

Participant Handbook

Sector
MEDIA AND ENTERTAINMENT

Sub-Sector
Film, Television, Advertising

Occupation
Camera Operation

Reference ID: MES/ Q 0904, Version 1.0
NSQF Level 4



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Still Photographer

This book is sponsored by Media and Entertainment

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Shri Narendra Modi

Prime Minister of India

“

Skilling is building a better India.
If we have to move India towards
development then Skill Development
should be our mission.

”



Certificate

COMPLIANCE TO QUALIFICATION PACK – NATIONAL OCCUPATIONAL STANDARDS

is hereby issued by the

Media & Entertainment Skill Council

for

SKILLING CONTENT : PARTICIPANT HANDBOOK

Complying to National Occupational Standards of

Job Role/ Qualification Pack: **"Still Photographer"** QP No. **"MES/Q 0904, NSQF Level 4"**

Date of Issuance:

Valid up to*: March 30th, 2027

*Valid up to the next review date of the Qualification Pack or the
'Valid up to' date mentioned above (whichever is earlier)

Authorised Signatory
(Media & Entertainment Skill Council)

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The preparation of this manual would not have been possible without the Media and Entertainment Industry’s support. Industry feedback has been extremely encouraging from inception to conclusion and it is with their input that we have tried to bridge the skill gaps existing today in the industry.

This participant manual is dedicated to the aspiring youth who desire to achieve special skills which will be a lifelong asset for their future endeavours.

About this Book

This book is designed for up grading the knowledge and basic skills to take up the job of 'Still Photographer' in 'Media and Entertainment' sector. All the activities carried out by a still photographer are covered in this course. Upon successful completion of this course, the candidate will be eligible to work as Still Photographer.

This Participant Handbook is designed to enable training for the specific Qualification Pack (QP). Each National Occupational (NOS) is covered across Unit/s.

Key Learning Objectives for the specific NOS mark the beginning of the Unit/s for that NOS.

- Use of photographic equipment, technology, camera techniques
- Produce still Images
- Apply drone techniques for still photography
- Handle digital image
- Develop and maintain portfolio
- Maintain Workplace Health & Safety

Symbols Used



Key Learning
Outcomes



Steps



Time



Tips



Notes



Unit
Objectives



Exercise



1. Introduction

Unit 1.1 - Introduction to the Media and Entertainment

Unit 1.2 –Duties and Responsibilities of a Still
Photographer



Key Learning Outcomes



At the end of this module, you will be able to:

1. Explain the key features of the Media and Entertainment sector.
2. Discuss various processes and products of Media & Entertainment sector.
3. Learn about the role of Still Photographer in industry.
4. Identify the minimum requirement to become a certified Still Photographer.
5. Describe the work area of Still Photographer.
6. Identify the opportunities available for Still Photographer.

UNIT 1.1: Introduction to Media & Entertainment

Unit Objectives

At the end of this unit, you will be able to:

1. Describe the media and entertainment industry in India
2. Describe the growth expected in the media & entertainment industry
3. Explain the various products and processes of the industry
4. Identify some keywords used in the industry

1.1.1 Media and Entertainment Sector in India

The Indian media and entertainment (M&E) sector is one of the biggest in the world. It is placed as 14th largest in the world. This sector is 1.7% of Indian GDP and expected to be 2.2% of GDP with INR 4.5 lakh crores in 2022. The sector employs 9.3% of the workforce of our country and we are expecting it to be 17% till the end of 2023.

From 2014 to 2018 Media and Entertainment sector has grown by approximately 11 percent CAGR which makes Media and Entertainment sector INR 1.43 trillion industry. It is estimated that Indian Media and Entertainment market will flourish to CAGR of 13.1% in FY 18-23 reaching at INR 2.66 trillion. The industrial performance of M&E sector is given in next figure.

Overall industry size (INR billion)	FY14	FY15	FY16	FY17	FY18	Growth in FY18 over FY17
TV	433.7	489.9	551.7	595.3	651.9	9.5%
Print	248.2	268.4	288.4	308.4	318.9	3.4%
Films	126.4	126.9	137.1	145.0	158.9	9.6%
Digital advertising	32.5	47.0	64.9	86.2	116.3	35.0%
Animation and VFX	41.0	46.5	53.2	62.3	73.9	18.6%
Gaming	20.3	24.3	27.6	32.4	43.8	35.1%
OOH	19.9	22.3	25.5	28.6	32.0	11.9%
Radio	17.2	19.8	22.7	24.0	25.9	7.9%
Music	8.5	10.2	11.2	12.6	14.4	14.7%
Total	947.6	1,066.1	1,182.3	1,294.7	1,436.0	10.9%

Source: KPMG in India analysis, 2018 based on primary and secondary research

Figure 1.1. 1 Revenue of M&E Industry

In 2018, digital advertising business grew 35% as compared to 2017. Another high growth sub-sector is Gaming which grew by 35.1% in FY 2018 as compared to FY 2017. The projected growth of industry for FY 2018 to 2023 is given in next figure.

Overall industry size (INR billion)	FY19	FY20	FY21	FY22	FY23	FY18-23 CAGR%
TV	746.4	855.3	959.1	1,066.6	1,179.6	12.6%
Print	338.5	357.8	378.6	400.8	424.9	5.9%
Films	171.7	185.4	199.3	213.9	228.8	7.6%
Digital advertising	154.7	202.6	263.4	339.8	435.0	30.2%
Animation and VFX	86.7	100.9	116.8	133.5	151.8	15.5%
Gaming	55.4	70.9	84.7	103.3	118.8	22.1%
OOH	35.7	38.6	42.0	45.7	49.7	9.2%
Radio	28.3	31.8	34.8	38.8	42.1	10.2%
Music	16.6	19.1	22.1	25.6	29.6	15.5%
Total	1,633.9	1,862.5	2,100.7	2,368.0	2,660.2	13.1%

Figure 1.1. 2 Projected growth of M&E Sector

India is one of the largest broadcasters in the world with approximately 800 TV channels, 242 FM channels and more than 100 community radio networks working at present. Bollywood, the Indian film industry is the largest producer of films around the globe with 400 production and corporate houses involved.

The Government of India keeps on pushing the Media and Entertainment industry by launching various schemes such as digitizing the cable TV to fill greater institutional funding, raising the foreign investment from 74 per cent to 100 per cent in cable and DTH satellite platforms. Government has also allotted industry status to the film industry for easy finance.

1.1.2 Employability in Media and Entertainment Sector

The Media & Entertainment sector employs 11-12 lakh people directly (as per 2017 reports) and if we consider indirect employments as well then count goes to 35-40 lakh people. The Media sector is highly dependent on advertising revenues and performance of Industry for economy outlook. This sector was having 4 lakhs workforce in 2013 and we expect it to reach 13 lakhs by 2022 which means employing 9 lakhs of additional employment in the period of 2013-22.

- 1/4th of the people employed in Media and Entertainment sector are from film industry.
- The Media & Entertainment sector has about 4.60 lakhs people employed, and is projected to grow at the rate of 13 % to reach 7.5 lakhs by 2017.
- The Media and Entertainment sector which is expected to grow at rate of 13.1 % by 2023 which means to reach 2.7 lakh crore of business for skilled professionals.
- Film & Television sector has a major portion of the workforce employed in media and entertainment. Digitization activities being done in both films and television arena are the key player for this demand.

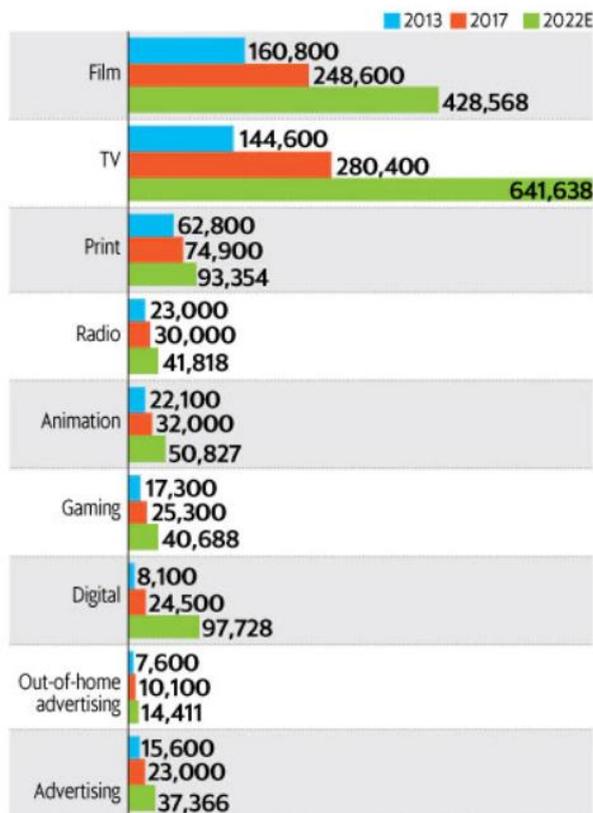
Workforce in the sector

Figure 1.1. 3 Employments in Different Sectors of Media and Entertainment

1.1.3 Evolution of Media and Entertainment Sector

- Radio broadcasting came by Radio Club of Bombay in 1923 in India under the British rule.
- All India Radio (AIR), one of the largest radio networks in the world, started working in 1936.
- Doordarshan (DD) started the era of TV on Sept 15, 1959 in India.
- The Indian economy was closed until 1990, and no private player was allowed to enter the space in the 1990s, the Indian film industry was completely fragmented.
- BBC launched its national service in 1995.
- In 1999, the government allowed private Indian Firms to set up their FM stations on a license fee basis.
- In May 2000, as part of Phase I of radio broadcast licensing, the auction was conducted and 37 licenses were issued, out of which 21 are operational in 14 cities.
- Approximately 1000 TV channels and 1052 radio stations are expected to be working by 2022.

1.1.4 Major Subsector and Segments

- The Indian M&E industry comprises several sub-sectors, such as television, radio, print media (including newspapers and magazines), films, animation and visual effects (VFX), Sound & Music, Amusement & Theme Parks, Art & Culture, and Event Management/Live Performances.
- Advertising industry is the major revenues generating part of the industry and the growth of the sector decides the overall growth of the industry.
- Although there is not much to export from this industry but imports have a considerable share in the economy like imports of newsprints, set-top boxes and antennae.

