, and he offered them for sale at the Frankfurt Book Fair in 1455.



BRIEF HISTORY OF PRINTING:

The history of printing in its broadest sense can be said to go back to the duplication of images by means of stamps in very early times. The use of round cylinder seals for rolling an impress onto clay tablets goes back to early Mesopotamian civilization before 3000 BC, where they are the most common works of art to survive, and feature complex and beautiful images. In both China and Egypt, the use of small stamps for seals preceded the use of larger blocks. In Europe and India, the printing of cloth certainly preceded the printing of paper or papyrus; this was probably also the case in China. The process is essentially the same-in Europe special presentation impressions of prints were often printed on silk until at least the seventeenth century.

In Europe in the 15th century, there was an increasing demand for large-scale production of literature. Gutenberg's invention was largely prompted by the fact that the multiplication of texts had become a recognized and lucrative trade. A Mainz goldsmith, he began experimenting with printing about 1440. By 1450, Gutenberg had perfected his invention far enough to exploit it commercially. He needed capital and borrowed from a Mainz lawyer. Who became his partner but then foreclosed on the inventor and took possession of his presses and types. Type metal is an alloy of varying composition. The basic metal is lead with different admixtures of tin and antimony as well as other metals such as copper at times. Metal alloys were already in use in the 15th century. Gutenberg's second invention, without which printing, as we understand it would have been impossible, was the preparation of an ink which would adhere to the metal types. Early inks consisted of lampblack or soot mixed with animal glue or vegetable oils. The printer made his own ink which he cooked according to a 'secret' formula. Boiled linseed oil was an ingredient at one time. In the days before inking rollers, printers used what were called mushrooms. These were made of soft leather stuffed with horsehair and had a wooden handle. The mushroom was used in a rolling motion to apply the ink to the type. To keep them soft between uses, they were kept in a bucket of urine, that essential by-product of the middle ages and beyond. The first illustrated book to be printed on a steam-press was done in 1832. It was, however, popular journalism which hastened the spread of illustrations as a regular adjunct to printed information.

IN INDIA: In Buddhism, great merit is thought to accrue from copying and preserving texts. The fourth-century master listed the copying of scripture as the first of ten essential religious practices. The importance of perpetuating texts is set out with special force in the longer Sukhavativyuha Sutra which not only urges the devout to hear, learn, remember and study the text but to obtain a good copy and to preserve it. This 'cult of the book' led to techniques for reproducing texts in great numbers, especially the short prayers or charms known as dharaṇi-s. Stamps were carved for printing these prayers on clay tablets from at least the seventh century, the date of the oldest surviving examples. Especially popular was the *Pratityasamutpada Gatha*, a short verse text summing up Nagarjuna's philosophy of causal genesis or dependent origination. Nagarjuna lived in the early centuries of the current era and the Buddhist Creed, as the Gatha is frequently called, was printed on clay tablets in huge numbers from the sixth century. This tradition was transmitted to China and Tibet with Buddhism. Printing text from woodblocks does not, however, seem to have been developed in India.

Difference between newspaper and magazine: Newspapers and magazines are two important forms of print media that are read by millions of people around the world, to get information and entertainment. People are so used to newspapers and magazines that they hardly pay any attention to differences between them.

- 1) There are various differences between magazines and newspapers. For example, in size, newspapers are usually larger than magazines unless the newspaper is of a tabloid-type. In appearance, magazines are more colorful and have more pictures, while newspapers appear dull and colorless.



- 2) Magazine tend to put more emphasis on entertainment were newspapers generally contain general news. Magazines only show stuff like perfumes, clothes and much more and newspapers show only current affairs and sometimes only advertisement.
- 3) Keep in mind that most newspapers are still using the column layouts (4 to 6 columns) that have been used for decades. Magazines have a lot more "freedom" to break from columns.
- 4) Newspaper is the primary source of authentic, reliable and fresh content about what is happening around the world and locally. The magazines are not sources of fresh content to the extent of publishing breaking news but contain content that is recent in nature.
- 5) Most of the newspapers are daily in nature, but some happen to be weekly and even biweekly. They are not published daily and are rather published weekly or monthly.
- 6) Newspapers traditionally use inferior quality of paper and poor quality ink as the emphasis is on keeping the prices down. Magazines use glossy papers and fine quality ink that gives a vibrant look to magazine.
- 7) Newspaper are cheaper than magazine.
- 8) Newspaper is more large than magazine.
- 9) Newspaper has more variety of content than magazine that pertains to its chosen field only such as cars, movies, sports, and so on.
- 10) People subscribe for magazines though they are also available on newsstands. Newspapers are delivered by hawkers though many purchase them at crossings and newsstands.
- 11) Readership of a newspaper is invariably higher than that of a magazine though there are exceptions. Newspapers never fall short of content as there is always something happening in different parts of the world, whereas magazine content is always based upon the liking of the readers.
- 12) A magazine is like a book while a newspaper is much larger in size though there is lesser number of pages than in a magazine.

