Digital Imaging
Block – II: Digital Imaging: Aesthetics & Artistry

Odisha State Open University
Introduction to Multimedia

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Course Overview

Welcome to Digital Imaging – Aesthetics and Artistry

In this block, you are going to study about the Aesthetics and Artistry of Digital Imaging. Before setting your hands into the practical, you have to learn about the theoretical aspects of Digital Imaging. There are some common ingredients of a successful design. Aesthetics covers the basic fundamentals which makes the design a presentable output. Artistry involves the tools and techniques of creating a wonderful art with the help of colours, shapes, text (typography), abstract designs etc. So for being a successful designer you have to master the fundamentals of Digital Imaging.

Introduction to Digital Composition

This course is intended for people who want to do Digital Composition of Images and Graphics on Computers. It helps you to learn the techniques of using a set of Images and Graphics in an organised way. Sometimes a design has all the information required but lacks the appeal. This happens due to the poor design sense which has a direct relation to the understanding of good Composition. Hence, this unit will help you to combine subjects together in the right way to prepare a Digital Composition.
Use of Design elements in Digital Layouts

This course is intended for people who want to create a perfect layout of a design. A good design stands on the elements of design which are being used by the designers for ages, in organised as well as unorganised manner. After lots of experimentations, some common design elements have been derived which make the output meaningful and attractive. In this unit, you are going to learn about each element in elaborate manner.

Basics of Image Editing

This course is intended for people who want to do Image Editing. Any person who wants to become professional in Computerised Digital Editing of Photographs needs to learn the process of doing so in this unit. It covers the basic information of capturing / scanning the images to preparing the final output using tools and techniques.

Raster, Vector Graphics & Typography

This course is intended for people who want to become a Graphic Designer. A Graphic Designer has to work more on shapes and typography. It includes a major portion of designing apart from photographs and images. It is the shape and text design which helps in arrangement of layout of a design. A layout of the design is the blue print of a design which is going to emerge out of the process. Hence, the success of a design depends on the Graphic and Typography used by the designer.
This video will provide a brief overview of this course.

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<th>YouTube link</th>
<th>QR Code</th>
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<td><strong>Video 1</strong> – Compositing Artistry</td>
<td><a href="https://youtu.be/kvsMn2vWWB0">https://youtu.be/kvsMn2vWWB0</a></td>
<td><img src="image1" alt="QR Code" /></td>
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<td><strong>Video 2</strong> – Graphics Type and Typography</td>
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<td><img src="image2" alt="QR Code" /></td>
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</tbody>
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**Course outcomes**

Upon completion of Digital imaging- art & artistry you will be able to:

- *Describe* about Digital Composition of Images/Photographs and Graphics.
- *Identify* the steps used in Scanning and Importing Images.
- *Learn* about Image Colour corrections.
- *Distinguish* between the Raster and Vector Graphics.
- *Learn* about Typography.
- *Judge* the Elements of Design in Digital Layout.
Course Overview

Timeframe

This course will be completed within “1” classes. This course is of “1” credits. 2 Hours of study time is required for this unit.

Study skills

This is a combination of theory and practical. Hence, you should have access to personal computer or personal laptop for better understanding of this unit.

Each and every option is explained step by step in the course material. Apart from this course material, the learner has to adopt the tendency of learning from multiple sources i.e.;

Internet tutorials
Video tutorials on YouTube
Collaboration with people working in the industry etc.

Only classroom study will not make you a professional. You have to be active to grab the opportunity of learning wherever you get a chance.

Need help?

In case of any help needed you can browse the internet sites like youtube.com for video tutorials about the subject.

Apart from that, you can contact the writer of this course material at jsrv2004@gmail.com.
Assignments

There will be some assignments at the end of each unit. These assignments are mostly practical based and should be submitted in CD or DVD. Theoretical assignments are to be submitted neatly written on A4 size sheet.

All assignments will be submitted to respective study centre of Odisha State Open University or as directed by Co-ordinator.

All assignments should be unit wise on separate CD/DVDs clearly mentioning course title and unit on top. Theoretical Assignment will be neatly filed or spiral bind with cover clearly mentioning necessary information of course, student details on top.

Assessments

There will be “1” assessments for each unit.

All practical assessment will be submitted to OSOU.

Assessment will take place once at the end of each unit.

Learner will be allowed to complete the assessment within stipulated time frame given by the university.

Video Resources

This study material comes with additional online resources in the form of videos. As videos put in human element to e-learning at the same time demonstrating the concepts visually also improves the overall learning experience.

You can download any QR code reader from Google Play to view the videos embedded in the course or type the URL on a web browser.
Getting around this Course material

Margin icons

While working through this Course material you will notice the frequent use of margin icons. These icons serve to “signpost” a particular piece of text, a new task or change in activity; they have been included to help you to find your way around this Course material.

A complete icon set is shown below. We suggest that you familiarize yourself with the icons and their meaning before starting your study.

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<th>Activity</th>
<th>Assessment</th>
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Unit-1

Introduction to Digital Composition

is intended for people who want to become a Graphic Designer. A Graphic Designer has to work more on shapes and typography. It includes a major portion of designing apart from photographs and images. It is the shape and text design which helps in arrangement of layout of a design. A layout of the design is the blueprint of a design which is going to emerge out of the process. Hence, the success of a design depends on the Graphic and Typography used by the designer.

This video will provide a brief overview of this course.

Video 1 – Compositing Artistry
https://youtu.be/kvsMn2vWWB0

Video 2 – Graphics Type and Typography
https://youtu.be/cwCPeom-KDE

Introduction

Composition means a mixture of multiple elements together to form a meaningful output. In the Digital world, composition is done out of images, videos, graphics, sounds etc. Digital Composition creates the output in a very informative way.

We can take an example of an image where we can see an image of a showroom. In the bottom, we have a graphic rectangle with a text over it briefing about the location of the scene. In the top we have the logo of the company that has published the image. Again in the corner we have the name of the photographer or the Agency. Thus, a composition makes the output attractive as well as informative.

Digital Composition is not only about the technical process of merging two subjects. The composition has to be in process with the norms of the society. It should be ethical and should bring no harm
to the content holders. The user must be aware of the copyright issues while creating a composition out of various materials from various sources. Even if a compositor mixes from various sources, he/she should acknowledge the original source.

Digital Composition of image requires the basic knowledge of Photography. For making original content, the compositor has to use all the original sources by himself/herself. The basis of an image is the Camera and the photography technique used to capture the image.

There are certain rules and principles of design which has to be adopted while designing a composition. We have to be familiar about theoretical aspect as well as some practical techniques of making a Digital Composition. And in the final, it is about the output whether it conveys the intended resource is an efficient and effective manner.

Outcomes

Upon completion of this unit you will be able to:

- Describe about the Basics of Digital Imaging.
- Explain the Basics of Photography and the type of photography required for Digital Composition.
- Compare the practical techniques of Image composition
- Evaluate the principles and elements of Design during composition.
- Identify the computer software’s used for Digital Composition.
**Terminology**

**Photography:** It is the process of capturing a real time image on a camera.

**Digital:** It is the process of storing an information in a numerical format.

**Composition:** It is the mixing of two or more content together to form a single element.

**Camera:** It is a device used to do Photography i.e. capture an image, from real time on a negative film or on digital sensor with the help of light.

**Opensource software:** It is a software which is free and can be openly used and distributed by anyone.

**Commercial software:** It is a paid software. License of Commercial software has to be purchased and is not freely distributable.

**Technical Process of Digital Composition**

An image is made up of pixels which consist of position and colour information. When two images blend together, it can be termed as “alpha blending”. In this case, the pixel of two images merge with each other with an opacity value called “Alpha”. The composition of colours of both the images mixes to create a new colour with the combined values.

<table>
<thead>
<tr>
<th>IMAGE 1</th>
<th>+</th>
<th>IMAGE 2</th>
<th>=</th>
<th>IMAGE 3</th>
</tr>
</thead>
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<tr>
<td>Existing Image or file is called Background layer</td>
<td></td>
<td>The image which is brought in is called Foreground</td>
<td>Alpha blending of the pixel information of both the</td>
<td>Formation of New composited image</td>
</tr>
</tbody>
</table>
Image 1 which is existing can be termed as Background Image or Background layer. The image which is brought in can be termed as Foreground Image or Foreground layer. Then the opacity value or value of foreground image is reduced so that it does merge with the background and create a composed output. The percentage of alpha reducing is based on the visual effect choice of the creator.

<table>
<thead>
<tr>
<th>Opacity value or Alpha Value</th>
<th>=</th>
<th>0</th>
<th>[For an opaque pixel]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opacity value or Alpha Value</td>
<td>=</td>
<td>100</td>
<td>[For a fully transparent pixel]</td>
</tr>
<tr>
<td>Opacity Value or Alpha Value</td>
<td>=</td>
<td>50</td>
<td>[Both the images are displayed as semi-transparent image corresponding to each other.]</td>
</tr>
</tbody>
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These calculations are in-built in the software’s like Krita, Photoshop etc. It is automatically done in the process. We don’t have to manually calculate anything. We have to concentrate only on the creative aspect of the image.

There are two technical methods of compositing:-

**Node Based Composition**

Node based Compositing is the mixing of images from two different sources. In this process, it is very effective for still frame composition. But while handing key-frame and time of real time editing it is very poor. The data’s are not perfectly merged in a moving video. Some example of software’s which use node based compositing are Blender, Nuke, and Fusion etc.

**Layer Based Composition**

In a Layer Based Compositing the image and effects are stored in individual layers. The layers are stacked one over the other as per the editing requirement and each layer has its own key-frame track. Each and every layer can be given motion individually. This is a very
effective type of composition done by most of the professionals in the Industry. Some of the software’s which use layer based composition are Adobe After Effects, Adobe Premiere etc.

**Rule of Thirds**

The “Rule of thirds” refers to one of the many rules that help a person in making a composition more attractive and more pleasing. Any composition looks better in a certain arrangement if the rules are understood well and followed properly and may not look as attractive as it ought to, if these rules are not followed.

The ‘Rule of Thirds’ is just a guide line to help make better compositions, not a hard and fast rule that cannot be broken. But good understanding of the same and following it is more likely to help one in making a composition better. The rule describes where the creator (artist) of the work should place / arrange his objects and where he should avoid placing his objects of importance.