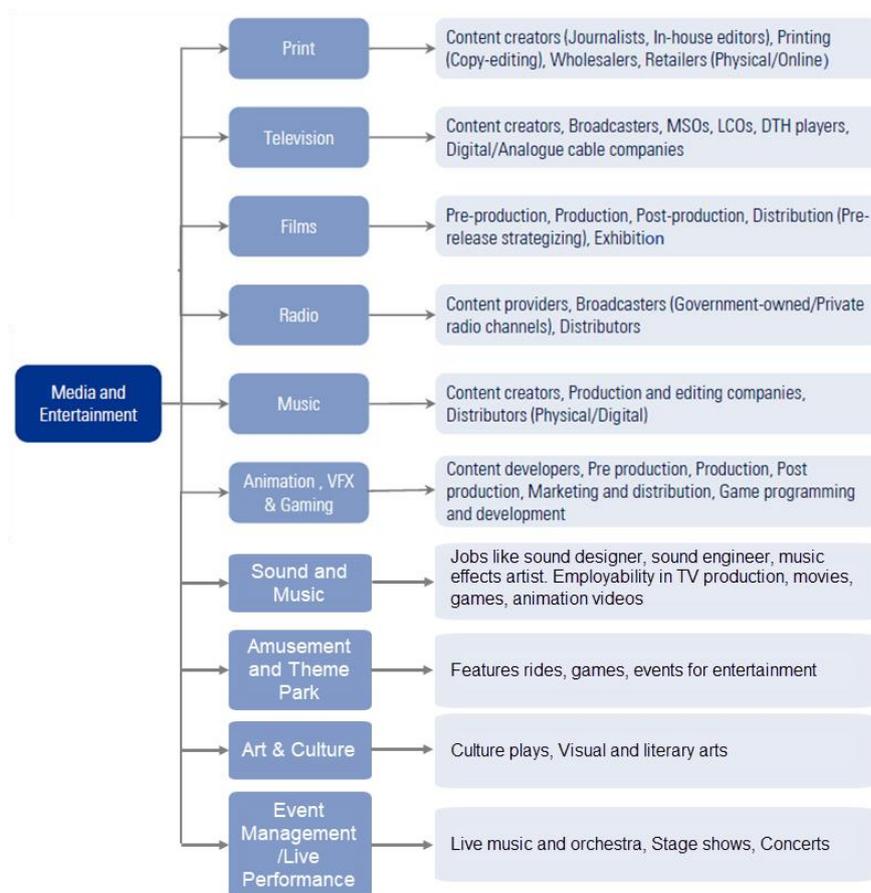


Figure 1.1. 4 Media and Entertainment Sector

- The industry is specific to cultural and ethnic backgrounds, and is organized around specific hubs that specialize in output for a given population segment. For example, the Mumbai film industry (Bollywood) is a key film hub in the country. A similar hub also exists in South India.

Growth rate by sub-sector

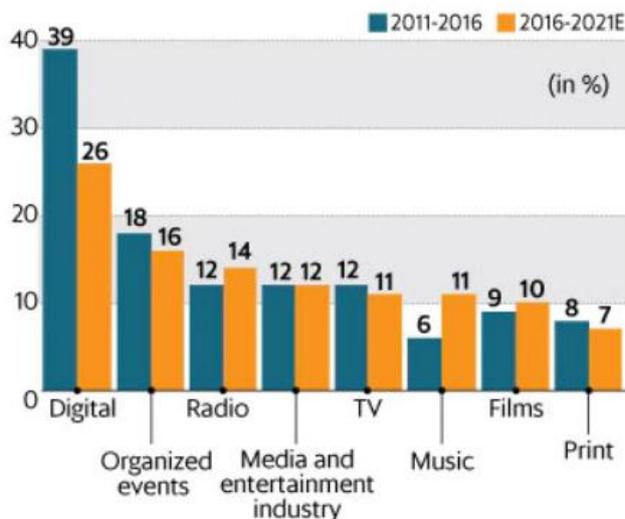


Figure 1.1. 5 Media and Entertainment Sector Growth Rates expected in 2016-2021

1.1.5 General Key Terms used in this Book

Animatic: A series of images edited together with dialogues and sound is called animatic.

Compositing: Combining layers of images/elements into a single frame is called compositing.

Composition: Positioning character with respect to the background and camera is called composition.

Creative Brief: A document that captures the key questions for the production including the vision, objective of the target audience, budgets, project, milestones, timelines and stakeholders is called creative brief.

Key Frame: Key poses that start and end poses for a particular animation sequence are called key frames.

Modeling: Creation of three-dimensional models for animation using a specialized software is called modelling.

Rendering: Conversion of three-dimensional models into two-dimensional images with 3D effects is called rendering.

Rigging: Process of adding joints to a static three-dimensional model to aid movement during posing is called rigging.

2D animation: Moving pictures in a two-dimensional environment is called 2D animation like in computerized animation software.

3D animation: 2D animation with depth is called 3D animation. Examples include video games such as Halo and Madden Football.

Animation: Sequential play of various inter-related frames is called animation.

Anticipation: Anticipation are created through the preparation of an action.

Aspect Ratio: The width to height ratio of a tv picture is called aspect ratio.

Background Painting: An artwork done in the background of an animation is called background painting.

CGI (Computer Generated Imagery): Creation of Figures, settings, or other material in the frame using computer software is called CGI.

Clean-Up: The process of refining the rough artwork of 2D animation is called Clean-up.

Computer Animation: Any kind of animation created in computer is called computer animation.

Frame: one of a series of still transparent photographs on a strip of film used in making movies or animations.

Frame Rate: The rate of change of frames in an animation is called frame rate. It is measured in frames per second (fps).

Graphics Tablet: This is a device used to draw sketches.

Pixel: The smallest indivisible portion of an image is called pixel.

Raster: Rastering is the projections of various pixels on CRT screen to form an image.

Rotoscoping: Creation and manipulation of background images of an animation is called rotoscoping. This can be done manually as well as using computer software.

Title Cards: Title cards are also called FIR of an animation. Title cards give brief information about the animation.

Tween: The transition of one frame to another in animation is called tween.

Vector: Some of the artwork is created by vectors rather than pixels. This allows cleaner and smoother animation because images are displayed by mathematical equation solutions.

CEL: It is a cellulose sheet used to paint characters. In practice, it is now a day. plastic sheet in combination with the outline and coloring of a character, object, and/or special effect.

Exercise-1

Discuss the role of Media & Entertainment sector in India economy.

Exercise-2

Discuss the employability of various sub-sectors in Media & Entertainment Sector.

UNIT 1.2: Duties and Responsibilities of Still Photographer

Unit Objectives



At the end of this unit, you will be able to:

1. Learn about the role of Still Photographer in industry.
2. Identify the minimum requirement to become a certified Still Photographer.
3. Describe the work area of Still Photographer.
4. Identify the opportunities available for Still Photographer.

1.2.1 Introduction to Still Photographer Job Role

A Still photographer, is an artist with the camera using a blend of technical skills and an artistic eye to take pictures, who creates film stills, and still photographic images specifically intended for use in the marketing and publicity of feature films. Photographers can work as fine artists, wedding and event photographers, or sell their photos to commercial clients.



Figure 1.2.1 A still photographer taking photo

The person must be able to work under the supervision of sponsor, and must have the ability to plan and capture scene in sequence and motion. The role requires excellent communication skills and collaborative abilities. The photographers must be manual dexterity, physical mobility, and some physical strength/stamina, bravery to get the camera shot in risky situations with creativity and attention to detail.

To become a professional photographer, you must have good experience in professional photography and strong portfolio with great photo clicks. A still photographer finds opportunities in education industry and entertainment sector. Still photographers also work as freelancer in portraiture, event photography, or photojournalism.

1.2.2 Job Profile of Still Photographer

A still photographer performs following tasks in the industry:

- Identify the right kind of camera / Drone (motionless still photography) for the photography uses such as for film, marriage, or another event.
- Handle camera menus and settings in order to set relevant camera functions such as shutter speeds, aperture, white balance and focus.
- Handle lens types like Prime vs. zoom, wide angle, standard, telephoto, angle of view, covering power, focal length, format, Lens features, Changing lenses, Focal length.
- Use of camera accessories e.g., tripod, remote release, cable release, lens hood, filters digital (flash cards, hard drives), digital file formats (RAW, JPEG, TIFF) film (monochrome, colour, negative, transparency) film characteristics (speed, contrast, grain, resolution, colour balance, spectral sensitivity).
- Use exposure measurement devices e.g., TTL, hand held; lighting e.g., wavelength, colour temperature, reflection, refraction, absorption.
- Use of lighting equipment e.g., flash, continuous, fluorescent, reflectors, diffusers, screens, filling flash, motion blur, freezing movement, camera movements, panning, differential focus, depth of field etc.
- Recognise anatomy of a compact /DSLR / and mobile device camera.
- Recognise visual language e.g., composition, scale, framing, contrast, colour, shape, line, texture.
- Use exposure measurement methods e.g., reflective, incident, subject brightness range, spot and centre weighted, matrix, multi-zone, compensation.
- Analyses different camera framing methods: Extreme long shot, long shot, Full shot, medium shot, Close-up shot, Extreme close up, etc.
- Produces still images for different purpose like wedding ceremony, film shoots, and other events of importance.
- Produce still images to be used for Hair/Make up and Costume Continuity, Continuity by script supervisor, art department, cinematographer, Dance, Stunt and Direction department.
- Capturing series of still images used as visual account reflecting the progression of the work used as Pre-checks for Heads of Department to conclude for opinions on works in progress for later filming.
- Capture series of exploratory images used by visual effects department to establish look and feel reference.
- Demonstrate drive of drone and its stationary (motionless) position and angles to capture image and necessary tools requirements including lightings.

- Interpret safe operation of drone and its legal measures/restrictions.
- Ensure drone settings like camera, battery, firmware, analyse difference between copyrighted material, fair use, intellectual property, and derivative works.
- Investigate whether need of permission to use any of their digital assets.
- Define range of shooting area and plan of sequences as well as suitable landing pad.
- Interpret instructions given by the clients for the required mood, theme and feel.
- Drive drone slowly to take photographs in sequence and in stationary need, motion control.
- Use the FPV to frame up the shot.

1.2.3 Opportunities for Still Photographer

There are various opportunities for still photographer in the field of production houses and creative boutiques on projects. A still photographer has following benefits for career aspect:

- Medium range of salary with low educational investment.
- Opportunities in Movie production houses, news networks, and animation industry.
- Lots of opportunities to grow in the industry.