Newspapers are more versatile in content than magazines, and they have various sections to suit the interests of people of diverse backgrounds.



UNIT-II

A Brief History of Typography & Composition

The Origin of the Typographic Form: Typography is the study of type and typefaces, the evolution of printed letters. Since man did not begin to write with type, but rather the chisel, brush, and pen, it is the study of handwriting that provides us with the basis for creating type designs.

Pictograms, ideograms, and phonograms: While cave paintings, dating as far back as 20,000 B.C. are the first evidence of recorded pictures, true written communication is thought to have been developed some 17,000 years later by the Sumerians, around 3500 B.C. They are known to have recorded stories and preserved records using simple drawings of everyday objects, called pictograms.



Sumerian pictogram for
"mountains"

As civilizations become more advanced, they experienced a need to communicate more complex concepts. By 3100 B.C., Egyptian hieroglyphics incorporated symbols representing thoughts or ideas, called ideograms, allowing for the expression of more abstract concepts than the more literal pictograms. A symbol for an ox could mean food, for example, or the symbol of a setting sun combined with the symbol for a man could communicate old age or death.



Egyptian ideogram for "weeping"

The Roman numerals we use today are considered to contain ideograms: I, II, and III representing fingers of the hand, V the open hand, and IV the open hand minus one finger.

By 1600 B.C., the Phoenicians had developed symbols for spoken sounds, called phonograms. For example, their symbol for ox, which they called aleph, was used to represent the spoken sound "A" and Beth, their symbol for house, represented the sound "B". In addition to sounds, phonograms could also represent words.



Phoenician "aleph"

Primarily a seafaring merchant society, they traded with many cultures, spreading their alphabet throughout the Western world. Around 1,000 B.C., the Phoenician alphabet was adapted by the Greeks,



who developed the art of handwriting in several styles. The word "alphabet" comes from the first two Greek letters alpha and beta.

Pictograms evolved into the letters of the alphabet



Early symbol for "ox"



Phoenician "aleph"



Greek "A"



Roman "A"

Several hundred years later, the Romans used the Greek alphabet as the basis for the uppercase alphabet. They refined the art of handwriting, fashioning several distinctive styles of lettering which they used for different purposes. They scribed a rigid, formal script for important manuscripts and official documents and a quicker, more informal style for letters and routine types of writing. By A.D. 100, the Romans had developed a flourishing book industry and, as Roman handwriting continued to evolve, lower case letters and rough forms of punctuation were gradually added.

Over the next 1,000 years, manuscript preparation developed into a specialized, highly regarded craft and came to be practiced chiefly in monasteries. Books were objects of immense value, and contained elaborate ornamentation. Illuminated, or illustrated, initials were painstakingly designed and incorporated into exactly rendered text. It was not uncommon for a monk to devote an entire lifetime to the completion of a single manuscript.

Moveable type and printing:

The fifteenth century was a pivotal time for written communication. Manuscripts were treasured possessions which rarely appeared outside monasteries or the courts of royalty. The written word was reserved for the privileged few. In fact, less than one-tenth of the European population could read. In 1445, in Mainz, Germany, Johann Gutenberg changed the course of the written word. While Gutenberg is often credited with inventing both the printing press and metal type, he, in fact, did neither. Printing had been practiced for several hundred years in China and for at least several decades in Europe. Type had been cast successfully, albeit crudely, several years earlier in the Netherlands. What Johann Gutenberg did do was make these technologies practical. He perfected a workable system of moveable type, developing an ingenious process employing a separate matrix, or mold, for each alphabet character, from which metal types could be hand-cast in great quantities. These types could then be assembled into a page of text, and imprinted to paper via special inks and a printing press of their own design. For the first time, a technical system of mass production was applied to publishing.

Proofreading:

The process of proofreading means that you will be correcting mistakes in your writing and looking for ways to improve and perfect your writing.

Proofreading symbols: Proofreading symbols make the revision process more efficient. Rather than writing a note to yourself each time you need to make a change, the symbols allow you to make a single mark. Use a different colored ink to make the symbols stand out from the rest of the text just like a teacher would do when grading your paper. Also, you can use highlighter pens to draw attention to changes, and pencil erasers and correction fluid allow you the flexibility to change your mind as well as the text.