The creator of rule of third was “John Thomas Smith” in 1797. A transcript of his rule of third in a book is shown here:

---

*Title*: Rule of Thirds  
*Attribution*: John Thomas Smith  
*Source*: Wikipedia  

In this rule a given area or block (we will call canvas), which is mostly rectangular, is divided into three equal parts both horizontally and vertically. Dividing the canvas this way produces nine blocks. The lines that are drawn to divide the canvas will intersect other lines at
some places. Where these intersecting lines join each other they will form points that are called ‘Intersecting Points’. These points are the key points to denote the location where the most important part (main subject) of the composition is to be placed which is called ‘Centre of Interest’. Placing your centre of interest near these intersecting points helps in making a composition better and more rhythmic.

An example of a “Rule of Thirds” image is shown below:

Title- Bangalore Airport [The lines drawn as per Rule of Third by the author]
Attribution- Sarangib (user name as per pixabay)
Source-pixabay.com

The above rule was devised keeping in mind the field of ‘Photography’ but the same rule can also be successfully applied to any design so that it would look better and more pleasing to the eyes.

**Generation of Images through Photography and Computer Graphics**

Composition is done from the Photographs and Images which are generated from photography and Computer Generated Graphics which may be a slide of data/graphs etc. or a 2D or 3D generated
graphics. Hand drawn and hand painted subjects can also be inputted for Compositing.

Photography is done with cameras and the quality of the image depends upon the photographer, the quality of camera and the lighting of the scene. The photographer should understand the needs of the subject he/she is capturing to get the picture needed for creating final output. He/she should also understand the theme of the photograph i.e. whether it is a personal portfolio photography or a photo for an advertisement, hoarding or a banner. The photographer chooses the camera and camera settings as per the size of the output required for final composition.

The source of images for digital composition with example is as follows:

- Images acquired through the medium of Photography
- Text Styles from Computer Graphics software
- Designs from vector based Computer Graphics software
- Scanning from documents using scanner.

Elements of a Digital Composition

Lighting

When we plan composite images, the source of the images has to be shot in with the same lighting pattern. There are occasions when the first photo is shot in the morning and the second photo which is required to be taken is shot in the afternoon. If we merge these two images directly then the output will not look natural. It is very frustrating situation for compositor who has to first match the light settings manually using Computer graphics software. It is a trial and error method where variety of combination of options has to be tried by the compositor.

Here, we have two images that need to be merged but the lighting of both the shots are different.
Title- Lighting
Source- Pixabay
Link- https://pixabay.com/get/eb36b40e29f2043ed1534705fb0938c9bd22f6d41cb0154992f8c37ca6/sunny-morning-2351165_1920.jpg

Title- Lighting
Source- Pixabay
Link- https://pixabay.com/get/eb36b10d10f523bdfb0938c9bd22f6d41cb0154992f8c37ca6/kot-2002643_1920.jpg

Hence, a pre-production work has to be check listed before planning for a compositing work in terms of lighting.

Final Output
Lighting is very crucial when we are doing blue screen shots or green screen shots. The source shot lighting should match with the destination shots. There are lots of properties of light settings like – intensity of the light, colour of the light and distance of the light. The positioning of light has to be perfectly done.

Lighting is in total a completely individual art work. It is handled by professionals in the Industry. It is very difficult for a new comer to set lights with only theoretical knowledge. If not done properly, it will show blue or green spills during the compositing which will make the output nasty. There are various methods of reducing the spills. One of them is to focus some yellow light on the subject to decompress the blue colour. Various colours of lights have to be used according to the requirement of final scene.

**Camera Technicality Match**

This is a very important phenomenon of composition. The two merging images will look perfect only when the camera angles of both the images match perfectly. If you have taken a photo of scenery from top angle and you want to merge your image into another picture, you should take your shot for the second image too from the top angle only to match the composition.

There are options in Computer graphic software to change the scale of the shot but a different camera angle of two shots is very difficult to merge.
Now-a-days, there are techniques where a camera motion is controlled by computers. Shots which are used for double role are shot using computer controllers which help in perfect merging. We can see the perfect composition in the movies where we find actors doing double roles.

**Identical source of acquiring Images**

It is better to take the photograph of two scenes to be combined using the same source i.e. camera, or scanner etc. The same source is important for a perfect composition because the same settings in different brand of cameras generate different results. Technically the settings may be same, but the hardware quality varies from company to company. In case of films, people tend to use single type of camera for shooting the entire film to maintain perfect compositing.

**Information Assessment**

This can well be called a Pre-production job. When we go for shooting images for composition purpose we have to make good notes and prepare a check list of all the requirements for the shoot.

An example of elements in a check list is as follows:

- Lights of different varieties
- Camera lens
- Camera battery [Additional battery for backup]
- Tapes for measurement of distance from camera position and model position.
- Colour combination of background, dress of the model, colour of the props in the scene etc.

All these information beforehand will enable in functioning of smooth shooting of raw materials for composition in later stage.

**Fixing or Manipulation**

There are occasions when after all the shooting and acquiring the raw image the shoots are done in digital format, we come to know that there are some settings which are wrongly done for which the
Digital Imaging

shots of some area are not perfect and it has to be shot again. Now it is no more possible to shoot again due to various reasons.

In such cases, there is no alternate except to fix the issues using Digital Computer Graphics software. This is called fixing or manipulating the original material to match the required output. In some cases, it is easily done and in some others, it is extremely time taking and difficult. It takes not only the technical knowledge but also the creative idea of the compositor to fix the issue.

**Rotoscoping**

Rotoscoping is the process of removing the unwanted areas of a frame for compositing. It is done by professionals where they remove unwanted areas which cannot be easily removed by green screen or blue screen areas. In one second we have twenty five frames; that means that if a rotoscope artist has 30 seconds of a shot he/she has to clean (30 x 25) 750 frames which is a very time consuming job.

Here is an example where we use rotoscoping to separate the character from the background.

![Title- Compositing Source- Pixabay Link-](https://pixabay.com/en/windmill-river-scenary-water-sky-916637/)


Here the artist has to work very minutely over the edge areas because it is the place where it merges with the background area.
Merged Image

In the above, the character has been selected individually using the Roto process and then pasted in the background.

Wire Removal

The extreme Action sequences and dance sequences are done using wires ties to the actor/actress. Here the frame is imported into computer and the CG artist removes the wire frame by frame. This job is of similar category of Rotoscopy job. This also takes lots of time and artist has to merge the background too along with the removal of the wire.
Title-Wire removal

Source-Own Photography with original source.

This practice is very common in visual effects in films where lots of mechanical devices are used to create an effect and thereafter removed using Computer Graphics. The person doing the wire removal has to be very skilful and work of every frame has to be done perfectly else there will be flickering and jerk in the output. There are some cases in which wire frames are easily removed but in some cases the wire areas have to be manually painted through software brushes.

Hand Painting

Hand painting is used to create exotic background effects which cannot be shot through a camera. Fancy elements like starburst, extensive glow effects etc. are doing using computer graphic software’s like Krita, Photoshop etc. Hand Painting doesn’t mean only the hand drawn paintings, it is the digital painting done using Computer Software’s.

Clone Stamp

Clone stamp is the method to remove unwanted spots or elements in a frame. There are occasions where we get elements in a shot we don’t require. For example, in a shot we have two crows sitting on a rock in the background. We want to remove one crow only from the shot. This is done using Clone stamp tools which is available in all the computer graphic software’s.
Title: Clone Stamp
Source: pixabay.com
Link: https://pixabay.com/en/birds-crow-black-433965/

Output after cleaning using Clone Stamp

Spots on the face of actor/actress can also be removed using Clone stamp. This has given the director the freedom to add or remove elements even at a later stage. This was not available in olden days where things were not done digitally. In olden days, things were done using optical techniques where a portion of a frame was very difficult to be edited.

Filters
Filters are the effects which are added after composting to make the image more effective. Some of the commonly used filters are Blur, Noise reduction etc. Blur is used in background areas where we need to focus on the foreground image only. We have seen in movies where the background is automatically blurred and the character is focussed using camera techniques.

In some cases of night shots, we get grains on the shot which distracts the image. It can be reduced or removed using filters like Noise reduction. There are many other filters also which effectively work towards a best composition.

**Artificial Lighting**

Artificial lighting is also an in-built feature of Digital Composing software’s like Krita, Photoshop etc. Unique type of lighting can be used on specific areas of composition to make the scene more realistic. They are termed as lens flare, Omni light, spotlight, and illumination lights etc. in technical software terms.

**Shadows**

When merging two elements, shadows are not always merged. The compositor has to manually add shadows of the subject to add depth to the image. Shadow is a very important element and it has to be created professionally taking into view all the properties of a shadow according to the lighting.

Properties of shadows include its opacity/alpha/transparency, the height of the shadow, overlapping cuts on other elements etc. A perfect shadow will make the composition look very real and impressive. Computer Graphics provide the tools and techniques which help the compositor to tweak shadows as per requirement.

**Atmosphere**

For making a composited scene real, lots of atmosphere effects like fog, haze, smoke, fire etc. are added. While adding atmosphere effects, the compositor has to have an idea of depth and distance of the scene. The effects should look natural hence lots of reference elements or reference photographs are studied in detail. After studying the reference, the techniques of software tool is used to apply Atmospheric effects.


Printing Techniques of a Digital Composition

Symmetry

Using symmetry in a composition or image creates an amazing view. It creates an attraction at the symmetrical point. An image below demonstrates the symmetry in an image composition.

Title-Symmetry
Source-pixabay.com

Another example of symmetry is the reflection of a subject in water or mirror. This also generates a wonderful composition.

Title-Symmetry
Source-pixabay.com
In symmetrical compositions, it is better to add the highlighted subject in the centre of the frame.

**Frame within a Frame**

There are compositions in which a scene is seen through a door or a window which consists like a frame. This will give a more focus to the subject of the composition. The image below shows a sea view through the window. This creates a focus on the output area.