Notes



Exercise



- Who is Still Photographer?

- What are the common industries where still photographer finds job?

- Discuss the job responsibilities of still photographer.

- What are the opportunities for still photographer?

Scan the QR code or click on the link(s) to check related video(s)



<https://www.youtube.com/watch?v=0XbpzVPNjrl>

Introduction to Media and Entertainment



<https://www.youtube.com/watch?v=FEEnQA0QUS6M>

Introduction to Still Photographer Job Role

2. Photographic Equipment and camera techniques



Unit 2.1 – Camera and Equipment

Unit 2.2 – Camera Techniques and Methods



Key Learning Outcomes



At the end of this module, you will be able to:

1. Identify the right kind of camera / Drone (motionless still photography) for the photography uses such as for film, marriage, or another event.
2. Handle camera menus and settings in order to set relevant camera functions such as shutter speeds, aperture, white balance and focus.
3. Handle lens types like Prime vs. zoom, wide angle, standard, telephoto, angle of view, covering power, focal length, format, Lens features, Changing lenses, Focal length.
4. Use of camera accessories e.g., tripod, remote release, cable release, lens hood, filters digital (flash cards, hard drives), digital file formats (RAW, JPEG, TIFF) film (monochrome, colour, negative, transparency) film characteristics (speed, contrast, grain, resolution, colour balance, spectral sensitivity).
5. Use exposure measurement devices e.g., TTL, hand held; lighting e.g., wavelength, colour temperature, reflection, refraction, absorption.
6. Use of lighting equipment e.g., flash, continuous, fluorescent, reflectors, diffusers, screens, filling flash, motion blur, freezing movement, camera movements, panning, differential focus, depth of field etc.
7. Recognise anatomy of a compact /DSLR / and mobile device camera.
8. Recognise visual language e.g., composition, scale, framing, contrast, colour, shape, line, texture.
9. Use exposure measurement methods e.g., reflective, incident, subject brightness range, spot and centre weighted, matrix, multi-zone, compensation.
10. Analyses different camera framing methods: Extreme long shot, long shot, Full shot, medium shot, Close-up shot, Extreme close up, etc.

UNIT 2.1: Camera and Equipment

Unit Objectives

At the end of this unit, you will be able to:

1. Identify the right kind of camera / Drone (motionless still photography) for the photography uses such as for film, marriage, or another event.
2. Handle camera menus and settings in order to set relevant camera functions such as shutter speeds, aperture, white balance and focus.
3. Handle lens types like Prime vs. zoom, wide angle, standard, telephoto, angle of view, covering power, focal length, format, Lens features, Changing lenses, Focal length.
4. Use of camera accessories e.g., tripod, remote release, cable release, lens hood, filters digital (flash cards, hard drives), digital file formats (RAW, JPEG, TIFF) film (monochrome, colour, negative, transparency) film characteristics (speed, contrast, grain, resolution, colour balance, spectral sensitivity).
5. Use exposure measurement devices e.g., TTL, hand held; lighting e.g., wavelength, colour temperature, reflection, refraction, absorption.
6. Use of lighting equipment e.g., flash, continuous, fluorescent, reflectors, diffusers, screens, filling flash, motion blur, freezing movement, camera movements, panning, differential focus, depth of field, etc.

2.1.1 History of Camera

A camera is an optical instrument used to capture images in front of its lens on a film or digital media. The evolution of camera has passed through many stages of development. Cameras have passed through many stages like camera obscura, cameras using daguerreotypes, calotypes, dry plates, films, and digital media these days. The descriptions about these stages are given next.

2.1.1.1 Camera Obscura

Camera obscura was the first development in photography. In Latin, obscura means dark room. Obscura is the natural phenomena in which a scene is projected on the screen/wall through a small hole. Note that the projection is inverted image of the scene. These cameras were of the size of a room. By Niépce's time portable box, camera obscura became suitable for photography at site.

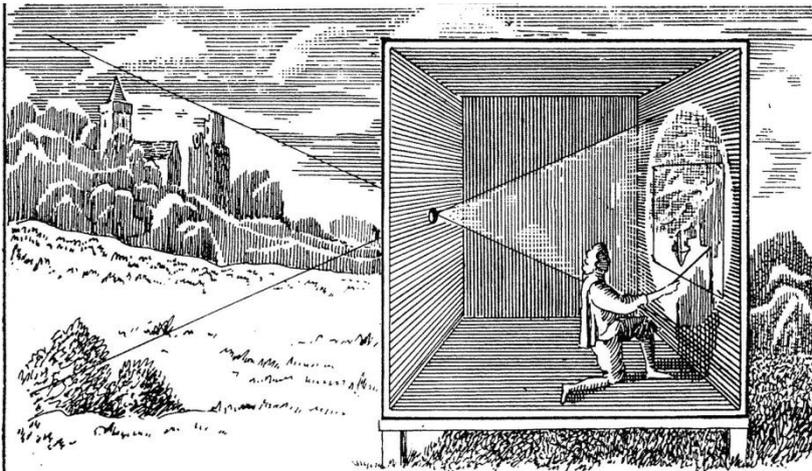


Figure 2.1. 1 Camera Obscura

The first partially successful photograph was taken by Nicéphore Niépce in 1816. He used a piece of paper coated with silver chloride which darkened when exposed to light through small hole. Although the photograph was created on the paper but it was not permanent because later the whole paper became darkened due to exposure to light. Later in mid-1820s, Niépce used a sliding wooden box with surface thinly coated with bitumen of Judea. The bitumen hardened at the site of exposure and rest of the bitumen was dissolved away to create the photograph.

2.1.1.2 Daguerreotype and calotype Cameras

Louis Daguerre was the partner of Niépce and after his death, Louis continued experiment on photography. He created the first practical photography in 1837. He named it daguerreotype. He created a light sensitive silver iodine sheet and after exposure in camera he developed the image using mercury vapor and fixed it with common salt. William Henry Fox Talbot perfected a different development process using the same silver iodized paper. William brushed the silver iodized paper with gallo-nitrate of silver (consisting silver nitrate, acetic acid, and gallic acid) to protect it from light exposure. While taking the photograph the paper was washed by potassium bromide to convert silver iodide into silver bromide. After exposure to light, hyposulphite of soda was used to remove iodine and bromide to develop the image in silver particles only. The cameras using this process were called calotype.

2.1.1.3 Dry Plate Camera

Dry plates were available since 1857 but until the invention of gelatin plates the process was very slow and lower quality. The gelatin plates were very light sensitive and could generate the snapshot in instantaneous exposure. This reduced the size of cameras and people could now hold the cameras in their hand due to small size. Soon the mechanical shutters were developed to create better photo quality.

2.1.1.4 Film Camera

Near the end of 19th century, George Eastman started making photographic paper films and the first cameras which used these films were called Kodak. The company sold the Kodak camera with 100 exposure capable films. After using the film, customer send the camera back to company where photographs were developed and new film was installed in the camera.

2.1.1.5 35mm Camera

Around 1913, Oskar Barnack build his first prototype 35mm still camera. The further development was delayed due to First World War. In 1925, Leitz commercialized the first 35mm camera. Kodak soon followed the chase the produced its 35mm camera Retina I in 1934 and later Japanese company Canon produced Canon 35 mm rangefinder in 1936.

2.1.1.6 TLRs and SLRs

The Twin Lens Reflex (TLR) cameras were available since 1928 but they were bulky not quite portable. The first compact TLR was Rolleiflex which was sufficiently compact to achieve wide spread popularity. SLR designs revolution began in 1933 with introduction of Ihagee Exhakta. Due to compact size of SLR and professional quality they soon became popular in market. The trail was soon followed by other company like Canon, Yashica, Nikon and so on.

2.1.1.7 Instant Cameras

In 1948 a new era of cameras begun with introduction of instant cameras. The Polaroid Model 95 was the first instant camera introduced in maker. Known as a Land Camera after its inventor, Edwin Land, the Model 95 used a fast chemical process to produce photograph from negative in few minutes. Although being highly priced, the camera still got pace. The first Polaroid camera, the Model 20 Swinger of 1965, was a huge success and remains the most selling camera of all time.

2.1.1.8 Digital Cameras

This is the era in which we live today and technology development rate is all time high now. Every day new inventions are made to make things cheaper and better. These cameras differ from analog predecessors as they use different media (digital memory cards) to store images. In 1988, Fuji DS-1P recorded image on a 2MB SRAM memory card. Battery was need to keep the date in memory at that time. Since 2003, the digital cameras have replaced the film cameras and companies like Kodak who once relied on film cameras have now stopped manufacturing films. Smart phones are now a days coming with high resolution cameras making it common for people to have high quality cameras.

2.1.2 Basic functioning of Digital Camera

Cameras work by capturing visible and non-visible portion of electromagnetic spectrum. In case of Video cameras for videography, a controlled light is passed into the recording chamber through a hollow tube called the aperture. Then a lens is used to record this light on film. Light entering the aperture is controlled by a shutter. It also controls the length of exposure. High-end film video cameras may utilize a rotary shutter to expose accurately. Digital cameras offer a faster shutter speed since there are no moving parts. This is known as an electronic shutter, and if paired with external automation such as a motion detector, it operates better than film cameras.

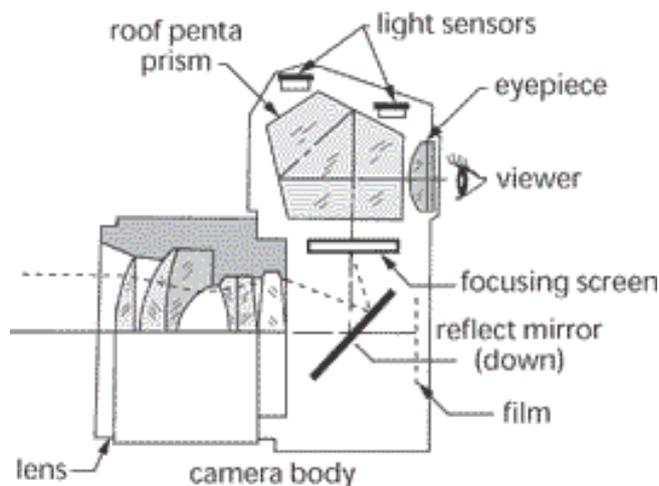


Figure 2.1. 2 Functioning of a camera

New video recording cameras do not use films to record image sequences. These cameras use image sensors to capture videos. Image sensors turn visible light into electronic signals which are organized in the form of an image. Digital cameras use an electronic shutter to capture light. The captured image is arranged in the form of a grid pattern on the sensor. Each of this grid square is called pixel. Image sensors recognize the number of photons in each pixel. To determine color, a filter is placed on each pixel that determines the quantity of red, blue and green photons. The most common type of filter is the Bayer filter as shown in below figure. A pixel row is aligned with either a red and green, or blue and green alternating pattern. When the pixel patterns are viewed as a two-pixel by two-pixel square, the camera averages the four colors to create an estimate of the correct color; refer to figures given next. Any inaccuracy is measured as interpolation. These types of cameras use CCD, CMOS, or CID image sensing technology.