PROOFREADERS' MARKS

OPERATIONAL SIGNS

- Delete
- Close up; delete space
- Insert space
- Make space between words equal;
- Make space between, lines equal
- Letter space
- Begin new paragraph
- Move right
- Move left
- Centre
- Move up
- Move down

TYPOGRAPHICAL SIGNS

- Set in italic type
- Set in roman type
- Set in boldface type
- Wrong font: set in correct type
- Insert here or make superscript
- Insert here to make subscript

PUNCTUATION MARKS

- Insert comma
- Insert apostrophe or single quotation mark
- Insert quotation marks
- Insert period
- Insert question mark
- Insert semicolon
- Insert colon
- Insert hyphen



भारत को अंग्रेजों की दासता से पूर्णतः मुक्त करवाने के लिए भारतीय राष्ट्रीय कांग्रेस ने राष्ट्रपिता महात्मा गाँधी के नेतृत्व में जो अंतिम निर्णायक अहिंसात्मक आंदोलन अगस्त 1942 में आरंभ किया था, उसकी तंत्री पृष्ठभूमि रही थी। अंग्रेज शासक दूसरे विश्व-युद्ध के दौरान जापानी आक्रमण से भारत की रक्षा के बहाने, भारतीय जनता की 'पूर्ण-स्वराज' की मांग को टालने तथा भारत पर अपना कब्जा कायम रखने की कोशिश कर रहे थे। ब्रिटिश प्रधान मंत्री सर विन्स्टन चर्चिल ने भारतीय नेताओं को समझाने और समझौता करने के लिए अपने दूत स्टीवर्ड क्रिप्स को भारत भेजा था। स्टीवर्ड क्रिप्स 22 मार्च 1942 को भारत आए और राष्ट्रीय नेताओं खासतौर पर महात्मा गाँधी से, जो कि उस समय 'पूर्ण स्वराज' की प्राप्ति के लिए कांग्रेस द्वारा लड़ी जा रही अहिंसा लड़ाई का नेतृत्व कर रहे थे, बातचीत की। उस समय गाँधीजी ने क्रिप्स को स्पष्ट और खुले शब्दों में कह दिया- 'अंग्रेज तत्काल भारत छोड़ दें! स्वतंत्र भारत स्वयं अपनी रक्षा कर लेगा'। क्रिप्स मिशन विफल हो गया और 2 अप्रैल 1942 को क्रिप्स ब्रिटेन लौट गया। क्रिप्स-मिशन की इस विफलता की पृष्ठभूमि में ही 'भारत छोड़ो आंदोलन' के बीज अंकुरित हुए थे। कांग्रेस कार्यकारिणी की एक और बैठक 14 जुलाई 1942 को सेवाग्राम नामा में मौलाना अबुल कलाम आजाद की अध्यक्षता में हुई। उसमें महात्मा गांधी ने वह ऐतिहासिक प्रस्ताव रखा, जो अंग्रेज साम्राज्य के अंतिम रूप से 'भारत छोड़ो' आंदोलन का मुख्य आधार बना। इस प्रस्ताव पर 'भार और खुली गलावे' कांग्रेस महासभा (प्रारोचना-सभा) का विशेष अधिवेशन आमंत्रित किया गया।

आजादी के लिए लड़ा गया अंतिम अहिंसक संग्राम

बंबई के गोवालिया तालाब मैदान पर निर्मित विशेष पंडाल में तत्कालीन कांग्रेस अध्यक्ष मौलाना अबुल कलाम आजाद की अध्यक्षता में 7 व 8 अगस्त को कांग्रेस महासमिति का अधिवेशन हुआ। विशेष जोश और उत्साह के साथ प्रतिनिधिगण एवं प्रेक्षक इस अधिवेशन में सम्मिलित हुए। गाँधीजी ने कांग्रेस कार्यकारिणी समिति द्वारा 14 जुलाई 1942 को सेवाग्राम-वर्धा में पारित प्रस्ताव में सन्निहित भावना डाला। उसके बाद पं. जवाहरलाल नेहरू ने कार्यकारिणी समिति का वह प्रस्ताव महासमिति के समक्ष विचार एवं स्वीकृति के लिए प्रस्तुत करते हुए कहा- कांग्रेस अब एक तूफानी महासागर में कूद रही है। अब या तो वह स्वतंत्र भारत के साथ ऊपर सतह पर आएगी या उसमें डूब जाएगी। 8 अगस्त 1942 को कांग्रेस महासमिति द्वारा घोर घन-गर्जना के बीच ऐतिहासिक 'भारत छोड़ो' प्रस्ताव बहुमत से पारित कर दिए जाने के बाद महात्मा गाँधी ने अत्यंत धीर-गंभीर होकर उपसंहार-उद्बोधन किया, उन्होंने कांग्रेसीजनों से कहा- "मैं चाहता हूँ कि आप अहिंसा की नीति के रूप में अंगीकार करें। हों मेरे लिए तो यह धम है, परन्तु जहाँ तक आपका संबंध है, आप लोग उसे नीति के रूप में मान्य करें। अनुशासनबद्ध सेनिकों की तरह आपको तब तक उसी समग्र रूप में अवश्य ही स्वीकार करना चाहिए।"