![Frame within a Frame](https://pixabay.com/en/view-window-sea-view-tenerife-2417156/)

**Title**-Frame within frame  
**Source**-pixabay.com  

**Leading Lines**

Image Composition of pathways leading to a destination catch the eye balls of the audience. The lines need not be straight always. A curved pathway also does the same leading work. There are examples of flowing waters, moving cars on a road etc. which leads the photo to a destination.
Diagonal Representation of Images

The representation of images can be divided into shapes. Some shapes automatically appear during a perspective shot of building, a bird’s eye view of a mountain etc. So always try to make composition in triangles forming diagonal lines.
Patterned Images & Use of Textures

Patterned flooring and walls are done to create attraction. It gives depth as well as a message for remembering a spot due to its resemblance of continuous pattern. Differentiated patterns make the scene memorable as well as beautiful.

![Patterned Image](https://pixabay.com/en/tile-pavement-road-city-831527/)

Textures also come in large variety like wooden textures, granite flooring textures, marble flooring textures, colourful square textures, parking textures etc. These textures add depth and artificial realism to a place. For example, a wooden texture would give the feeling of a tree or scenery in an interior.

Rules of Odds and Evens

In composition, odd number of elements creates more attraction than even numbers. For example, five birds sitting on a branch will be more effective two.

Image: Nine Birds sitting on an electric wire
This rule is followed by professionals but not considered by all. There are occasion where even number of elements are required compulsorily. For example, two people are talking, in this case a third character can become a distraction. Hence, it depends upon situation where we need the odds and where the evens.

**Filling the Frame**

In a composition, the main element has to be focussed and fit in the frame. In case of a face of an animal photo we have cropped it till its face even eliminating the outer border. This helps in focussing on the face of the animal.
In this building, a little space has to be left to show the surrounding of the building but to some extent only. So the compositor has to decide according to the subject on how to fill and fit the frame with the content.
In some cases, there are lots of negative spaces or blank spaces that have to be left to focus on the character or subject. We can see in full page advertisements where around 50 to 60 percent of space is used in negative and only 40 percent is used for the content. This creates a pin point view to the audience who concentrate only on the main subject for the whole time they look into the image. This will not put pressure on them at a glance to view at all the materials in the space.

![Image of a pen and paper with the word "Lebenslauf"](https://pixabay.com/en/curriculum-vitae-cover-letter-1756264/)

**Title**-Leaving Negative space  
**Source**-pixabay.com  

**Simplicity by isolating the subject**

Simplicity means to focus only on one segment. This is done by blurring the background elements and focussing on the main subject. This is done in composition by using multiple layers. The content in the Background layer which is sharp can be blurred artificially using the Blur filter of the computer software. In Photo of sceneries also we can find blurred background with fog effect and focussing on the mountains and trees. This can also be referred to as isolating the main subject from the other matters of composition. Isolation means left alone to be focussed rather than being a part of the crowd.
Image: Car with a blurred background

Title-Car with background
Source-pixabay.com

Point of View
The subject for composition is taken from different point of view or can be simply termed as taking photography from different camera angles. The subject for composition depends on the interpretation of the subject. If we are taking a photo for composition of a character or model it has to be taken from eye level or from a bottom angle. If we have to take a photo for composition of scenery then wide angles are used from bottom to top as required.

Colour Combination
Colour combination is a very important factor in composition. The artist can use variety of colours which goes in contrast with the images used in the composition. The light shades of a particular colour from dark to bright bring a depth or 3D effect in the composition. While composing a colour for depth it takes the dark shade of the colour to display distance and the bright shade to display glossiness and light. The logical arrangement of a colour sequence helps in choosing the right colours.
Rule of left to right

We always read text from left to right; hence we have the same pattern in images also to look at it from a left to right perspective. So the flow of information or movement in any composition has to be displayed from left to right. For example, if you want to show a photograph in which a person is walking to destination, then it has to be shown as the person is walking from left to right towards his destination.

Title-Color combination
Source-pixabay.com

Title-Rule of Left to Right
Source-pixabay.com
Although in Arabic countries, text are read from right to left. So there is possibility that images may be in those countries may be composed with the opposite rule.

**Balancing Elements in a Composition**

Balancing elements means the arrangement of focused parts of composition. For example, in an advertisement one wants to focus on 50% discount first, then the focus on the product, then on the features of the product, then on the contact information.

This balance is created by the sizing of the elements in some places and by colour specifications in another. The composition of dark background with a bright text brings the subject in focus, whereas a semi dark background with a semi bright text solves the purpose of giving information but it is not highlighted as equal to the main subject. A successful compositor is one who masters the art of balancing the elements in Digital composition in computer software.
Unit summary

In this unit you learned about the Digital Composition elements which make the composition a successful output. You have also learnt about the role of Computer Graphic software in each and every element of Digital Composition. In today’s graphic world all the composition has to be done using Computer Graphics only.

Assessments

- Name two software’s used for Digital Composition.
- Name five elements used in Digital Composition.
- Name the person who established the Rule of Third.
- In the year ________, the Rule of third was established.
- Name the two technical methods of compositing.

Resources

Web Reading Reference

Digital Composition

Digital Composition and Digital Literacy
http://guides.library.stonybrook.edu/digital-storytelling

Digital Composition and Performance
Unit 2

Use of Digital Elements in Digital Layouts

Introduction

A good design always comes with some common elements. It is because of the use of these elements in perfect way; an output of a design is appreciated and fulfils the motive of the designer to convey the information. Conveying information to the user is the most essential part of creating a design using visual elements.

There are around twenty numbers of elements of design. The number of elements is not fixed. It depends upon the choice of the designer to use the combination of elements. It is not required that you use all the elements of design in a single project. The fundamentals of Design elements are taught in the school of art as the basic foundation. It is upon this foundation that the style of the work of artist depends. If the foundation is good and clear, then the artist can go on to become a good asset as a Visual Communication candidate to any organisation. The process of learning Design elements is possible only through visual demonstration of each and every element.

Outcomes

Upon completion of this unit you will be able to:

- **Describe** the Design Elements of Digital Layouts.
- **Interpret** the use of major Design Elements.
- **Examine** the combination of best components for design.
- **Apply** the Design Elements in Practical works.
- **Draw** the elements through graphical representation of each element.
Terminology

**Design:** A representation of a subject in a stylised manner.

**Visual:** Any subject which can be seen using eyes.

**Elements:** The components out of which a subject is made up of.

**Texture:** An image which is applied on a subject to show its originality and create the feel. For example, a brick texture on a flat box.

A Brief History of Designing

**Design Elements**

The elements of design are used according to the requirement of subject. The most commonly used Elements of Design are as follows:

|---------|-------------|--------------|-----------|

Now, we will study each and every element in detail.
**Line**

![Different styles which can be applied to Lines](Created by the Author)

Line is the first and foremost element of Design. Everything we look upon is made of line. It may be the numbers, alphabets, drawing etc. everything is made up of Lines in one form or the other. Line always does not necessarily mean a straight one. The curved forms of a drawing are also considered as a line. If we need to show something to the point of the subject only, then a straight line is used. When we want to show something which gives movement to the information, then curvy lines are used. If we need to show something new and innovative with suspense then patterned lines are used.

Line gives direction to our eyes to generate emphasis on the subject according to the arrangement of the design.

When we give an artist a pencil to learn art then what does he do. He just draws lines and composes them to create a final version of the drawing. In the same way in design, Line tool and Pen Tool in graphic software play a big role in creating a good Computerised Graphic design. It is easy to draw straight and curve lines using software’s with accuracy. Even if we make mistakes, there are options to rectify it with ease.

**Scale**

![Scale](Created by the Author)
Scale classifies the importance of the subject according to its requirement. It means that the headings are a bit bigger in size and bold than the normal text. This distinguishes between the important points of the design and the ordinary information of the design.

When we look at an advertisement, we always see the information which is larger in the size and then move our eyes towards the smaller size information. For example in a product advertisement “50% Discount” is sometimes highlighted in big and then the product information follows. So Scale is a very important element in design because in today’s busy life, people have less time. People looks at things in glance and only when there is a thing of appeal in larger size, it attracts the person. It is only after the attraction that they get into the detail if they are interested.

Scale is not always used as per subjects appear in real. Lots of variations are used to create attraction. We have seen cartoon characters with a big face and a small body which is not real but looks attractive. So use of artificial scale is done according to the requirement of the subject. A viewer has to comfortably establish the important subject in the design according to the scale.

**Colour**

Fig. 3: A graph consisting of all colours on Computer Graphic Software
Colour is an essential part of design today. It plays a very vital role in design to catch the attraction of the audience. The above figures indicate the colours which can be used in Computer Graphics. Each colour has been given its own resemblance and is used according to the feel of watching a colour. Some of the commonly used colour implications are as follows:

<table>
<thead>
<tr>
<th>Colour</th>
<th>Implication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red</td>
<td>Red colour is used to show Passion and Excitement which fill our mind with energy and confidence.</td>
</tr>
<tr>
<td>Orange</td>
<td>Orange is a fresh colour which is used as a symbol of adventure. If you are willing to try something new in a business, the use of Orange will create strong enthusiasm.</td>
</tr>
<tr>
<td>Yellow</td>
<td>Yellow colour is cheerful and light colour. It is a symbol of the colour of the sun when it shines. But due to its extra glossiness it may look cheap if not used with the perfect combination. So try to avoid yellow as a single colour medium.</td>
</tr>
<tr>
<td>Green</td>
<td>Green colour is the symbol of tree which gives a natural feeling. Depending upon the product category, green is used which connects us with the outer greenery.</td>
</tr>
<tr>
<td>Blue</td>
<td>Blue colour symbolises sky, ocean etc. It is a vast colour which is used for communication. It easily connects with the harmony of the viewer. It is used as a cool colour in design.</td>
</tr>
<tr>
<td>Purple</td>
<td>Purple is a royal colour and is mostly used in luxurious brands.</td>
</tr>
<tr>
<td>Brown</td>
<td>Brown is a bold colour which adds strength to the design just like a branch to the tree. It is mostly used in organic products.</td>
</tr>
</tbody>
</table>
Pink symbolises romantic and sentimental feelings.

Black is used for communication purpose and sometimes as the background highlighter over a light colour like white, yellow etc.

White symbolises space and in any design fifty to sixty percent is left as blank space as an element of design.