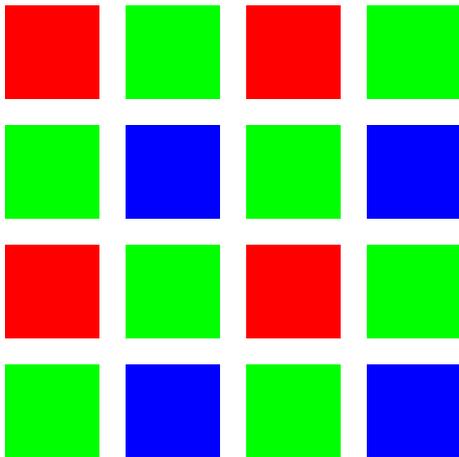


Figure 2.1. 3 Bayer Filter

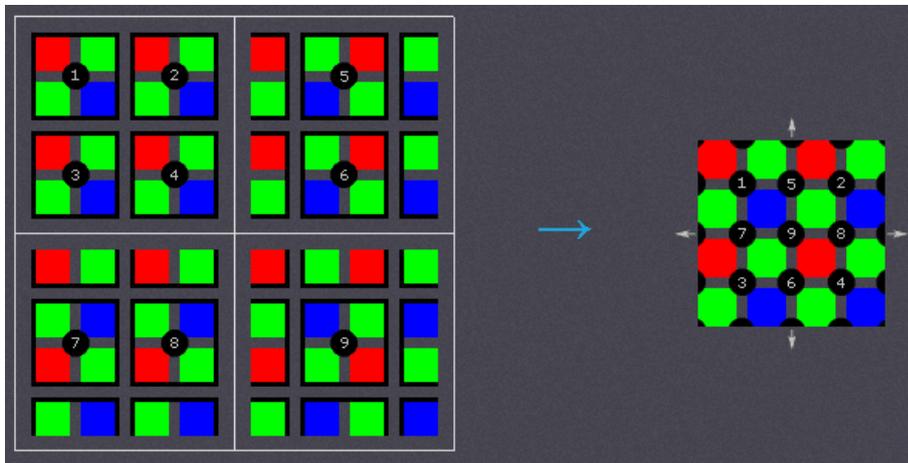


Figure 2.1. 4 Colour Array

The working principles of CCD and CMOS cameras are shown in below figures.

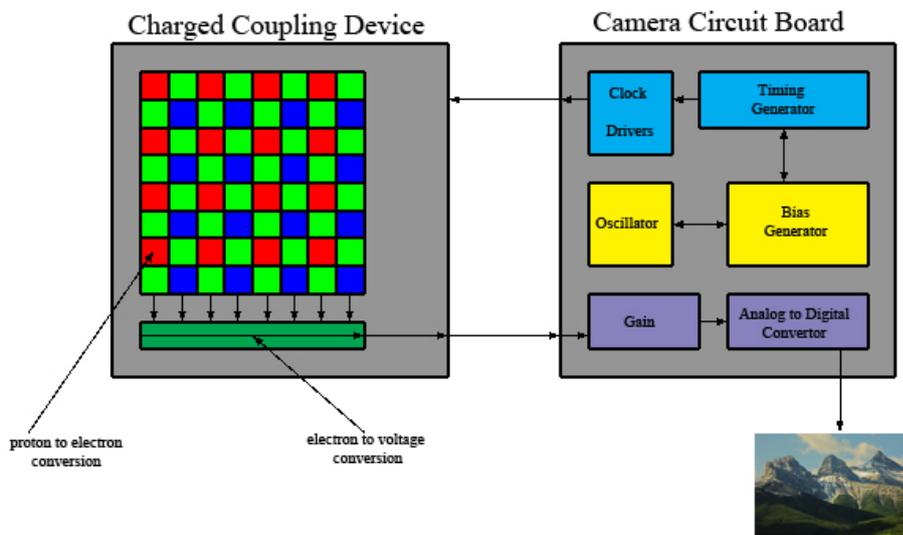


Figure 2.1. 5 CCD Image Sensor Operation

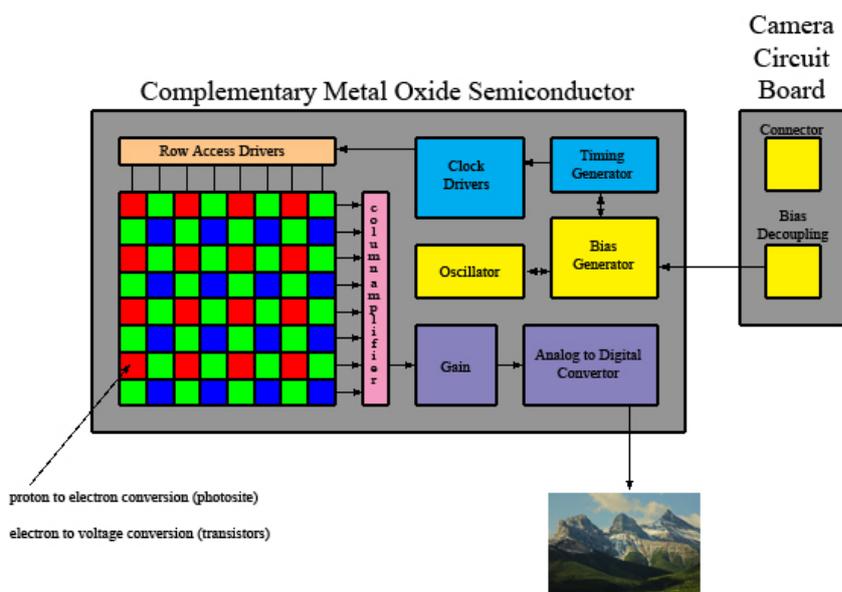


Figure 2.1. 6 CMOS Image Sensor Operation

Both CCD and CMOS offer high-quality recording. CMOS imagers offer more features on each sensor, lower power use, and a smaller footprint. CCD imagers are less susceptible to noise, consume extremely more power than similarly capable CMOS imagers, and offer more pixels.

2.1.2.1 Factors that affect Photo/Video Quality

Lens

Lens is the most critical component of a camera and it mostly affects the quality of recording. You need to select correct type of lens based on your requirement. Lenses are available in different standards and mounting styles. Make sure you have correct set of lenses based on your camera.

Resolution

Resolution is measured in pixels per square inch. Most of the cameras take pictures in megapixels. One mega pixel means one million pixels. Film cameras can have 50 Megapixels or more for medium to large format films. Film resolution depends on the exposure and quality of lens.

Frame Rate

Frame rate is measured in frames per second. Human eye can differentiate between 10 to 12 images per second. When we move images faster than that then images create the illusion of movement. General cameras record at 30 frames per second.

Shutter Speed

Shutter speed is used to define the duration for which shutter will remain open to capture light. Slower shutter speed results in blurred motion pictures.

Sensitivity

Sensitivity is measured in lux. It defines the capability of camera to capture in low light situations. A lower number of lux means better picture in low light. Lux is measured differently for colour and monochrome cameras.

2.1.3 Camera Selection

Camera selection is a compromise between various factors and cost of equipment. Selection of camera depends highly on the event for which you want to use the camera. Even a super costly camera can become useless when used at wrong place. Digital cameras are the most preferred cameras these days for even photography and still photography. There are mainly four types of digital cameras used for photography:

- Point and shoot cameras
- Bridge cameras
- DSLRs
- Mirrorless cameras

2.1.3.1 Point and Shoot Cameras

Point and shoot cameras are easy to handle and compact in size. These cameras are generally preferred by beginners because they have feature like automatic modes, no photography knowledge required, and easy to use buttons. Drawback of these cameras is fixed and non-interchangeable lenses.



Figure 2.1. 7 Point and Shoot Camera

2.1.3.2 Bridge Cameras

Bridge cameras are more advanced version of Pick and Shoot cameras. In these cameras, you can have much better control on settings like shutter speed, shot timing, colour temperature, and so on. Body of these cameras is rugged with better ergonomics and larger grips. Note that you cannot change the lenses of these cameras also.



Figure 2.1. 8 Bridge Camera

2.1.3.3 DSLR Cameras

DSLRs are the most used digital cameras for photography and video recording in general events. DSLR is the short form of digital single-lens reflex. A DSLR camera can store thousands of photos in memory card and you can use the autofocus function to get better photos even if you do not know all the functions of camera. You can find various gadgets and lenses for your DSLR easily in market.



Figure 2.1. 9 DSLR Camera

2.1.3.4 Mirrorless Digital Cameras

Mirrorless Digital cameras are latest products in the range of digital cameras. These cameras have all the features of DSLR cameras in compact and relatively smaller bodies. Normally in DSLRs, the light enters through front lens and gets reflected by an internal mirror in camera before getting to image sensor. Image sensor is the part of camera which converts the photo to electronic signals to be recorded on chip or data media. Note that a mirrorless camera may or may not have facility to use interchangeable lenses. Camera in your smartphone is an example of mirrorless digital camera.



Figure 2.1. 10 Mirrorless Camera

2.1.3.5 Camera Capabilities

After picking desired camera type, you need to check a few parameters of camera to make sure that camera is appropriate for the event. There are mainly three parameters which define photo capabilities of a camera. Sensor Size, Resolution, and ISO capability.

Sensor Size

Sensor size defines the amount of light that can be captured to generate photo. Larger sensor size generates better quality photos. But the large sensor size also fetches more cost. Also, the bigger sensor will increase size of the camera. Largest sensor size available for consumers is 35mm film negative and it is known as full frame size. But most of the time, you will find sensors of smaller size. A chart of sensor size is shown next.