'करो या मरो' की उत्तरा-

भावना के साथ मर-मिटने को तत्पर रहें, अब हमारा यही नारा होना चाहिए जो 'अंग्रेज भारत छोड़ो' और भारतीयों 'करो या मरो'। महात्मा गाँधी की इस जीवनस्पर्शी प्रेरणा को उत्साह के साथ अपने अंतर में संजोए कांग्रेसीजन 8 अगस्त 1942 को आधी रात अपने-अपने घरों की ओर चल दिए। 9-8 अगस्त की रात तीसरे प्रहर कांग्रेस के लगभग सभी शीर्षस्थ नेताओं को गिरफ्तार कर लिया, इनमें महात्मा गाँधी, पं. जवाहरलाल नेहरू, सरदार पटेल, मौलाना आजाद, श्रीमती सराजनी नायडू सहित कार्यकारिणी के सदस्य और 20 अन्य नेता शामिल थे। अंग्रेज शासकों के इस अविश्वसनीय उत्तेजनात्मक उतावलेपन की सारे देश में तीव्र प्रतिक्रिया हुई। जगह-जगह स्वतंत्र जन-आंदोलन भड़क उठे। हजारों-लाखों देशवासी 'अंग्रेजों भारत छोड़ो' के नारे लगाते संघर्ष करने तथा प्राणों की आहुति देने सड़कों पर निकले। सारे देश में विप्लव जैसी स्थिति निर्मित हो गई। सत्ताधारियों ने भीषण दमन-चक्र चलाया। जगह-जगह गोली कांड हुए, जिनमें अगणित भारतीयों ने भारत माता की जय, वन्दे मातरम्, इन्कलाब जिन्दाबाद के गगनभेदी नारे लगाते हुए प्राणों को दान दिया तथा हजारों जेलों में ठूंस गए। "कई देशभक्तों ने अपने प्राणों की बलि दी और अपने देश को अंग्रेजों के चंगुल से छुड़ा लिया। अंतिम बार सन् 1942 में अहिंसक संग्राम लड़ा गया और अंग्रेजों को हमेशा के लिए भारत से भिजाल दिया। * * □ △ ∇ ○



UNIT III

Brief history of printing press: Johannes Gutenberg's work on his printing press began in approximately 1436 when he partnered with Andreas Dritzehen – a man he had previously instructed in gem-cutting – and Andreas Heilmann, the owner of a paper mill. It was not until a 1439 lawsuit against Gutenberg that an official record exists; witness testimony discussed type, an inventory of metals (including lead) and his type mold.

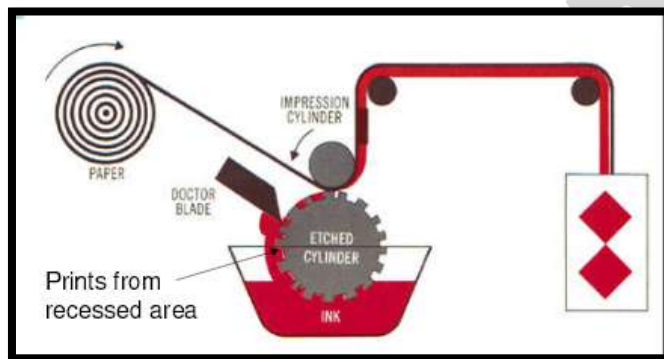
Compared to woodblock printing, movable type page setting and printing using a press was faster and more durable. The metal type pieces were sturdier and the lettering more uniform, leading to typography and fonts. The high quality and relatively low price of the Gutenberg Bible (1455) established the superiority of movable type for western languages, and printing presses rapidly spread across Europe, leading up to the Renaissance, and later all around the world. Today, practically all movable type printing ultimately derives from Gutenberg's innovations to movable type printing, which is often regarded as the most important invention of the second millennium.

PRINTING PROCESS: To understand printing, one must understand the various printing methods used today to print a product. While there are many different printing methods used today, there are still four main methods:

- Intaglio
 - Gravure
- Relief printing
 - Letterpress
 - Flexography
- Offset Lithography
- Screen printing

Intaglio: This method is used on those surfaces which are sunken. Image carrier is usually handy crafted, using an engraving or etching technique. In this method line are used instead of ink cells. This method applies to make paper money, postage stamps, stock certificates, fancy stationery.