**Shape**

Shapes play a big role in forming of design. Triangle, Rectangle, square, oval, circle, start, polygons etc. are used in designs to create the output. There are two kinds of shapes. One is mechanical shape and the other is organic shape.

Mechanical shapes are those which are formed of measurement like Rectangle with its length and width, Circle with its radius, Polygon with specific number of sides with radius.

Organic shapes are free hand drawing shapes which are done using Pen tool, Bezier tool etc. It is formed in a specified space according to the rough estimated proportion. It depends upon the artistic ability of the designer to make the shape attractive.
Negative Space

Fig. 5: Image displaying the unused space as negative space to form a design

Negative space is the space left over after creating our designs. But this space can also be used in an effective way to create a symbol. In Fig. 5, we can see the white space as the negative space. But if we subtract black from it we get a design from the outline of the white shape. This has not been created intentionally by the user by it automatically happened.

Negative spaces are used in patterns and tiles also. The left over shape is automatically formed. It looks like a loop where every part can be considered as the starting point of the subject.

It is also created in small shape designs like logo where we need to represent more using less design.

Symmetry

Fig. 6: A symmetrical figure where the left side is the mirror of the right side.

[Created by the Author]
A human shape is made up of symmetry. Symmetry means the left side and ride side are similar to each other facing the opposite direction. Images which form symmetry attract the most. From an advertising point of view, we can see designs and background photographs which are drawn or photographed from symmetry point of view.

Symmetry is basically used in symbols and logo forms. Although each designer has his own choice of representation, symmetry acts as an asset for the designer. Symmetry is used in cases of mirrored images, reflections on water etc.

It is not necessary to create the whole image in symmetry. A part of a scene can be also shown in symmetry which adds an essence to the viewer.

**Transparency**

![Fig. 7: The intersected area displaying transparency of overlaying objects with alpha/opacity applied on it.](Image)

In the language of Computer Graphics, Transparency is termed as Opacity and in some cases as Alpha. In case of Raster Graphics software, a shape or an image is placed in layers and the opacity of the layer is reduced to see the transparent parts of the lower layer. In case of Vector Graphics Software, the shape itself is
considered as a layer and the opacity is reduced as property of the individual shape.

Opacity is used mostly in Compositing of images where we would like to merge one image over the other and be able to see both the images with reduced transparency of both.

Transparent medium of design is being experimented on glass paintings also. This element is not only limited to computer graphics. In hard copy of design also transparency is tried to be implemented in form of glass, transparent sheets etc.

Texture

Fig. 8: Varieties of Textures inserted inside the shapes

[Created by the Author]

Textures are used for creating a 3D feel of a photograph when we look at it. For example when we look at the texture of branch of a tree, we feel the depth of touching the tree. In the same way there are lots of textures like brick texture, stone texture, marble texture, fabric texture for clothing etc.

When we create something artificially using Computer graphics, it is formed in outlines or flat and gradient colours. With the help of textures we can apply it in shapes to make it look real. It creates an illusion of depth in the minds of the viewer.

It is not merely used a design, but it is used with intention to create the feel of the subject of the design. It is a source of tactility to the design to create incredible effects on the screen. It creates the vintage feel to the viewer while watching the dark and light strokes which is created by the designer. Watching as a source of
information and feeling it as natural connects the mind of the viewer with the potential source of information.

**Balance**

![Balance Diagram](image)

**Fig. 9: Equal balance of subjects in both the directions**

[Created by the Author]

Balance is the placement of the elements of your design in an even way that it looks informative from all the angles. For example, we have created a design and put most of the elements in the left side then there will be a problem for the viewer standing in the opposite direction to watch it.

Hence we have to see that both of sides of the design contain equal elements of importance even if it is negative space. It is like the weight of elements placed on either side of a measuring bar. Both the sides need not be fully symmetrical with identical contents but the information of value should be equal in both directions.

**Hierarchy**

![Hierarchy Diagram](image)
Our world runs on Hierarchy, both from top to bottom as well as in parallel. It may be family or business, authority runs on hierarchy. Hence while designing something we have to create the hierarchy. We should be clear that which information has to be highlighted first and then the next. It is not only in scale that hierarchy can be shown. Hierarchy is also shown using colours. With the help of scale and colours the designer has to create the hierarchy of information. A perfect hierarchy give significant importance to the elements of the design.

**Contrast**

Contrast is used for highlighting a subject or to make an object look like popping out of the screen. It is basically done where we place a white text over a completely black colour. It looks like the white colour comes forward of the black creating a depth or a 3d kind of look. Contrast is used to create artificial depth to an object. Although the object is not in 3D but it creates an illusion of front and back in space.

Technically contrast is created in different ways like using Bright Colour against Dark Colour together, Thick shapes against Thin Shape together, large shapes against small shapes together. When we place two opposite things in front of each other or besides each other it creates a 3D kind of effect which indicates depth to the design.
Framing

Framing in a design is created to draw attention towards a particular subject. The frame may be in form of an outline in any shape such as rectangle, oval etc. It gives emphasis to the subject which is placed inside the frame.

It creates an aesthetical composition of the subject and the frame. There are occasions when the highlighted subject is just information but not an attractive design. In this case the subject is intentionally highlighted through a frame.

The frame also removes the unwanted part of a subject or an image which is done using Cropping. It is also termed as Masking in Computer Graphic language. In Masking, a shape is created in any form and an image or another shape is placed inside the mask. Frames need not be a specific shape; it can be designed from simple to exotic floral designs.
Grid takes us back to our olden days of Graph Paper in the subject of Mathematics in school. It is used to prepare Graphs, Charts etc. using perfect measurement. In Computer Graphics Grids are used to create elements with perfect alignment. The placement of elements of a design is very important. It has to appear in a perfect way. For example, we use scale to draw a straight line on a paper. In the same way Grid is used to place things in proper place and proportion.

A single grid is used in different ways. Sometimes it is used to generate objects by perfect measurement. It is used to create alignments of objects according to their measure for i.e. left, centre, right, top, vertical centre, and bottom, justify etc.

Grids are used as a helpful tool in a design which appears only on the screen. Grids do not appear in printout. It is like an on and off option in a software. When required it is turned on and when the use the over it is turned off. The spacing of grid can be specified by the user according to his need.

It makes the design neat and clean, look good and impressive to the viewer.
Randomness

Randomness is used in Design for Abstract form of artwork. There are occasions of designs where non uniform works attract. It is a composition of subject which are placed and aligned in an abstract manner. It deviates all the elements of design still looks impressive. These are used in designs which are used to convey information that are not of high commercial value. These are used in Art works.

Randomness is termed as Design Randomness when used in design works. Even though things are placed in rough order, design randomness still creates a message out of it. It helps in a smooth eye flow on the hidden elements in a random design. It is like searching for a valuable among the scraps. Everyone might have done this in their life at least for once. We get a chance to get into a store room locked for months. We would try to find something useful from the useless things and feel proud when we find a one of our relevant importance.

In the same way Randomness in design is also a genre of work in which a category of people are interested. It may be for film, art, design etc. People visualise abstract form like making an imaginative picture out of the formation of clouds in the sky.
Repetition

Fig. 15: Repetition of a single element like logo in all the correspondence document of a company

[Created by the Author]

Repetition is a useful element to build the brand of an organisation. People quickly remember symbols and logos rather than the name of the company. So we can see logos of various companies like Tata, Coca Cola, and MDH etc. They have a unique symbol which is repeated on all its products from packaging to letter heads, visiting cards etc. A consistent view of the logos creates the brand of the organisation in a large scale. Logos and Trademarks are done by professionals looking into all the aspects of the company because this is the symbol which will represent its identity for all the future days to come.

Repetition is also used to create emphasis on a design. It is also being termed as Tiling or Patterns. In this case a single design is repeated all through a shape to create a textured effect. The design which has to be repeated should be in continuous flow then only a tile effect is created. If the design is broken or creates a patch while repetition then it is a wrong pattern. Hence, while drawing a pattern one has to be very cautious in the corners because the pattern connectsthem from the four corners i.e. top, bottom, left and right.
Even though there are some logics of design, a designer denies following certain rules. In some cases, a designer does not even want to have an eye on any of rules while designing a piece of work. Rules exist in design which creates a checklist of what is right and what is wrong.

Following the rules create a design of perfect nature. It tells us what should be done and what should not be done. It is not described by aliens. It is done by the people who have contributed their years of experience in the field of design. These are the basic common rules which are correct to the maximum extent. There are rules like using a particular font, not using pixelated images, cutting an image sharply from the edges without leaving any cut marks or background colours etc.

So there are designers who follow the rules as well as the designers who feel pride in breaking the rules and arguing with the justification of their deeds. This has been going on and will go on till designers exist.
Movement

![Fig. 17: Movement of a subject in a pace](Created by the Author)

When we hear of movement in a design or still graphic, we might imagine that how can we give a movement to a static image. But still movement is an important element of design. Movement is the flow of information which you want to convey in the design. For example, when we see a design, we see the focussed part of the design then move onwards to the other parts of information.

Movement can be shown on the still graphic by symbols, arrow marks, transparency flow of an object, scale hierarchy of an object etc. It creates a sense of happening in the image. Movement is also achieved through filter effects like Blur. It is also illustrated through motion lines like smoke effect in the backside of a vehicle, circular lines around the legs of a person etc.

Depth

![Fig. 18: Adding depth to a shape and a text](Created by the Author)
Anything which has depth captures the attention rather than a flat image of the same subject. It is the artwork which generates a 3D visualisation on the flat surface itself. It is done using various techniques:

- **Adding Shadows** – The oldest and easiest technique of creating a solid feel of an object is to add shadow to it. It makes the object lively in the scene even if it is seen from a two dimensional view. The shadow is given a treatment like black faded colour with transparency. It is tweaked using shape manipulating techniques like Distort, Free Transform, and Skew etc.

- **Light and Deep shade of a colour** – A depth to an object is formed by creating a gradient shade from the light colour to its dark shade. It is the efficient method of creating 3D using gradients in all the raster and vector based two dimensional software’s like Krita, Inkscape, Photoshop, CorelDRAW etc.