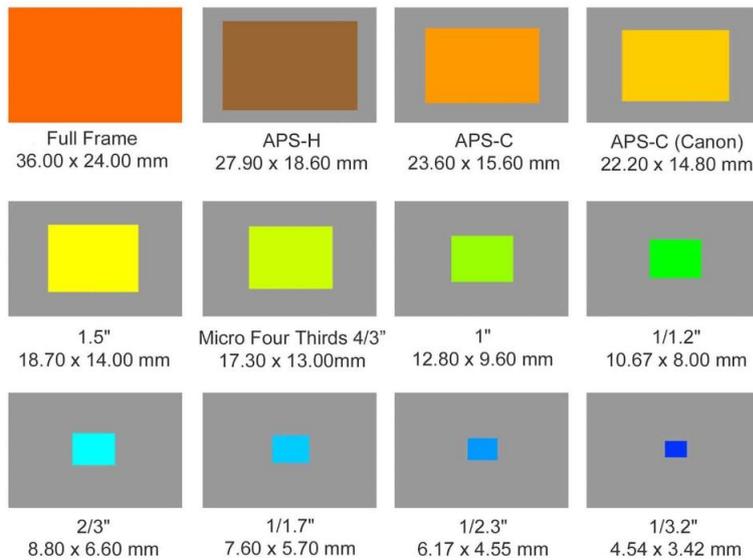


Figure 2.1. 11 Camera Sensor Size Chart

Resolution

The resolution of a camera defines how many megapixels can be stored in captured images. Having more megapixels in camera means bigger print and cropping latitude. In simple words, a 40-megapixel camera will generate bigger print as compared to 16-megapixel camera. Note that megapixels are the number of pixels (small dots used to capture light) created by camera, they may or may not have detailed information of light depending on the sensor size parameter. Megapixel also allows to get magnified view of the object. Note that higher megapixel will also increase the size of photo.

Megapixels vs. Maximum Print Size Chart				
Megapixels	Pixel Resolution*	Print Size @ 300ppi	Print size @ 200	Print size @ 150**
3	2048 x 1536	6.82" x 5.12"	10.24" x 7.68"	13.65" x 10.24"
4	2464 x 1632	8.21" x 5.44"	12.32" x 8.16"	16.42" x 10.88"
6	3008 x 2000	10.02" x 6.67"	15.04" x 10.00"	20.05" x 13.34"
8	3264 x 2448	10.88" x 8.16"	16.32" x 12.24"	21.76" x 16.32"
10	3872 x 2592	12.91" x 8.64"	19.36" x 12.96"	25.81" x 17.28"
12	4290 x 2800	14.30" x 9.34"	21.45" x 14.00"	28.60" x 18.67"
16	4920 x 3264	16.40" x 10.88"	24.60" x 16.32"	32.80" x 21.76"
35mm film, scanned	5380 x 3620	17.93" x 12.06"	26.90" x 18.10"	35.87" x 24.13"

*Typical Resolution. Actual pixel dimensions vary from camera to camera.

**At 150ppi, printed images will have visible pixels and details will look "fuzzy".

Figure 2.1. 12 Megapixel vs Print Size chart

ISO Capabilities

ISO is the light sensitivity level of your camera. It is the amount of light that can be captured by the camera. There is always an upper and lower limit of ISO for your camera. Since digital cameras convert incoming light into electric signals so to increase the ISO sensitivity, these cameras amplify the signals. The ISO range of a camera is written as 400- 6400 where 400 is the lowest light exposure to be captured and 6400 is the highest light exposure to be captured. ISO range defines the efficiency of camera under extremely bright and extremely dark situations.

ISO Chart		
LIGHT SENSITIVITY OF CAMERA SENSOR	ISO SETTING	WHEN TO USE THIS SETTING
VERY LOW	50-100	IN DIRECT SUN
LOW	100-200	VERY BRIGHT
MEDIUM	200-400	MODERATELY BRIGHT
HIGH	400-1600	SOMEWHAT DARK
EXTREMELY HIGH	1600-6400	DIMLY LIT

Figure 2.1. 13 ISO Chart

2.1.4 Drone Selection for Photography

The selection of camera drone depends on many factors and majorly on the type of event for which you want to use drone camera. The other factors that define the selection of drone for photography are discussed next.

2.1.4.1 Camera Quality

For any camera drone, the most important factor to consider for photo quality is its camera quality. A drone camera with larger sensor size will capture more details as compared to smaller size one. You should also consider using cameras which can generate photo digital file in RAW and digital negative file (DNG) formats. Generally, your camera should be able to capture at least 12Megapixels and if you are aiming for videography then it should be capable of recording 4K videos.

2.1.4.2 Gimbal and Hover Capabilities

Gimbal is a mechanism of gyroscope and accelerometers which is used to stabilize drone in air. This mechanism sends signals to processor which decides how much fan speed should be applied to various fan motors of drone. A good quality gimbal should be at least capable of 3-axis manoeuvres.

2.1.4.3 Battery Capacity

Battery capacity of drone defines the time up to which the drone will be operational and flying. Note that increasing battery size may not increase the operational time proportionally because increasing battery size also increases overall weight of drone and hence reducing the flying time. Generally, drone with operational flying time of 20 minutes are sufficient.

2.1.4.4 Obstacle Avoidance System

If your drone is equipped with proximity sensors and crash avoidance system then it will be an added benefit for newbies. Camera drones are expensive and a small crash with objects when flying can cause costly damage to machinery.

2.1.4.5 Advanced Features

Modern camera drones come with various advanced features like Follow Me mode, home mode, Selfie mode, and so on. Having such features can increase your productivity. The Follow Me mode enables the drone to follow controller in your hand and hence reducing your efforts to manually move the drone while capturing.

2.1.4.6 Size of Drone

Size of drone does not have much importance for photo quality as the quality of photo depends on camera quality and drone stabilization. But a large size drone can cause inconvenience when transporting so you should search for a smaller sized drone fulfilling all the quality conditions.

2.1.4.7 Applications and Controller Quality

A controller is the piecer of hardware which allows you to control the drone. A controller with option of Wi-Fi connection gives a longer control range to operate drone. Having a video screen on controller allows to see what the drone is capturing. There are drones available in market which can be controlled using your smartphone after installing their application.

2.1.5 Professional Camera Menus

Different cameras manufacturers design different types of function menus for Camera software. But most of the time main functions of photography remain the same. Here we will use Panasonic LUMIX G7 as subject for discussing camera menus and button functions. You can apply the information to other cameras in the same way.