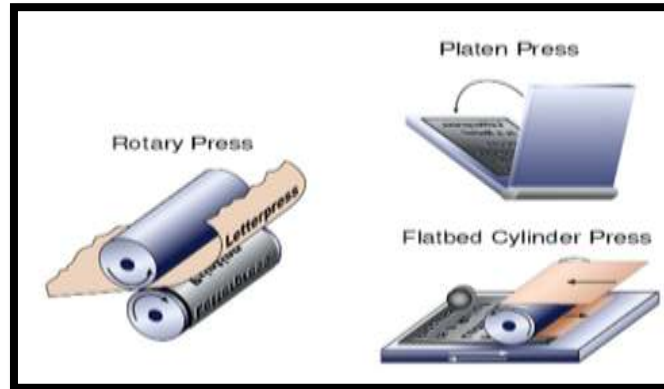
1. **Gravure:** Gravure is another old printing process used to print packaging, magazines, wallpaper, gift wrap, etc. The major advantage of Gravure is that it can print very long runs due to its configuration. Sear advertising, for example, can count into the millions of printed pieces. Unlike offset, Gravure uses a metal printing cylinder can handle these types of long jobs without wearing out the printing cylinder. This printing is expensive though but it gives a high quality printing. It can give millions of copies at a time.



Relief printing: This kind of printing can be done from a raised surface for example potato printing. Relief printing is a method used to make multiple images, in which ink is transferred under pressure to paper or another support by the raised parts of a prepared printing block, surface or texture. This is the oldest and most durable method of making prints, dating back eleven hundred years to hand printed



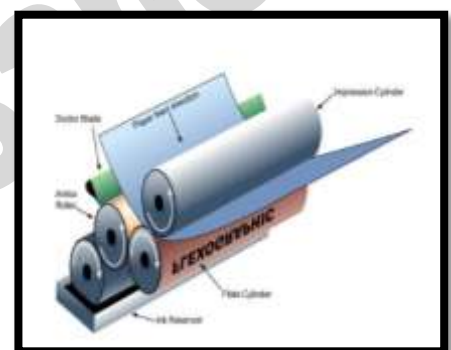
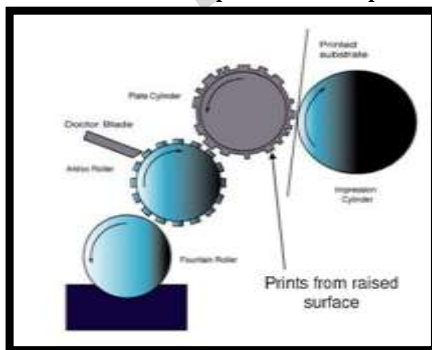
scrolls made in China. Relief printing developed in Europe during the 1450's. Common relief prints methods for monochrome and color prints employed by artists include wood and linocuts, rubber stamps, wood engravings and calligraphy.



Letterpress: Letterpress is the oldest and fastest diminishing method used today. Rotary letterpress printing from rubber printing plates (stereos) originated around 1890 and took the name 'aniline printing' from the aniline-derived dyes that were dissolved in water or alcohol to make the ink. By the Chinese it is still used to print newspapers, labels, etc. Its quality, however, is not that of the other main processes and tends to print mid to low quality. This process has declined rapidly in the last two decades and is now limited to a few specialist applications and those sectors where older equipment has yet to be replaced.



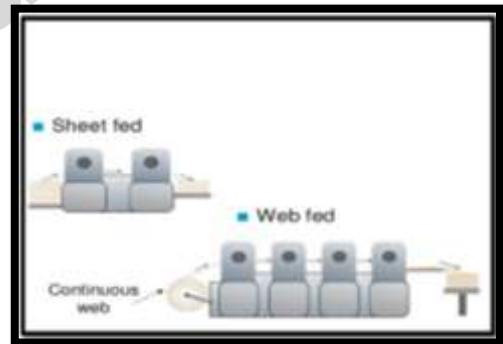
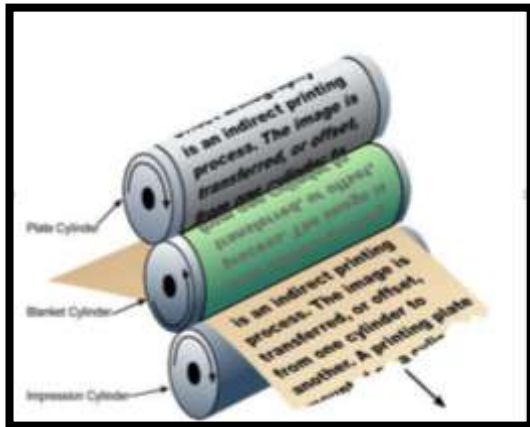
Flexography: The crude process of letterpress has been refined since, particularly over the last 30 years, and has developed into a discrete. The process in its own right under the name of flexographic (or flexo) printing. The basic dyes still have limited use but modern inks are based upon synthetic pigments in a wide range of synthetic media dissolved in volatile solvents, such as industrial methylated spirits. Flexography has found wide application in printing for food packaging with plastics and non-absorbent stock. It is also used to print envelopes, newspapers, pressure sensitive labels, etc.