- **Perspective** – Depth is generated from the Perspective drawing. Drawing in perspective is an art which has to be learnt in Art subjects. Drawing roads, buildings etc. are a part of perspective drawing study. Drawing in perfect proportion in perspective will make the scene lively by adding depth in form of distance.

- **3D effect like Extrude, Revolve etc.** – There is readymade effects like Extrude, Revolve etc. in software which automatically creates depth to the subject in various forms and colour.

**Typography**

![Fig. 19: Different styles of writing a text](Created by the Author)
The style of writing an alphabet is called Typography. There are thousands of typographical designs available as readymade in the industry. Typography according to Computer Terms is referred to as Fonts. There are lots of in-built fonts which come with the Software operating system. A user need not be a good artist in writing or may have a bad handwriting. But when he uses a computer to write something, he can choose the best font available and make the writing good excellent.

It is the choice of the font which a designer chooses according to his creativity which makes him outstanding in the text design. This is really a boon for the designer as in the old days without computer; an artist has to manually write the text with lots of technical equipment of art like scale, rounder, eraser, ink, paint etc.

So Typography is only a choice for the designer without worrying about the process of writing a text. Even though there are some designers who create their own style of text using the shape tools of the software’s.

**Composition**

![Composition Image](image)

*Fig. 20: Two different types of Composition*

* [Created by the Author]
The last but not the least component of design is Composition. Even though you have everything, if it is not composed or presented in a systematic way then all the hard work goes in vain.

Hence a designer has to compose his work according to the elements of design. Composition is an interesting work to do if you have all the objects needed for the design. It can also be termed as Editing of the subject.

It is a creative work and each designer has his individual taste and choice of compositing an artwork. A single subject with the same matter is displayed by different designers in a different way. There is no rule of 4+5=9 here, any combination to form 9 is correct such as 1+8, 2+7, 3+6 etc.
Unit Summary

In this unit you learned about the elements of Design which are used for preparing Design works. You have learnt about the principles of design which will be helpful when you will be given a design project. It not only gives a direction to the work but also makes the work look efficient. In old days people used rough guesses which creates a design. It is only after a detailed study the elements of a successful design has been collected and given to learners making their foot into this great world of design.

So, this checklist of elements of design will always accompany you in your mind and help you to eliminate the mistakes which making a design. The vision of a customer can easily judge the work, so after completing each and every project in form of a design, film etc. it has to be showcased to a set of viewers to judge the work. So, whenever you make a design, don’t judge it by yourself. Take consultancy from reputed people or even from your friends, elders or even juniors. The consumer feedback will help to know the mistakes done with the elements. After knowing the drawbacks you can rectify the changes and the final output will be a perfect design.

Assessment

- Name the twenty elements of Design
- Create an own graphical representation of the twenty elements of design in a pen and paper.
- Name the elements which you find more interesting and why?
Resources

Elements of Design
https://en.wikipedia.org/wiki/Visual_design_elements_and_principles

Ten Basic Elements of Design
https://creativemarket.com/blog/10-basic-elements-of-design

Design Elements and Principles
https://designschool.canva.com/design-elements-principles/

Introduction to Elements of Design
http://char.txa.cornell.edu/language/element/element.htm
Unit 3

Basics of Image Editing

Introduction

Digital Industry is progressing very fast. The varieties of input into digital platform are increasing in form of Scanners, Digital Camera’s, Mobile Cameras etc. Text has most probably been replaced by Images and Photographs. With the advancement of 3G and 4G network, now it is possible to easily transmit images, audio and video on digital exchange platforms. Hence, each and every person should be acquainted with the digital devices and the operating platform on the devices.

The application of digital content or soft copies is applicable in most of the areas. The process of admission into colleges, entrance examinations, form fill up for jobs, interviews, government projects etc. all involve activities done in digital format to reduce the time taken for the work and convenience to the people. So it is very important for every common man to be knowledgeable about the common digital techniques, social networking, internet access procedure etc. Handling mass works is becoming a tough task today which is being slowly replaced by computers.

The population of the world is increasing day by day and the mass repeatable activities which were done by human beings are replaced by analytical robots. The process of finger sensors, face sensors, voice sensor recognition techniques are used to reduce manual verifications for quick processing of work.

Analytical robotics, today not even does repetitive jobs but also analyses information to produce results as equal to a human being. It is preferable to each and every person to have an idea of Digital Platform.
Outcomes

Upon completion of this unit you will be able to:

- Describe the process of scanning i.e., transferring of paper content into a Digital Image content using Scanners.
- Identify the aspects of Camera.
- Use the software’s used in Image Editing.
- Practice the process of image editing.
- Apply the process of colour correction in an image using software.
- Explain the process of masking in a design.

Terminology

Scanning: The Process of transferring documentation on a paper to a digital format. It can be said that the conversion of a hard copy format into a soft copy format is called Scanning.

Image Editing: Manipulation of a Photo or an image to make it better in terms of clarity is called Image Editing.

Masking: Making a graphics to appear in a particular shape is called Masking. For example, a rectangle shaped photo is masked into a Circle. The photo can be viewed only up to the border of the circle and not beyond it.

Capturing Images: Taking Photographs using camera is called Capturing Images or scenes. The quality of capturing images depends upon the quality of the Camera used.
Scanning and Capturing Images

Scanning is the process of transferring content in a piece of paper into digital format. The content in the paper can be text, handwritten matter, drawing, painting, photograph etc. The device which is used to do scanning is called Scanner. It is a device in which we place the paper on the glass and it captures the data in RGB format of the computer.

History of Scanning

Telephotography and fax were the input devices which were used in the early days for transmitting messages from one place to another in paper format. These sources inspired the idea of modern scanners of today.

In the year 1860s, the historical form of facsimile machine which used to transmit images on a telegraph line was introduced by Giovanni Casselli. It was named Pantelegraph, which started to be used commercially for practical purposes. It used Electromagnets which matches the movements and creates an exact replica of the image at source. The size of the paper used to transfer was around 150 x 100 mm.

After few years, photocells were used for scanning and the data generated was transferred using Phone lines. This process was adopted by AT&T for their wire photo service. This type of technique was also experimented in Europe and named Belino. The media agencies of newspaper, T.V., Radio etc. used this system in the 90s era for their business purpose.

Types of Scanners

<table>
<thead>
<tr>
<th>Drum Scanners</th>
<th>PMT Tubes i.e., Photomultiplier Tubes were used to transfer the information using Drum Scanners. Three colours are used to capture images i.e., Red, Green and Blue. The content is divided into these three channels and transferred into Digital System.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flatbed Scanners:</td>
<td>These are the scanners which are used now-a-days for scanning paper contents. A thin</td>
</tr>
</tbody>
</table>
light beam passes over the content which transfers the content line wise into a Digital Image format.

<table>
<thead>
<tr>
<th>CCD Scanner</th>
<th>CCD (Charged couple device) scanners are made up of three arrays or rows. They contain sensors of Red, Green and Blue colours which are called Primary Colours.</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIS Scanner</td>
<td>CIS (Contact Image Sensor) also used Red, Green and Blue LEDs for illumination purpose. For the purpose of light collection the LEDs are connected to a monochromatic photodiode which is placed under a Rod.</td>
</tr>
</tbody>
</table>

Apart from these, there are also other scanners like Film, Roller Scanner, 3D Scanner, Planetary scanner etc. Due to the rise in technology, the types of scanners are developing in the quality and providing excellent results.

**Process of Scanning**

- “Power On” the Scanner
- Insert the image in the glass bed of the scanner upside down as done in case of a Xerox Machine.

<table>
<thead>
<tr>
<th>1. Choose the Photo</th>
<th>2. Open the Scanner and place the photo upside down</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Screenshot" /></td>
<td><img src="image2" alt="Screenshot" /></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3. Place the photo upside down</th>
<th>4. Close the scanner</th>
</tr>
</thead>
</table>
• Open the software for Scanning
  
  ![Screenshot of Windows Fax and Scan]

• File – New Scan
  
  ![Screenshot of New Scan window]

• Click on “Preview”
• Choose the Resolution as 300 DPI [Minimum standard for good print quality]

• Click on “Scan”

• The Process of scanning will take around a minute.

• After the scanning is complete, it will save the image in the computer in the default folder of scanned images.

Capturing Images

The medium of capturing images from the live scene is called Camera. It is optical equipment which is used for clicking images and storing photographs. Today, we have Digital Camera’s
which has the capability to display the positive of the image immediately after clicking it on its display. In today’s life almost everyone has a camera in-built in his/her mobile.

The cameras in the beginning used Negative as the source to store the image which is clicked. Then the image is taken to Photo Lab where the image is developed is a dark room. After that the positive is derived out of it. This process takes around 2 or 3 days for the customer to get the positive of the image taken.

The quality of the image depends upon the lens of the camera. To achieve better results of a far distance scene, high range lenses are mounted on the camera.

Photos and Photography has always remained a passion for each and every human being. They feel happy watching at the glimpses of photographs of self and others in various moods and places.

The excessive interest in Photography has been the motivation to develop high end cameras with quick functionality. This gave birth to Digital Cameras which was a revolution in the world of Photography.
The immediate output is one of the feature which has delighted everyone. Digital camera is available in most of the households as a part of home accessory. It is no more a luxury, it is a part of a daily entertainment to capture moments and make it memories.

Digital images are stored in digital format hence it is very easy to transfer and share images. Websites like Facebook, whatsapp etc. have grown to a huge extent due to its photo sharing capability.

Image stored in digital format are very durable and do not get distorted or damaged. It remains in the same quality in which it has been taken. It can be stored for all the generations to come with perfect quality.

**Resolution of Capturing Images on a Camera**

The resolution of Capturing an Image depends upon the Optical Zoom of the Camera. We have also heard of 8 megapixels, 12 megapixel and 15 megapixels also. This is the pixel size at which a shot is made. The more is the megapixels, the more is the size of the pixel of the image. This will help in printing the image at a bigger size with perfect quality. This table illustrates an example of megapixels with pixel size and image size.
The latest Digital Cameras have all the capabilities to capture an image with high quality output. It depends upon the knowledge of the user to choose and capture images as per his requirement.