Figure 2.1. 14 Panasonic LUMIX G7 camera

2.1.5.1 Quick Overview of Camera Functioning

1. Connect the straps to camera after opening the camera package.

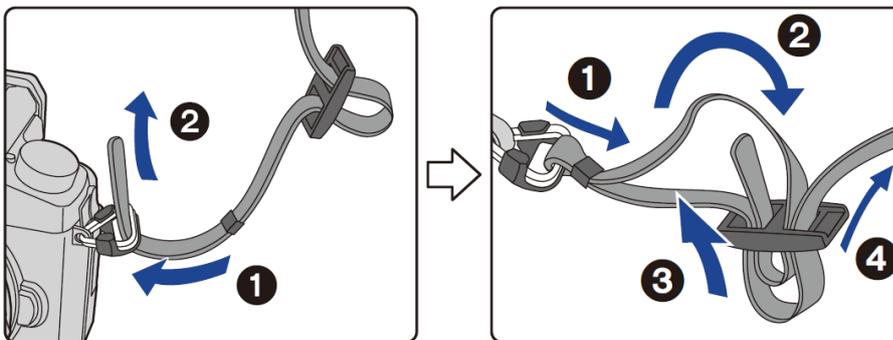


Figure 2.1. 15 Attaching Strap

2. Connect the battery in battery charger and leave it for charging up to at least 1 hour.

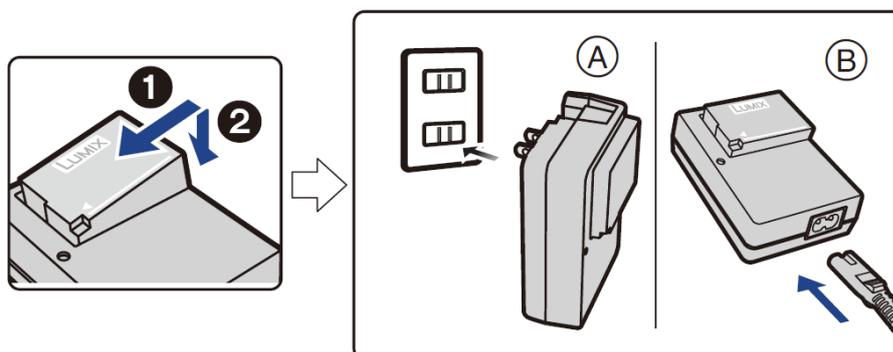


Figure 2.1. 16 Charging Battery

3. Connect the battery and memory card to the camera slots.

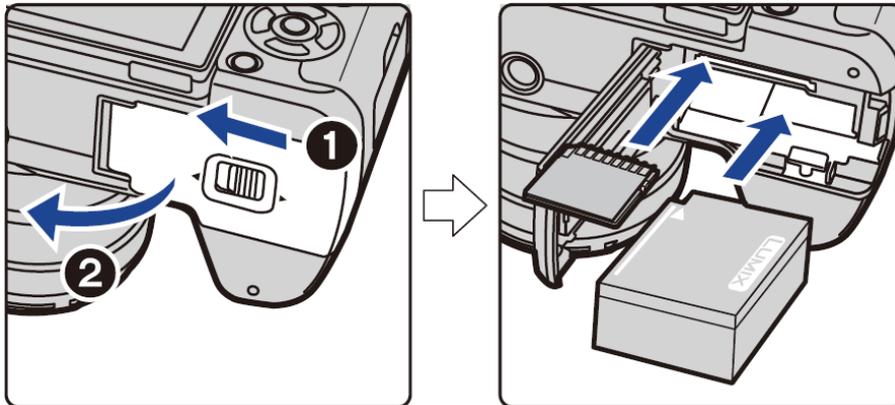


Figure 2.1. 17 Inserting battery and memory card

4. Attach the lens at its slot at front of camera.

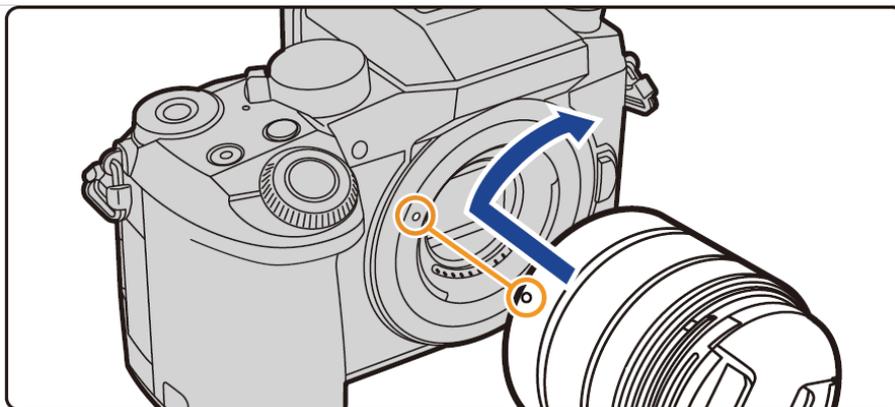


Figure 2.1. 18 Attaching lens to camera

5. Open the camera video screen flap and switch ON the camera.

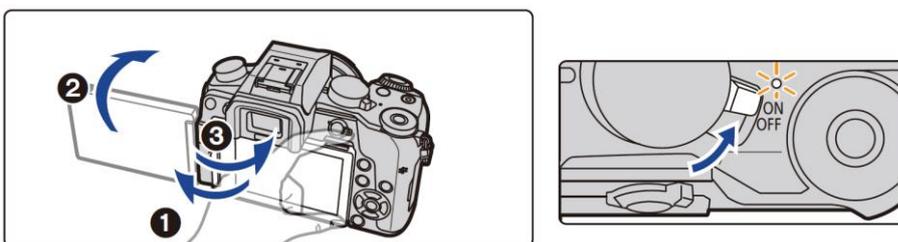


Figure 2.1. 19 Opening camera flap

6. Format the memory card in camera and set the mode to automatic [iA].

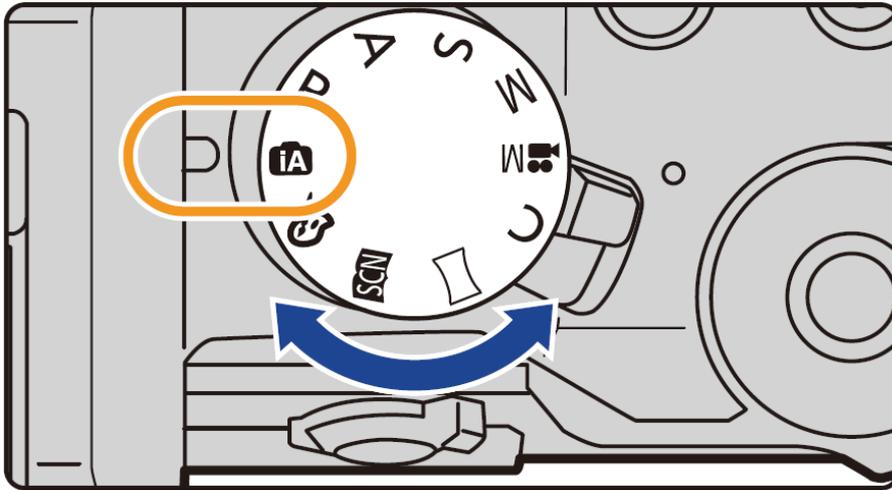


Figure 2.1. 20 Setting to automatic mode

7. To take picture, press the shutter button half for focusing and then press fully to take a picture.

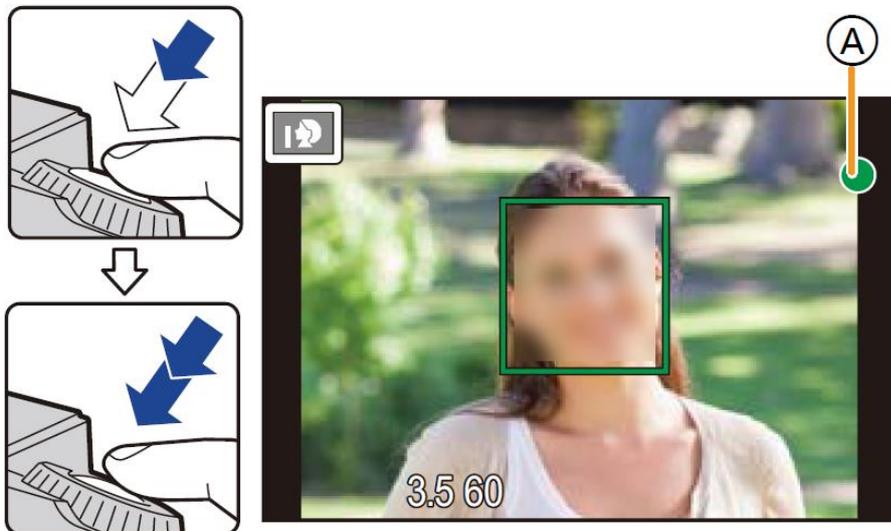


Figure 2.1. 21 Taking Picture

Some common buttons and their functions are shown in next figures.

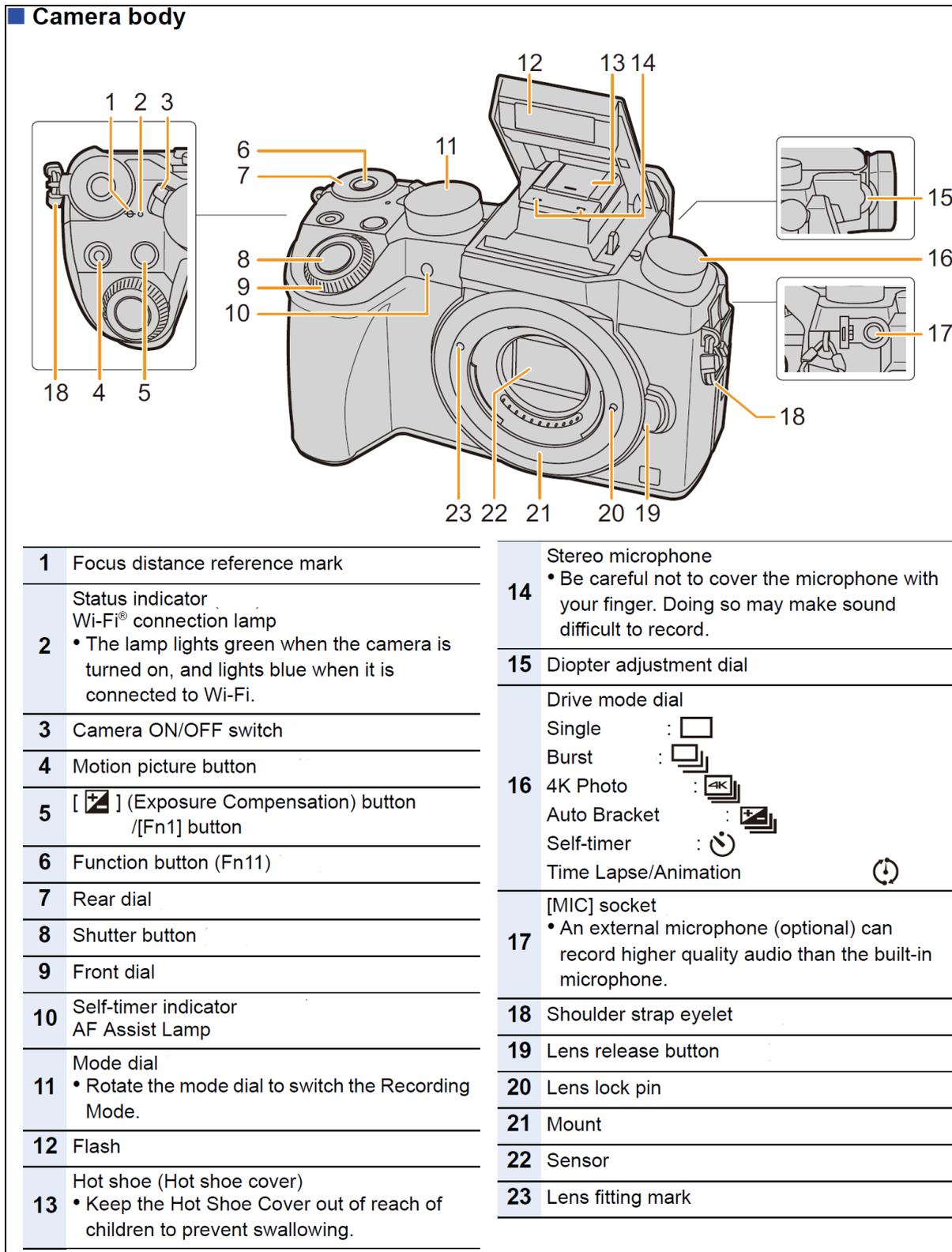


Figure 2.1. 22 Buttons and their functions

2.1.6 Photography Equipment

Basic tools and equipment used in photography are given next.

2.1.6.1 Lens for Camera

Lens has the main function to focus light on sensor. A camera lens is marked with parameters like aperture, depth of field, and focusing distance. Note that quality of lens determines how much detail can be captured by sensor. The figure given next shows general components of a camera lens.

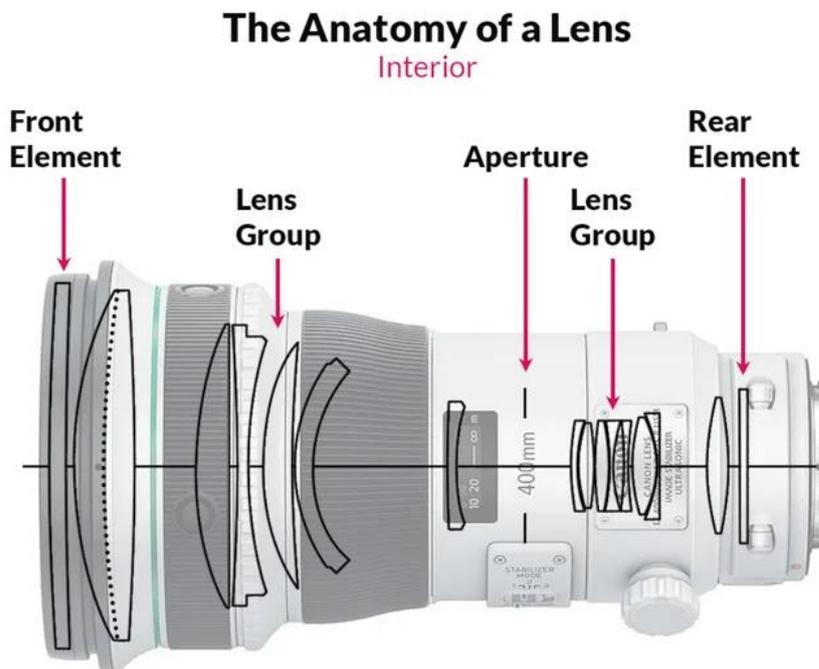


Figure 2.1. 24 Camera lens components

As you can see in figure, a camera lens body contains multiple groups of lenses. These lenses are used to manipulate focal length of incoming light so that it projects correctly on image sensor. Focal length is the distance between point of convergence and image sensor in the camera. Point of convergence is the point at which light coming from outside inverts when passing through lens.