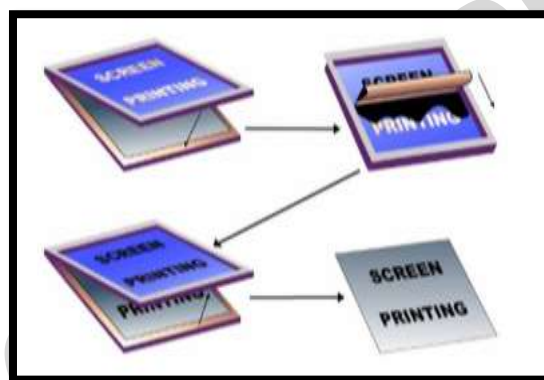
Offset Lithography: The lithographic (or litho) process was introduced in 1796 in Germany by Alois Senefelder. This process relied upon a particular type of hydrophilic limestone upon which images were drawn with greasy inks. These images were then receptive to oil-based inks, while the remainder of the



surface was not. The first lithographic inks were composed of beeswax, tallow soap and lampblack, again produced by heating and burning. Offset Lithography was later developed during the late 1800's in Germany and has become a very popular printing process. Offset Lithography is used to print newspapers, magazines, advertising, business forms, direct mail, etc. Offset is the most widely used printing process used today. Gradually, the basic composition of letterpress and litho inks began to converge, with rosin-fortified linseed oil being the basis of most colored inks and rosin oil or mineral oils being the basis of blacks. The difference between the inks for the two processes was minor, but important; the litho inks contained additives and had a substantially higher viscosity.



SCREEN PRINTING: Screen printing is a small segment of the printing industry, for which the history is less well recorded. As a development of stenciling, the process has been in use for many centuries, primarily for the decoration of textiles. In the 1920s, it started to attract attention as a convenient way of producing short runs of posters and for printing on difficult surfaces such as glass. The process has developed as a means of depositing heavy films of ink upon a wide variety of substrates, often of difficult shape. In the early days, no suitable inks were available for screen printing, and use was made of ordinary decorative paints. Modern screen printing inks are based on a wide range of synthetic resins and polymers in a range of solvents with suitable volatility. The screen consists of a fine mesh, usually nylon or polyester, but sometimes stainless steel, stretched over a metal frame. The stencil is produced by coating the mesh with a photosensitive coating, exposing it to UV radiation through a positive film and developing away the unexposed image areas. The open areas of the screen around the stencil are blocked with screen filler, using volatile solvents such as xylene or dichloromethane. The inks used are intermediate in viscosity between those used for litho and those used for flexo or gravure. Evaporation, oxidation, chemical curing and UV curing methods are used for drying in screen printing.



The other significant printing techniques include:

- Hot wax dye transfer.



- Inkjet used typically to print a small number of books or packaging and also, to print a variety of materials from high quality papers simulating offset printing, to floor tiles; Inkjet is also used to apply mailing addresses to direct mail pieces.
- Laser printing (Toner Printing) mainly used in offices and for transactional printing (bills, bank documents). Laser printing is commonly used by direct mail companies to create variable data letters or coupons.
- Pad printing popular for its unusual ability to print on complex three-dimensional surfaces
- Thermal printing - Popular in the 1990s for Fax printing. Used today for airline baggage tags and in Supermarket deli counters.

Offset litho	Sheet-fed	< 2	Wide range of paper and board, plastic sheet and metal	All general print, business forms, technical documentation, packaging, promotional, magazines, credit cards
	Web-fed			
	Heat-set	< 2	Wide range of coated and uncoated paper	Magazines and similar format products
	Cold-set	< 2	Newsprint	Newspapers
	Rotary	3-4	Newsprint, self-adhesive materials	Newspapers, labels
Lithopress	Offset	< 2	Plastic containers, metals	Dairy product and drinks containers
Flexography	Narrow web	0.75-2	Paper and plastic film	Labels, flexible packaging
	Wide web	0.75-2	Newsprint	Newspapers
		0.75-2	Wide range of plastic film, paper, corrugated cardboard	Boxes and many other types of packaging, sacks
Gravure	Large web	< 6	Coated or uncoated paper	Magazines and similar products, mail order catalogues, wood grain patterns
	Smaller web	< 6	Coated or uncoated paper, plastic films, board	Packaging (especially flexible), cigarette cartons, postage stamps
	Sheet	< 6	Paper	Fine art reproductions
Screen		< 30	Card, fabric, wide range of plastic, shaped containers	Point-of-sale displays, plastic containers, labels, T-shirts
Intaglio		< 30	Paper	Bank notes, security documents



UNIT IV PRINCIPLE OF DESIGN

Design elements and principles describe fundamental ideas about the practice of good visual design that are assumed to be the basis of all international visual design strategies. The elements from the vocabulary of the design, while the principles constitute the border structure aspects of its composition.