### Image Editing

Images are stored in computer in a pixel format which comprises of grids. This process of storing a Digital image is termed as Raster Graphics. It contains the information of the position and colour of each and every pixel which combines into an Image when displayed on computer software or any digital platform.

The images which are captured can be stored as well as edited with the help of software’s. The images are edited to make them look better. There are automatic settings fitted in cameras which rectifies the image and produces a bright and clear image in dim lighted areas also. Even though the photo is dim, there are computer software’s with options which automatically corrects the colour of the image.

The few features of images which can be edited in computer software are described with the process.

- **Selection and adjusting a particular part of an image.**

  In a Particular image, we can select an area using the selection tool of software and make modifications to the selected area or delete as per our requirement.

- **Open Krita**

<table>
<thead>
<tr>
<th>Maximum Print Size</th>
<th>Minimum Megapixels</th>
<th>Pixel Resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td>8” x 10”</td>
<td>5 Megapixels</td>
<td>2560 x 1920</td>
</tr>
<tr>
<td>11” x 14”</td>
<td>6 Megapixels</td>
<td>2816 x 2112</td>
</tr>
<tr>
<td>16” x 20”</td>
<td>8 Megapixels</td>
<td>3264 x 2468</td>
</tr>
<tr>
<td>16” x 24”</td>
<td>12 Megapixels</td>
<td>4200 x 2800</td>
</tr>
</tbody>
</table>
- File – Open [Open an Image]

Title- River - Landscape
Attribution- Quangpraha (User name as per pixabay)
Source- Pixabay

- Rectangle Selection Tool

Select an Area

[Screenshot]

Press Delete
Select Menu - Deselect
It will delete the selected area.

- **Merging two or more images via Layers**

  Two different images can be merged into a single image using Layers. This helps to move the layers or remove it at any time.

  - Open Krita
  - File – Open [Open an Image]

  - Rectangle Selection Tool
  - Select an area
Basics of Image Editing

- Edit Menu – Copy
- File – Open [Open Another Photo]

Title- Red Rocks
Attribution- esudroff (User name as per pixabay)
Source- Pixabay

- Edit Menu – Paste
- It will paste the selected portion of the first image in this file. This will create a new layer in the layers panel.
We are resizing the image using the Transform Tool.

Changing the Image Size according to requirement

An image can be opened using the software and the size of the image can be changed according to the need of the Project. However, if the size of the image is increased the pixels of the image will get distorted. But, if the size of the image is reduced, there will be no effect in the quality of the picture.

- Open Krita
- File – Open [Open an Image]
- Image Menu – Scale Image to New Size
[Screenshot]

- Change the width and height as required and press OK.

- **Cropping of an image**

  There are situations when we take a photograph or scan an image, we get some portions which seem not required at the edges. We can select the portion only which we want and remove the remaining areas using the Crop Tool.

  - Open Krita
  - File – Open [Open an Image]

  ![Image Menu – Trim to Selection](image)

  - Rectangle Selection Tool
  - Select an area

  ![Image Menu – Trim to Selection](image)

  - Image Menu – Trim to Selection [In some software, Crop is termed as Trim]
Basics of Image Editing

- Changing the Image Orientation

The angle of the Image can be rotated by any angle as required. We can even Mirror the image horizontally or vertically as per our need.

- Open Krita
- File – Open [Open an Image]
- Image Menu – Rotate
- Image Menu – Mirror Image Horizontally
- Image Menu – Mirror Image Vertically
• **Transforming, Perspective and Warping Images.**

The image can be applied transformations, adjust the Perspective and Warp Images. When we take a photograph, it may or may not fit the area in which we want, hence, we need to manipulate the transformations i.e. Move, Rotate and Scale the image to fit our requirement.

• Open Krita
• File – Open [Open an Image]
• Choose the Transform tool
• Tool Options –
• We have the options required for editing.

![Screenshot]

- Free
- Perspective
- Warp
- Cage
- Liquify
• Choose each tool and click and drag on the specific area of the image to view the result.

• **Cleaning a damaged area using Clone stamp**

There are situations when we take a photograph or scan an image, we get some portions which seem to be not required at the edges. We can select the portion only which we want and remove the remaining areas using the Crop Tool.

• Open Krita
• File – Open [Open an Image with some stain marks]

[Image Composition by the Author]

• Our motive is to clean the stained areas of the Image
• Choose Brush Tool

• Brush Settings – Clone Tool

• You will be able to see a green marker
• Hold Control and Click on a nice area
• Leave the Control and Click on the Affected area
Repeat the process as many times as required to clean the affected area.

The output will be as follows.

Blurring the Images and Reducing Noise

There are occasions where we get noise in a photograph due to inadequate lighting. In that case we have options in computer software to reduce the Noise using the Blur technique.

- Open Krita
- File – Open [Open an Image with some stain marks]
- Filter Menu – Blur
• Or Filter Menu – Enhance – Gaussian Noise Reduction

  ![Screenshot]

• Any of the above two can be applied for Noise reduction.

• Creating Artificial Lighting

  When we take a photograph, it comes with the natural lighting of the scene. There are some in-built capabilities in Camera like Flash etc. which can correct the light of the image to a certain extent. But there are cases where the default settings of the camera output do not suit our requirement. So, we want to increase the brightness of a particular area using the artificial lighting which can be added using software’s. In software’s like Photoshop we have the option in the Filter Menu – Render – Lighting Effects and Lens flare. We can manually draw using the brush tool and create the effect of an artificial light.

• Application of Filters

  Photographs and images are edited and enhanced using the application of Filters in software’s like Krita, Photoshop etc.

  • Open Krita
  • File – Open [Open an Image]
Digital Imaging

- Filter Menu – Apply and Practice and all options one by one to view the changes in the image.
- The options in Filter Menu are experimental and developed by the coding experts in a random manner to create abstract form of images. Some output from the options can be explained in particular whereas other are creative forms which do not have exact meanings.

**Colour Adjustments**

Colour Adjustment or Colour Correction is an important part of Image Editing. When we take a photograph it comes with the default settings. But we can enhance and change the colour settings using software’s. We can take a photograph in day time and convert it to a theme where it would look like it has been taken in night or a cloudy atmosphere.

- Open Krita
- File – Open [Open an Image]

- Filter Menu – Adjust – [Options]
- All the options under the Filter Menu – Adjust will change the colour settings of the image. The user has to apply the effects one by one and decide which suits his requirement.
• **Auto Contrast** – It automatically sets the contrast of the image as per the default settings of the Software for an image.

• **Brightness / Contrast Curve** – It will change the brightness and contrast of the image as done in case of a Television or a Computer Monitor.

The line has to be adjusted by moving up or down for the effect.

• **Burn** – It will Burn the image or create a dark shade of an image.
Shadows indicate the dark shades of an image, Midtones indicates the mid shades of an image and Highlights indicate the bright shades of an image.

We have to select them one by one and change the Exposure. The preview icon will display the output before pressing the OK Button. After getting satisfied with the output one can click OK.

- **Colour Balance** – It will change the colour balance by changing the options.
- **Desaturate** – It will convert the image into Black and white shade.

![Screenshot](filter-desaturate-krita.png)

- **Dodge** – It will convert to extreme brightness or to extreme darkness.

![Screenshot](filter-dodge-krita.png)

- **HSV Adjustment** – It is a type of colour adjustment which includes Hue, Saturation and Value.

  **Hue** – Hue stands for the spectrum of colours.

  **Saturation** – Saturation stands for the colour depth from main colour to its respective black and white shade.

  **Value** – The change of value of the colour from its white coordinate to main colour and back to its black coordinate.
- **Invert** – It will reverse the colour channels of the image hence turning the image into a negative kind of effect.
- **Levels** – It is used to change the lighting theme of the image.

There are three markers for adjustment:

1. Shadows
2. Midtones
3. Highlights

- **Colour Adjustment Curves** – The colours can be adjusted by choosing the Channels and the curve in the panel.
Basics of Image Editing

- **Threshold** – It will convert the colour into a Single colour mode where we will have only black as the key colour with white background. This is done for creating an outline sketch of an image.
Masking

Masking is the effect of placing a photo inside a particular shape. It is done using the help of software’s like Krita, Photoshop etc. This kind of effects is basically used in commercially done designs. In this case we see an image wrapped inside a Circle, Rectangle, a Love shape, Text etc. This adds to the creative design aspect of the designer. This kind of effect appeals to the consumer or viewer.

- Open any Image Editing Software.
- Select the Image which you want to warp inside a mask.
- Create a mask i.e. Shape, Text, Hand drawn design etc.

There are enormous examples of this kind of masking effects in Leaflets, brochures, catalogues etc. Any image with a different structure creates a visual appeal in the minds of the people. They are extraordinary than a rectangle shaped image. It conveys the message of two things at a same time. One is the Image and the other the shape or text in which the image is display. Again these masked images are supported by outlines, shadows etc. to create a more depth effect. It is a composition of effects which makes an image attractive.
Unit Summary

In this Unit you have learnt about the process of converting paper content into a digital content via scanning. You learnt some of the options related to Camera and resolution. We came to know about the theory of Image Editing as well as the Practical of some of the image editing using open source software Krita.

You can also do colour corrections, colour adjustments and masking of an image. These tips and techniques will help you to use the software effectively. The motive of learning an image editing software has to be clear before entering into practical. This will help in knowing the applicability of the functions of the software in projects or commercial works.

Assignment

- Scan a newspaper advertisement to Computer.
- Make your signature in a paper and scan it to Computer.
- Take 10 photographs using Digital Camera or Mobile Camera and transfer it to computer.
- Open an Image in Krita and use the Image Editing options. Save each section in a new file.
- Write all the above Assignments in DVD using Nero with the video output, raw source files of the software used and submit it to the University.
Resources

Digital Image Scanning and Editing Basics
http://scantips.com/

Image Masking

Image Colour Corrections for Cinemascope view
Unit 4

Raster, Vector Graphics & Typography

Introduction

Graphics is being used in each and every segment of work in almost all the industries. It is not restricted to Design segment only or Computers only. Graphics today are mostly generated out of Smartphone camera. Smartphone phone cameras come with the resolution of 8x, 12x which is equivalent to a quality of Digital Camera few years ago.