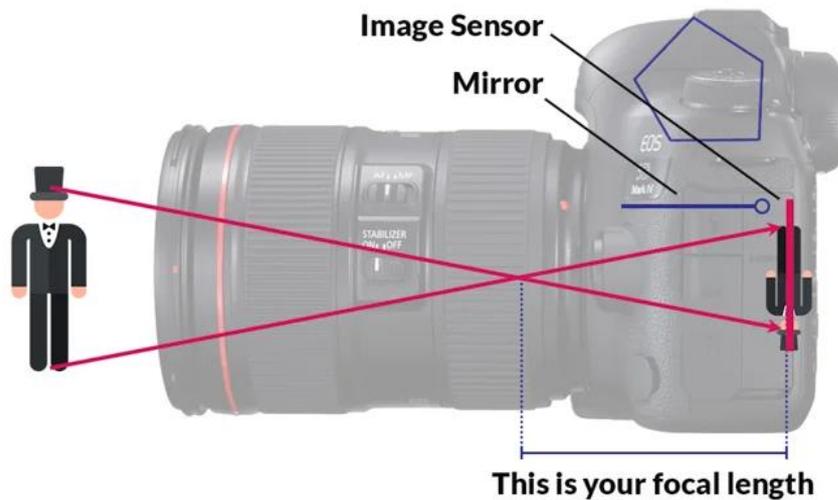


Figure 2.1. 25 Focal length

Crop Factor

Crop factor is the value by which size of image is reduced from full-frame size. A full frame size or 35mm size means image sensor size of 36x24mm. Crop Factor is marked on lens. APS-C marked on camera lens means it will give you image size of 25.1 mm x 16.7 mm hence reducing the size by 1.5x. So this gives APS-C, the crop factor of 1.5x. Note that for Canon cameras, APS-C is the crop factor of 1.6x. Similarly, Micro Four Thirds (MFT) has the crop factor of 2x. When using crop sensor, a 35mm lens becomes 50mm with 1.5x crop factor for APS-C marked camera.

Zoom Lens and Prime Lens

All the lenses fall into two categories: Zoom lens and Prime lens. Zoom lenses allow to change the point of convergence hence allowing to adjust the focus. The Prime lenses have fixed focal length and hence you cannot adjust the focus using lens. The benefit of using prime lens is that they better sharpness in photo when used with tripod. So, if you want planning for still photography then prime lenses are more suited for the job.

Lens Aperture

Lens aperture is the ratio of aperture diameter and focal length of lens. It defines how much light will enter through lens. In simple terms, aperture means orifice/hole. The value of aperture is denoted as $f/2$, $f/4$, and so on. Note that aperture value of $f/2$ will allow more light to pass as compared to $f/4$ lens and $f/4$ will allow more light to pass as compared to $f/8$ lens.

Note that there are variable aperture lenses available in the market which change their aperture size based on amount of zoom used. For example, when using an 80-200mm $f/4-5.6$ lens as an example. At 80mm, you can use the $f/4$ aperture. By zooming at 200mm, you can use the $f/5.6$ aperture.

Camera Lens Markings

In camera lens markings, the first number/range of numbers written with mm defines the focal length of lens. If you see single number like 50mm, 60mm, and so on then your lens is a prime lens type. If you see a range of numbers like 20-60mm then your lens is a zoom lens.

In camera lens markings, the second number written with f symbol denotes size of aperture of lens. If it is a single number then aperture is fixed and if it is a range of numbers like f/2-8.5 then it means your lens has variable aperture.

There are some other markings on camera lens as well which are discussed next.

- ∞ – 0.25 m in markings means closest object that you can focus is 0.25m from camera lens.
- IS for Canon / VR for Nikon / OSS for Sony are means for stabilization of image. Here IS means Image Stabilization, VR means Vibration Reduction, and OSS means Optical Steady Shot.
- \emptyset symbol denotes the diameter of lens.
- ASP or Asph means aspherical lens. It means that lens is non-circular.
- CRC or Macro means the lens is meant for short distance photography.

Depth of Field

The depth of field parameter defines how much area of your scene will be in focus when taking photos depending on the selected aperture.



Figure 2.1. 26 Depth of field parameters

Lenses based on Mount Types

There are mainly three types of lens mounts: Screw mount, Lock Ring mount, and Bayonet Fitting. The Screw mount as name suggests are mounted on camera using clockwise rotation as we do with any screw. The Lock Ring mount type lenses are attached to the camera from front and then a locking ring is attached to hold it in place. Bayonet fittings are used to mount the lens by half rotation. Almost all the modern cameras use bayonet fitting for lens mounting. Note that different camera manufacturers use different types of bayonet fitting mounts but you can find conversion adapters easily in the market.



Figure 2.1. 27 Bayonet Fitting

2.1.6.2 Other Equipment for Photography

Tripod

A tripod is a three-leg stand used to hold the camera steady for taking pictures. Tripod can be very helpful if you cannot keep camera steady taking shot. A tripod is very useful in still photography for taking photos of objects.



Figure 2.1. 28 Tripod

Backdrop

Backdrop is the piece of curtain, texture wall, board and so on to be used as background for taking photos. A backdrop with right contrast to your subject can enhance the quality of your photos.



Figure 2.1. 29 Backdrop

Light Box

Light box is box with three sides made using transparent or semi-transparent fabric. A light box scatters light coming from different sources. A light box creates light on object without generating considerable shadow.



Figure 2.1. 30 Light box

Reflector

Reflector is a type of reflective surface object used to direct light towards an object. Using reflector, you can control how much light and shadow will be casted on the object.

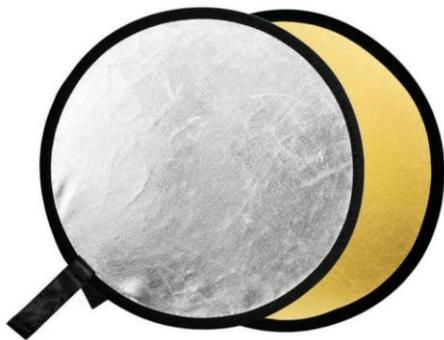


Figure 2.1. 31 Reflector

Flashgun

Flashgun is used to cast strong light on the object just after clicking the button.



Figure 2.1. 32 Flashgun

Flash Diffuser

The diffuser is a piece of foam or plastic which is used to soften the light coming from an external flash or flashgun. A diffuser is attached on the top of flash/flashgun.



Figure 2.1. 33 Diffuser

Black Tile

Black tile is only useful for still photography. You can place an object on black tile when taking photograph and it will generate a professional reflection of object in the photo.



Figure 2.1. 34 Black Tile

Canvas Tote Bag

Used to carry various camera accessories and supplies.



Figure 2.1. 35 Canvas Bag

Precision Screwdrivers

To be used for making repairs/adjustments to camera equipment.



Figure 2.1. 36 Precision Screwdrivers

Electrical Adapters & Power Strip

For charging batteries and powering any electrical device.



Figure 2.1. 37 Battery Chargers

Framing Chart

Used as a reference for framing each shot. Usually shot at the beginning of roll for reference in post-production.

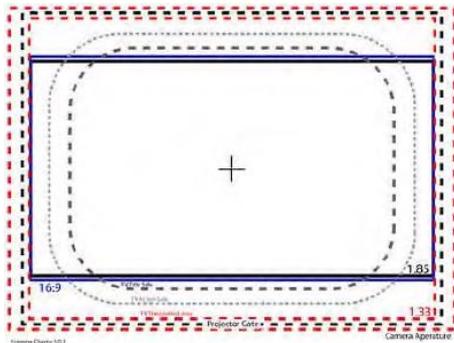


Figure 2.1. 38 Frame Charts

Camera Oil & Liquid Silicone

The oil is used to keep the camera movement or mechanism lubricated. The silicone is used to keep the pull-down claw lubricated.

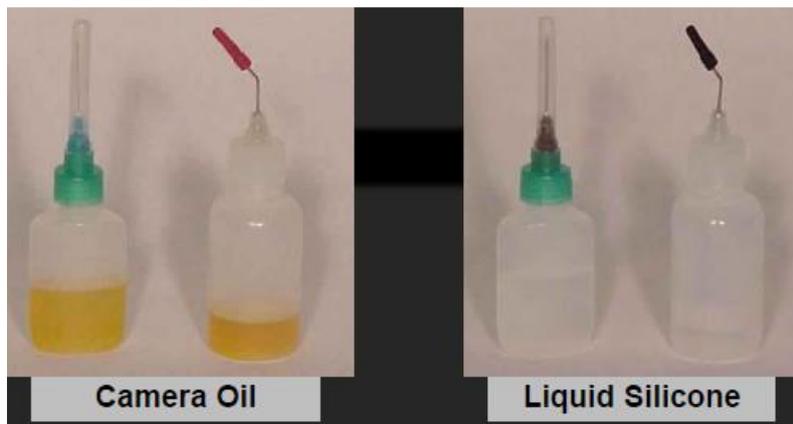


Figure 2.1. 39 Camera Oil and Silicone

Depth of Field Calculators

For checking depth of field on critical shots.



Figure 2.1. 40 Depth of Field calculator

Notes 

UNIT 2.2: Camera Techniques and Methods

Unit Objectives

At the end of this unit, you will be able to:

1. Recognise anatomy of a compact /DSLR / and mobile device camera
2. Recognise visual language e.g., composition, scale, framing, contrast, colour, shape, line, texture
3. Use exposure measurement methods e.g., reflective, incident, subject brightness range, spot and centre weighted, matrix, multi-zone, compensation
4. Analyses different camera framing methods: Extreme long shot, long shot, Full shot, medium shot, Close-up shot, Extreme close up, etc.
5. Recognise different camera angles: High-angle shot, Low-angle shot, Eye-level shot, Bird's eye view, Canted shot, Tilt Shot, Three-quarter shot, Over-the shoulder shot, etc. as per the requirement of the scene, shot, location, performers expression, etc.