ELEMENTS OF DESIGN: The elements of design are space, line, shape, form, texture, and color. Each of these elements plays an important role in the overall success of a design; it is created for a home's exterior a specific room or a piece of furniture.

1. **Space:** space is the area provided for a particular purpose. It may have two dimension (length and width), such as a floor, or it may have three dimensions (length, width, height) such as a room or dwelling.
2. **Line:** line is the mark made by a moving point, such as a pencil or brush. The edges or of shapes drawn on paper. Lines and curves are the basic building blocks of two dimension shapes like a house's plan. Experimenting in design by adding or changing lines such as the lines of the floor plan of a house.
3. **Color:** color is the most expressive element of art and seen by the way light reflects off a surface. Color is used to create illusion of depth, as red colors seem to come forward while blue seems to recede into the instance. Color and particularly contrasting is also used to draw the attention to a particular part of the image. On some cases of interior design, color can be added to increase visual appear such as the natural colors of wood of a china cabinet. Color may add visual appeal to a home décor just as colored flowers can ass beauty to a field on a prairie.
4. **Shape:** shape is an area enclosed by lines or curves. It can be geometric or organic. Importantly, a shape automatically creates a around in shapes in house décor and interior design can be used to add interest like a door. Shape in interior depends on the function of the object like a kitchen cabinet, door, and room accessories. There are two types of texture; tactile or visual texture, and texture which you can detect with your five senses.
5. **Texture:** texture is the feeling and visual feel of the fabrics, colors, and room accessories. There are two types of texture; tactile or visual texture.
6. **Form:** form may be created by the forming of two or more shapes. Form is considered three dimensional showing height, width, and depth. It can be illustrated or constructed.
7. **Value:** value helps the form. It gives objects depth and perception. Value is also referred to as tone. Basically shading.
8. **Type:** type is the use of letterform to add message that would be otherwise challenging to create through the other elements.

Principles of designs: design is he organized arrangement of one or more elements and principles for purpose. Awareness o the elements and principles in design is the first step in creating successful visual compositions. These principles in design, which may overlap, are used in all visual design fields, including graphic design, industrial design, architecture and fine art. Design principles are a technical and artificial method to attempt to produce home architecture and interior design beauty. The principles of design consist of:

1. **Unity:** unity refers to a sense everything in the artwork belongs there and makes a whole piece. It is achieved by the use of balance and repetition. Two objects like a living room and a design room can be unified by giving these similar features like a shared hardwood floor design.
2. **Balance:** Balance is a psychological sense of equilibrium. As a design principle, balance places the parts of a visual in an aesthetically pleasing arrangement. In visual images, balance is formal when both sides are symmetrical in terms of arrangement. Balance is informal when sides are not exactly symmetrical, but the resulting image is still balanced. Informal balance is more dynamic than formal balance and normally keeps the learner's attention focused on the visual message. There are three main types of balance, horizontal balance, vertical balance, radial balance.



3. **Proportion:** Proportion refers to the relative size and scale of the various elements in a design. The issue is the relationship between objects, or parts, of a whole. This means that it is necessary to discuss proportion in terms of the context or standard used to determine proportions.
4. **Perspective:** Perspective is created through the arrangement of objects in two-dimensional space to look like they appear in real life. Perspective is a learned meaning of the relationship between different objects seen in space. Perspective can be used to draw the audience into a visual. It can be achieved through the use of relative sizes of objects, overlapping objects, and blurring or sharpening objects.
5. **Emphasis:** Emphasis is used by artists to create dominance and focus in their work. Artists can emphasize color, value, shapes, or other art elements to achieve dominance. Various kinds of contrast can be used to emphasize a center of interest.
6. **Movement:** The way the artist leads the eye in, around, and through a composition. The path the eye follows. Motion or movement in a visual image occurs when objects seem to be moving in a visual image. Movement in a visual image comes from the kinds of shapes, forms, lines, and curves that are used.
7. **Pattern:** Pattern uses the art elements in planned or random repetition to enhance surfaces or paintings or sculptures. Patterns often occur in nature, and artists use similar repeated motifs to create pattern in their work. Pattern increases visual excitement by enriching surface interest.
8. **Repetition:** Repetition works with pattern to make the artwork seem active. The repetition of elements of design creates unity within the artwork.
9. **Rhythm:** Rhythm is the repetition of visual movement of the elements-colors, shapes, lines, values, forms, spaces, and textures. Variety is essential to keep rhythms exciting and active, and to avoid monotony. Movement and rhythm work together to create the visual equivalent of a musical beat.
10. **Variety:** Is the use of several elements of design to hold the viewer's attention and to guide the viewer's eye through and around the work of art.

COLOR & THEIR PRODUCTION ASPECTS: CMYK and RGB are the two color spaces methods of creating color.