Graphics are categorized into two segments, Raster Graphics and Vector Graphics. Whenever we see an image or photograph it consists of photographs, shapes, effects etc. All of the photograph contents are Raster Graphics which are captured using Cameras. The shape content may be Raster or Vector depending upon the software used for creating of the content.

Typography has grown leaps and bounds in the digital age. Typography is referred to the style of writing or handwriting of a particular person. People were appreciated for their good, neat and clean handwriting, but now-a-days handwriting is no more seen as a barrier for people. All the handwritten matters are replaced by Computer Fonts. There was a time where letter styling was the property of a manual artist who uses his skill and knowledge of pencil art to create a design of a text. In digital age, it is called Fonts. Fonts are designed and created by artist once and it can be used in all the software’s. Any computer user can create content using beautiful typographical effect irrespective of his/her handwriting.
Outcomes

Upon completion of this unit you will be able to:

- **Differentiate** between Raster and Vector Graphics.
- **Describe** the use of resolution in a Printing Unit.
- **Create** Vector design using software’s.
- **State** process of applying Typography via Computer Fonts in creating Designs.
- **Use** software’s used in creating Raster and Vector Graphics.

Terminology

**DPI:** Dots per Inch. This is the resolution measuring unit of a Design. The resolution is required in Scanning an image, Capturing an image from camera, Printing use etc.

**Raster Graphics or Bitmap Graphics:** An image which is composed of grid and pixels.

**Vector Graphics:** A shape which is created from mathematical calculations.

**Typography:** The style of representing a text in various design forms.

**Font:** The word used in Computer for Typography for representing Text.
Raster Graphics

A Raster Graphics is an image made up of rectangular grids which are called pixels in computer language. Whenever we see an image or any photograph on a digital format it is a combination of pixels. It is called a Bitmap Image or Bitmap Graphics.

The word Raster is originated from Latin word “rostrum” which means a rake. A monitor of CRT (Cathode Ray Tube) presents an image each line magnetically which is steered by an electron beam which is focused.

The pixel contains the position information and the colour information. When all the information is combined together in a Digital Platform, it generates the image. It is stored in the format of a Dot Matrix.

The files of Raster graphics format are stored in various formats. Some of the mostly popularly used formats are BMP, JPG, TGA, TIFF, PNG etc.

A Pictorial example of a Raster Graphics technically can be represented as follows:
Size of the Image:

The measuring unit of a computer screen is pixel. Suppose we taken an image of 400 pixels in width and 300 pixels in height. The total number of pixels used in the file would be 400 x 300 = 12,000 pixels.

Each pixel is identified by its x axis and y axis position. Suppose we take an example of a point (100,200). It will be identified by its position.

Colour of the Image

The colours used in digital format come in two modes. One is RGB Mode - Red, Green and Blue. The other mode is CMYK – Cyan, Magenta, Yellow and Black.

The RGB mode is used for on-screen presentation formats like Monitor, Television, and Mobile etc. The CMYK mode is used for printing formats on paper, flex etc. Every colour has its own RGB and CMYK coordinates. The following image demonstrates a colour coordinate.

[Screenshot]

When we choose a colour blue, we have its RGB coordinates as well as its corresponding CMYK coordinates.
Resolution

Resolution is a very important factor which determines the quality of the Image. The Digital cameras and the scanner plays a big role in bring a photograph into digital shape. The quality of cameras and scanner define the clarity of an image. The resolution of a computer screen starts from 640 x 480 pixels, 1024 x 768 pixels etc. Likewise all the images require to be presented in particular pixel format. Some of the examples of pixel sizes used in different industry formats are as follows:

<table>
<thead>
<tr>
<th>For Monitor Display</th>
<th>640 x 480 pixels, 800 x 600 pixels, 1024 x 768 pixels etc.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>The size of the pixels varies according to the size of the monitor.</td>
</tr>
<tr>
<td></td>
<td>PAL Format – Phase Alternate Line – 720 x 576 pixels in the display ratio of 4:3.</td>
</tr>
<tr>
<td></td>
<td>HD Format – High Definition -1920 x 1080 Pixels in the display ratio of 16:9.</td>
</tr>
<tr>
<td>For Print formats</td>
<td>The Resolution plays a vital role in print formats where the pixel size has to be related with the measuring unit of print (cm, mm, inches) etc.</td>
</tr>
<tr>
<td></td>
<td>Resolution for Print for matters which required to be read from near the eyes like magazine, brochures etc. is 300 pixels/inch.</td>
</tr>
<tr>
<td></td>
<td>If we need to print an image matter of 5 inch x 4 inch, then the pixel size should be (5 x 300 = 1500 pixels) x (4 x 300 = 1200 pixels). The size of the image captured depends upon camera like 8x, 12 x etc.</td>
</tr>
<tr>
<td></td>
<td>Resolution for print of matters which required to be read from a distance like</td>
</tr>
</tbody>
</table>
The resolution for big size printing is less due to the following reasons:

- The matters required for a big size print are basically larger in size and are to be viewed from a distance. The square pixel dots will exist but will not be affecting the person’s view because he watches the subject from a distance. But in case of magazines, product catalogues etc. the person views from nearby the eyes so the less pixel resolution images get distorted and is clearly displayed as a poor quality image. This does not happen in case of a hoarding or big banner.

- The capacity of a computer system is a hurdle for big pixel sized image. A 10’ image with a 300 pixel/inch resolution will result in a size which may hand the computer system or be very slow in operation. It is practically impossible to do mass work with 300 pixel/inch resolution for huge size prints.

- The process of transmitting data from the computer to printer will take more time according to the size of the file. The time taken for transmitting a 300 pixel/inch file will be relatively much more than a 72 to 100 pixel/inch file. Even though a designer has designed a hoarding in a 300 pixel/inch resolution, the flex operator will reduce it to 72 to 100 pixel/inch and process the printing.

- The ink consumed in printing for a big resolution file will be also relatively more. So, for this purpose also the printer reduces the resolution for higher size prints.

**Scaling capability as a demerit of Raster Graphics**

The only one demerit of Raster Graphics is its inability to scale maintaining the quality of an Image. Whenever we scale an
image beyond its 100% capacity it will get distorted. However, we have software’s today which use blur technology to reduce the rectangular patch output which used to occur in older Raster Graphic Editors.

Scalability is an issue when we use images by choice from varieties of images from internet. Because, in internet we may find an image with the content we like, but the resolution of the image may not be equal to the size in which we want to fit. In that case, we scale up the image using software tools which result in distortion up to the extent in which it is scaled.

But, when we know the content we want, then we choose our camera accordingly and hunt for the images in various places. In that case, we won’t require scaling because we have prepared our hardware (camera) according to the content of the software. For example, we need an image for advertisement in a newspaper of 5 cm x 5 cm. We can capture the image with an 8x camera. But if we want an image to be used in a hoarding of 20’ x 10’ then we have to use a high end camera with a high optical zoom capacity and around 12 to 20 megapixels resolution.

So, scaling is a demerit for only those who use readymade images with low resolution. Some images may be up to the mark and some may not. But when a designer hires a professional photographer and conveys his requirement in form of size and quality, then the image need not be scaled beyond 100%, hence achieving the best content.

Vector Graphics

Vector Graphics is derived out of mathematical calculations. It stores the information in form of x axis and y axis of the end points or nodes of the shape. Basically, the shape related contents and text related contents are done using vector software’s. The end points are termed as node, point, vertex etc. in different vector software’s. The end point is supported by handles or tangents for smoothness purpose.

The following example demonstrates a vector shape:

- Line
In vector software, in case of line, it is defined by its starting point and ending point coordinates. When we create a file in vector software, make and line and save it, it will save the coordinates of two points. It does not matter about the length of the line. It is automatically generated when we open the file in the vector software again. This also helps in reducing the size of the file without reducing the content. This is also called compression of data in terms of computer language.

- **Rectangle, Polyline**

- **Smooth lines**
The above design in a vector shape is called handles or tangents. It creates the smoothness of a vector shape without increasing the number of points. In old process, if we needed a smooth shape then we have to create more nodes or points.

However, when we scale the shape the outline will be displayed as straight lines.

Properties of Vector Graphics

Scalability

The design produced in vector graphics is scalable up to infinite extents without any distortion. This happens because the end points or curves are stored in the memory. For instance, if we take a triangle of 5 cm in width and 5 cm in height, it has got 3 end points. If we take a triangle of 20 cm in width and 20 cm in height also, it has also got 3 end points. So size is not a matter of vector graphics because the in-between gap of end point is instantly generated by the software as soon as you open the file. Hence, scalability is a very big advantage for designers. A designer creates a logo in vector graphics because a logo needs to be printed on a small envelope as well as on a big hoarding. A vector design solves both the purposes.

Minimal Space Consumption

Vector Data is hugely used in Web design world where the memory of the file plays a big role in fast downloading and uploading of the data. Most of the website today is powered by Flash content which use Vector graphics for its content. The most important thing is that quality is not compromised for space
reduction. The quality of vector graphics is very much crystal clear in any size which it is produced.

**High Processing Speed**

The speed of producing or processing the data is very higher. It happens so due to its less space consumption. The modifications done to a vector graphic design is property wise i.e. Move, Rotate, Scale, Stroke Width, Fill colour, Scale colour etc. All these properties are placed in vector based software in a systematic way which can be changed even at a click at any time required.

Apart from all its advantages, Vector Graphics cannot be used in Photograph in high detail. Vector Graphics are only for shape related and text related contents. Images can be applied in vector graphic software along with vector shapes, but when we zoom into the subject, the images will get distorted, but the shape is not. So, one has to be clear in vector graphic software that whatever shapes you create in Vector Graphic software is scalable but the image pasted into a vector graphic software is not scalable without distortion if it extend beyond its 100% pixel size.

### Properties of Vector Design

<table>
<thead>
<tr>
<th>Outline Shape</th>
<th>Outline Colour / Stroke Colour</th>
<th>Stroke Style</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Outline Shape" /></td>
<td><img src="image" alt="Outline Colour" /></td>
<td><img src="image" alt="Stroke Style" /></td>
</tr>
</tbody>
</table>

- **Outline Shape**: Shows the basic shape created in vector graphic software.
- **Outline Colour / Stroke Colour**: Represents the colour used for the outline or stroke.
- **Stroke Style**: Various options for stroke style including Dashes, Markers, Join, Cap, and Order.