CMYK is subtractive, like paint/pigment. CMYK represents the standard colored inks that printers use to create colors: cyan, magenta, yellow and black. It is mostly used in print. This starts with white such as paper, which is combination of all colors and filters of subtracts out those colors not wanted by the application of colored dyes or ink. Putting for instance, a cyan lens in front of a white light, or cyan ink on a sheet of white paper, will prevent other wavelengths of light from passing through the lens or reflecting from the paper. Using combinations of these ink colors in varying amounts will produce the various colors needed for a graphic or a picture.

RGB is additive, the way light creates colors. RGB represents: Red, Green, and Blue. You start with black (darkness) and as you add lights of more colors you eventually get white as all colors shining together like a regular light bulb. It is used in display graphics. RGB is called an 'additive' color model because it starts with the absence of light or color- black- as one would find in a television screen or computer monitor with no power, and adds light in colors as needed.



UNIT-V

KINDS OF PRINTING PAPERS: Paper can be classified by the weight or thickness and coating. Paper weight is very easy to observe and is expressed in terms of **GSM** (grams per meter square). Paper weight is really a way to express its thickness and hence thickness and weight mean the same thing in practical usage. Coating is either present or not present, hence there are two general types of paper: Coated and Uncoated.

Coated paper: Since paper is basically made from natural fibers, certain types of printing needs the paper to be coated to make it smoother and make printing more sharper. This coating is like a sealant which acts like a layer and prevents the paper fibers to absorb the ink randomly. Digital printing always used coated paper. Most common types of paper coating are:

Gloss – This coating used in magazines and have a shine or a sheen

Matte – This coating looks dull and does not have a reflection or sheen.

1. **Coated paper:** Paper coated on one or both sides with a mixture of china clay, latex and other loadings to fill up surface pits and improve the printing surface. There are a variety of coating methods, the most common on-machine coating method being roll coating. Off-machine processes include blade coating, air-knife coating, the traditional brush coating, or combinations of these types. A very high quality form of off-machine coating is cast coating.
2. **Manila paper:** this paper is used to make envelopes. They are usually in light purple color. It one side is smooth and the other side is rough. It is found in the weighs of 60 GSM to 150 GSM.
3. **Safety paper:** Specially treated, calendared bond paper that readily reveals attempts to alter it through erasures or printing is termed **safety paper**. It may have an additive introduced during the papermaking process or a surface treatment after the paper is made that renders it less susceptible to alterations. Safety paper may include a fine printed pattern on the surface.
4. **Art paper:** it is smooth on both sides. It is basically used for colored pictures. Menu cards and pictorial books are made by this paper. Its weight can from 60 GSM to 200 GSM. It cannot absorb ink thus it is useful for special printing. This paper is expensive.
5. **Imitation art paper:** these papers were used to print hand bills. These were cheap and easily available. Now a day's some organizations still use them for printing.
6. **Art card:** the very fine quality and much thicker. These are found form 200 GSM to 500 GSM in weight. These are used to print souvenirs, brochures, and invitation cards. These are found in different pieces and different colors.
7. **Ivory card:** These types of paper are superfine quality. This is useful in multicolor printing. It is much shiny and smooth as we can see any reflective image in this.



TYPES OF PRINT PUBLICATION:

1. **Souvenirs:** A printed document which is published on a specific occasion of any organization, are called souvenirs. Sometimes they are used to publish the achievements of any person. For example if any institute or a person has completed his 50 years or he achieve something, will publish in souvenirs. This is basically a type of preserved document.
2. **Broachers:** this is type of a magazine. This based on either an institute or a person. This is also known as introductory magazine. It has no time duration. It contains all type of articles. Many institutes like life insurance companies, corporate, banks, educational institutes, and private companies publish this type of publication.
3. **Books / booklets:** books are a good of friend of human beings. These are the best way to express feelings. Books are based on a particular subject. These have various size and shapes according their content. Books are record for future and can establish a dignity in the society. Books are helpful in research, knowledge and information. In modern age books can be found in library as well as on the internet, that can be downloading and save for future reading.
4. **Handbills/ pamphlets/ leaflets:** this type of publication is the oldest way of publicity. In the quality of their papers, only content and organization matters. These are the cheapest way of publicity. They are very easily printed and distributed. They take least time and effort to print. These have temporary usage as they cannot be preserved. In the modern age they very useful for medium size organizations and small capital institute.
5. **Posters:** the first specialty of the posters is that, it is pasted on the walls at public places. It is comparatively bigger in size as much as readable from the distance of 5 to 10 ft. the importance element in the poster is that, they are visualized. In the poster the content is less but the graphics are more. They can be available in sizes of 15X20, 20X30, 30X40, 40X60, 60X 120 inches. These can be made in single, double, one forth, one sixth, one eighth sheet. They can be single color or multicolor. Posters are expensive. Mostly posters are pasted on the railways station in India. There is no life of poster are pasted.