[Created by the Author]
Software used in Vector Graphics

<table>
<thead>
<tr>
<th>Open Source Software</th>
<th>Commercial Software</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inkscape – for Design</td>
<td>CorelDRAW – for Design</td>
</tr>
<tr>
<td>Vectr – for Design</td>
<td>Illustrator – for Design</td>
</tr>
<tr>
<td>Synfig Studio – for Animation</td>
<td>Adobe Flash – for Animation</td>
</tr>
<tr>
<td>Blender – for 3D</td>
<td>Autodesk 3ds Max – for 3D</td>
</tr>
</tbody>
</table>

Vector Graphics in various Industries

**Game Industry**

Vector Graphics are used for creating Game designs. There are thousands of games done using Flash Animation and Graphics which use Vector Shapes. Early day Arcade games were done using Vector Graphics.

**Web Design Industry**

Animated Flash banners are extensively used in web pages to make the webpage more lively and attractive. It helps to deliver with less memory and high quality output. Advertisements on web use flash because it is animated with excellent quality and a moving information using images give more and effective information than a still text.

**Cartoon Industry**

All the cartoon animations, cartoon films and cartoon serials are done using vector graphics. In olden days, each and every frame was hand drawn and painted by the artists, but today all the work is done using Vector graphic animation software’s.

**3D Industry**
All the 3D software’s are vector graphics. Software’s like Blender, 3dsMax, Maya etc. used for creating 3D contents for all purposes are vector based. It combines the vector capability with 3D space. Art oriented design is now being armed with scientific coding and the artists are able to create new and attractive heights in design.

### Difference between Raster Graphics and Vector Graphics

<table>
<thead>
<tr>
<th>Raster Graphics</th>
<th>Vector Graphics</th>
</tr>
</thead>
<tbody>
<tr>
<td>It is a combination of rectangular grids or pixels.</td>
<td>It is generated through mathematical calculation.</td>
</tr>
<tr>
<td>Each pixel consists of position information and colour information.</td>
<td>It consists of node/vertex/point information, shape properties like stroke colour, fill colour, stroke width, stroke style etc.</td>
</tr>
<tr>
<td>Any photo related subject is a Raster Graphics</td>
<td>Any shape related subject created using Vector Graphic Software is Vector Graphics.</td>
</tr>
<tr>
<td>Pixels get distorted on enlargement of the image beyond 100%.</td>
<td>Pixels do not get distorted on enlargement up to infinity.</td>
</tr>
<tr>
<td>The bigger is the size of the image, higher is the memory.</td>
<td>The memory depends on the curves, not on the size of the shape.</td>
</tr>
</tbody>
</table>

### Typography

Typography is the art of displaying text in a most appealing and attractive manner. It is a subject of art where different styles of text are developed and used. It includes all the properties of a text like its size, word spacing, word stretching or squeezing, line
spacing, paragraph spacing etc. Typography is used differently for different purposes like official letters have a normal look, letters of weddings written on walls are colourful and stylish, letters of advertisements are presented in a different way. So for every occasion the style of writing is different.

With the advancement of computer and graphics, fonts were developed which created a great revolution in the text design category. Thousands of fonts were developed and now a user has to only choose from the varieties available. A normal person need not hire an artist to create a stylish text. It is available in computer and can be used in almost all the software’s used.

Typography is derived from Greek work “typos” which means an impression and “graphia” which means writing. The glimpses of varieties of typographical outcomes can be seen in the following outputs:

- Advertisements
- Headlines of Magazines
- Hoardings
- Newspaper articles
- Leaflets
- Product catalogues
- Book Covers
- Logo Designs
- Grafitti
- Motion Pictures
- Architectural designs
- Old Age Cave

A great typographical design depends upon the choice of layout, pattern of grid, the combination of colours etc. A creative design can become a good, great or bad design according to the composition of all the properties of typography

**Properties of Typography**

**Size**

The font size is a very important section in typography. The size of a text is given considering its usage. For example, heading of a book, heading of a chapter, normal body of the text, text required
for poster/hoardings of huge size etc. Point is the basic measuring system used in all software’s to measure the size of the font. One point is equal to 1/72 of an inch. Size is related to the readability of a subject either from a nearby or far distance.

**Leading**

The distance between two lines is called leading. The distance between lines make the text look more readable and resemble a neat outlook. In the old days when text was done using metal typesetting, lead strips were used for separate one line from the other. Hence, it is termed as leading. As per standards, the distance between two lines should be somewhere between 1.25 to 1.50 times of the size of the text.

**Tracking and Kerning**

Kerning is the use of space between two alphabets. There are certain alphabets like “A” and “V”. When these two alphabets are placed one after another (AV) in any word then the adjacent lines should remain parallel for a smooth flow of the writing. In these types of cases, kerning is used. Tracking is used at a place where the spacing between two characters is exactly same whatever may be shape of the alphabet.

**Text Box**

Text Boxes are used for perfect placement of the letters according to our required place. In software’s like MS Word, the letters or words are typed one after another. This text box helps to insert text in between a blank space at our convenience. The text used in the box may be of same font as other or may vary also as per our requirement.

This is a TEXT BOX. I can place it anywhere.

**Hierarchy and Scale**

When we prepare a document, there are cases where we have a heading and lots of sub headings under each category. This is distinguished by a hierarchy of scale where the top title resembles a higher size and the sub titles go on decreasing in size till the
body of the text. This gives a decent view to the reader to distinguish the main points from each other.

**ASIA**

**INDIA**

**ODISHA**

**BHUBANESWAR**

**Dropcap**

This type of typographical setting is used in Newspaper articles. In this case, the first or two alphabets or a word in the beginning resembles a big giant size which is followed by the normal text. These are the designs used as a signature style for different type of textual works.

**B – Bold, I- Italic, U-Underline**

These three form the basics of computer fonts in all the software’s ranging from an ordinary WordPad to the latest version of Microsoft Office. A particular set of words can be selected individually and can be assigned Bold, Italic or Underline or any of the combination together. They are like button switches, which activates on one click on it and again deactivates on the other click as desired by the user.

**Glyphs**

Glyphs are the symbolic representation of a font. Now-a-days font is not limited to alphabets, numbers and symbols. Fonts are used to demonstrate shape, designs, symbols and vector shapes as well. There are font categories of webding, winding 1, winding 2 etc. where we see designs in place of text. Glyphs represent the building block of text. Even an alphabet is a shape if it is not viewed as an alphabet. So if a shape can represent an alphabet then it can represent any type of vector shape or symbol also. So letters, shapes and symbols used in a font are uniquely termed as Glyphs.

**Alignment**
Alignment is the basic of a document. The Alignment comprises of Horizontal Category of Left, Center, The example of alignment in a document is as follows:

<table>
<thead>
<tr>
<th>Alignment Left</th>
<th>Alignment Center</th>
<th>Alignment Right</th>
</tr>
</thead>
<tbody>
<tr>
<td>This is for your kind information we are studying the unit of Odisha State Open University. This head office of the University is located in Sambalpur.</td>
<td>This is for your kind information we are studying the unit of Odisha State Open University. This head office of the University is located in Sambalpur.</td>
<td>This is for your kind information we are studying the unit of Odisha State Open University. This head office of the University is located in Sambalpur.</td>
</tr>
</tbody>
</table>

**Alignment Justify**

This is for your kind information we are studying the unit of Odisha State Open University. This head office of the University is located in Sambalpur.

The Vertical Alignment comprises of Top, Vertical Center and Bottom.

<table>
<thead>
<tr>
<th>Vertical Top</th>
<th>Vertical Center</th>
<th>Vertical Bottom</th>
</tr>
</thead>
<tbody>
<tr>
<td>I AM IN THE TOP</td>
<td>I AM IN THE CENTER</td>
<td>I AM IN THE BOTTOM</td>
</tr>
</tbody>
</table>

**Margins**

Whenever we create a document we have the decency to leave margins from top, bottom, left and right. The blank spacing has to be determined and judged by the user depending upon the subject he/she is writing upon.

Apart from the above, there are lots of min aspects about typography which keeps adding on and making fonts more and more attractive. The features of typography are an art combined with science. And the combination of art and science has always created wonderful results.
Steps of Creating Typography

Creating a Rough Imagination

The first step is the creativity. One has to roughly think of a writing style on a piece of paper. Lots of brainstorming has to be made to look the design attractive.

Technical drawing of Typography

After the first imaginary step, the next level is to create margins or guidelines to prepare the text. It can be of any form. When we were kids, we had a handwriting copy with margins. This helped us to learn handwriting and write with correct proportions. In the same way a new typography or font requires guidelines to draw.

In the above image, the extension of “g” required an extra support in the bottom. This happens in case of “y”, “p”, “q”, etc. Hence a detailed plan has to be made to bring the imagined typography into perfect and accurate reality.

Vectorisation in Vector Software

The handmade design is scanned and taken into vector software and the outlines are traced to form a final neat and clean output.
[Created by the Author]
Unit summary

In this Unit we have learnt about the differentiation between Raster Graphics and Vector Graphics. We came to know the place where we have to use Raster Graphics and where we have to use Vector. We also learnt about the available software’s in the market to learn Raster and Vector Graphics. We learnt about the features of Typography and the process to create a new typography style.

Assignment

- Create your own font with your name as the design style in the steps as mentioned manually. For e.g. Rajesh, Rajesh etc.
- Write all the above Assignments in DVD using Nero with the video output, raw source files of the software used and submit it to the University.

Assessment

- Name the three Raster Graphic software’s.
- List three Vector Graphic Software’s.
- Differentiate between Raster and Vector Graphics in a multiple table format.
- Write down 3 formats to store a Bitmap graphics.

Resources

- Raster Graphics
  https://en.wikipedia.org/wiki/Raster_graphics
  https://www.techopedia.com/definition/9098/raster-graphics
Vector Graphics
https://en.wikipedia.org/wiki/Vector_graphics
http://searchwindevelopment.techtarget.com/definition/vector-graphics

Typography
https://en.wikipedia.org/wiki/Typography
http://www.creativebloq.com/typography/what-is-typography-123652