2.2.1 Visual language of Photography

The motive of professional photographs is not show objects only but also to convey the meaning of when and how the photograph was taken. The language used to convey this information is called visual language of photography. Various important terms of this language are discussed next.

2.2.1.1 Object and Subject

All the photographs have some objects and/or a subject to show. An object to be shown in photograph can be fruit, mountain, person, food, electronic item, furniture, and so on. Every photographer provides his/her unique point of view about the object and hence the object becomes subject of the photograph. Subject of a photograph is the theme about which the photograph is taken. When taking a photograph or looking at a photograph, we generally check the object and subject of the photograph.



Figure 2.2. 1 Subject of photograph

2.2.1.2 Composition

Composition is the arrangement of various objects in the photograph. When you have multiple objects in photograph and you want to guide the eyes of viewer on a specific path then you should rearrange the objects in a progressive line to your main target object. This can also be achieved by colour and tone manipulation when taking photograph.



Figure 2.2. 2 Composition

2.2.1.3 Focus

Focus is used to draw attention to a specific object. When you want to focus on a specific object in photograph then generally all the surrounding objects are blurred. If you have multiple objects that are subject of the photograph then you can bring them into focus in a fashion that tells the story of photograph.



Figure 2.2. 3 Focus in a photograph

2.2.1.4 Light

Light plays a very important role in making an object look great or bad in the photograph. Generally, it is desirable to have enough lighting to cover 3/4 of a persons face when taking photograph. This method of lighting is called star lighting. Note that when taking an outdoor photograph, the time of day and direction of light coming from Sun can greatly affect look of object in photograph.

2.2.1.5 Contrast

Contrast is the difference between lightest and darkest areas of the photograph. Photos with high contrast are used to show happy or dramatic events. Photos with low contrast are used to show calmness or steady state of objects.

2.2.1.6 Colour Contrast

Colour contrast is the set of colours used in the photo to convey idea, mood, and other themes in the photo. To make a photo dramatic/appealing, it is advised to use combination of colours opposite to each other on the colour wheel.

2.2.1.7 Point of View

Point of View is the position of photographer's camera when taking shot. A photographer can make large objects appear smaller on photograph and he can make small objects appear large in the photograph. There are various uses of point of view when showing intent in the photograph.

- Using Bird-eye view i.e., taking photo from height can make objects appear smaller in size hence giving viewer feeling of superiority.
- Using Eye level view represents direct connection between object and viewer. It generates illusion of person standing in front of object. This view is generally used for portraits.
- Photography from below used to represent Insect point of view. Using this point of view in photograph makes small objects intimidating and cause sense of fear in the viewer.
- A photographer's point of view can be used to cause illusions in the photograph.



Figure 2.2. 4 Photographer's Point of View

2.2.1.8 Texture

Texture is the combination of depth of field, colour contrast, focus, and contrast of the object in photo. The texture shows in a photo how the object feels when touched.



Figure 2.2. 5 Texture

2.2.2 Exposure Measurement Method

Exposure is the amount of light coming through aperture on the image sensor. Most of the digital cameras have inbuilt exposure meters. For normal photography jobs, the inbuilt exposure is enough but if you are working on complex photography job, you need to use an external exposure meter. There are mainly two ways by which exposure meter measures the exposure. A light meter can measure either measure incident light (light falling on object) or reflecting light (light reflecting from the object surface).

2.2.2.1 Incident Light Measurement

Incident light measurement is performed by using external light meter. External light meters have diffusing hemispheres which measure actual amount of light in the scene. Note that external light meters can meter both constant light and flash light.



Figure 2.2. 6 External exposure meter

2.2.2.2 Reflected Light Measurement

Measuring reflected light is now a days, an inbuilt functionality in digital cameras. These types of light meters are not accurate because they measure reflected light instead of direct incident light. Also, the light reflecting from object is assumed to be precisely 18% of incoming light. If the object is reflecting more than or less than 18% then the calculation by meter will be wrong. Note that due to error of measurement by internal light meters, generally a neutral gray test card is used along with light meter.

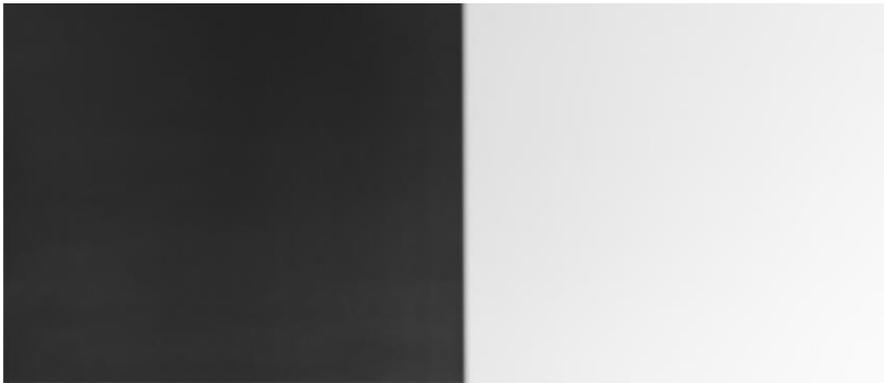


Figure 2.2. 7 Neutral gray test card

If the test card is 50% black and 50% white then it means the internal light meter is giving correct readings. If the test card is showing 25% black and 75% white then light meter will be giving wrong readings.

2.2.2.3 Exposure Metering Methods

There are various exposure metering methods that are used to measure light in light meter. These methods are discussed next.

Evaluative (Matrix/Multizone) Method

Evaluative/Matrix method is the most advanced method of measuring light exposure. In this method, photograph scene is divided into multiple small zones and exposure is measured within them. Using this method, you can measure exposure in even the toughest scenes considering tonality as well as colours.

Center-weighted Exposure Measurement Method

In this method, whole scene is considered for measuring exposure and average of the scene is the final exposure reading. Note that in this method, area around the subject of photographic scene is given more weight in calculation.

Partial Metering

Partial metering is used for measuring exposure of complicated scene which you could not measure by previous metering methods. In this metering method, only the small area around focused object is considered for exposure measurement. In this method, rest of the scene is ignored. You also need to use neutral gray test card in combination with light meter.

Spot Metering

Spot metering is used for measuring exposure of small portion of the scene. Generally, 3% or lesser sensor area is used for measurement of exposure. Spot metering is used for high contrast scenes with highly dynamic range. This method is useful when a specific spot in scene is important and rest of the scene can be ignored.

Highlight Metering

In Highlight metering, the brightest areas of the photographic scene are used to get final reading of exposure. This measuring method is used for pictures that have high brightness areas.

Exposure Compensation

The exposure compensation is the amount of light by which exposure will be raised or lowered based on lighting conditions. You will find an EV dial on camera for adjusting this value.

2.2.3 Camera Framing Methods

Framing is the process of defining composition for the shot. Note that taking photograph is not confined to subject only. It is about including best suited surrounding near the subject when taking photograph and hence framing the shot. The basic types of camera shots are discussed next.

2.2.3.1 Extremely Wide Shot/Extremely Long Shot

An extreme wide shot/extreme long shot makes the subject of photograph smaller as compared to surrounding.



Figure 2.2. 8 Extremely Wide/Long Shot

2.2.3.2 Wide Shot/Long Shot

The long shot/wide shot makes the subject appear bigger as compared to extremely long/wide shot. You can assume that camera is near to subject and shows proportionate surrounding.



Figure 2.2. 9 Wide/Long Shot

2.2.3.3 Full Shot

In full shot frame, the subject fills the frame completely while keeping background scenery in view as well.



Figure 2.2. 10 Full Shot

2.2.3.4 Medium Wide Shot

In Medium wide shot, the subject is framed roughly above knees.



Figure 2.2. 11 Medium Wide Shot

2.2.3.5 Cowboy Shot

This is the variation of Medium wide shot where subject is shot at nearly mid of thighs.



Figure 2.2. 12 Cowboy Shot

2.2.3.6 Medium Shot

Medium shot starts from upper waist and covers full torso of subject. In this shot, we focus on the subject while keeping the surroundings.



Figure 2.2. 13 Medium shot

2.2.3.7 Medium Close Up Shot

Medium close up shot starts from chest and covers full face of subject.



Figure 2.2. 14 Medium Close Up shot

2.2.3.8 Close Up Shot

This shot is used to reveal subject's emotions and expressions.



Figure 2.2. 15 Close Up Shot

2.2.3.9 Extreme Close Up Shot

This shot is used to get extreme details of subject or photograph small objects.



Figure 2.2. 16 Extreme Close up Shot

2.2.4 Camera Shot Angles

Advanced shots taken by camera include frame and angle into consideration. Here, we will discuss some common shot angles generally used by photographers.

2.2.4.1 High Angle

High angle shot is taken from height while pointing the camera downward. This shot angle is used to show powerlessness of subject. Sometimes this shot is also used to show landscape of scenario.



Figure 2.2. 17 High angle shot

2.2.4.2 Low Angle Shot

This shot is taken from the level below eyeline. The camera points upward in this shot to look at subject.



Figure 2.2. 18 Low Angle Shot

2.2.4.3 Over the Shoulder Angle Shot

This shot is used to show people talking to each other and you need to mainly shot their faces. Generally medium or close-up shot is used for this angle.



Figure 2.2. 19 Over the Shoulder Angle

2.2.4.4 Bird's View Angle

A Bird's view shot is taken to cover whole action area using a drone or camera placed much above the action ground.



Figure 2.2. 20 Bird's View Angle

2.2.4.5 Dutch Angle/Tilt Angle

This angle is also known as canted angle or oblique angle. This angle is used to tilt the subject frame for giving a dramatic look. This angle is generally used to create suspense or distress in the scenario.



Figure 2.2. 21 Dutch angle

2.2.5 Composition Rules

Composition in photography defines what is to be included in the shot and what can be excluded from the shot. Various rules of composition are discussed next.

2.2.5.1 Rule of Thirds

As per this rule, the scene is divided by two horizontal and two vertical lines equally spaced in the frame. The four intersection points of these lines at the centre of frame are called crash points. You should try to place your subject at these crash points to get a good view of the subject when taking photograph.

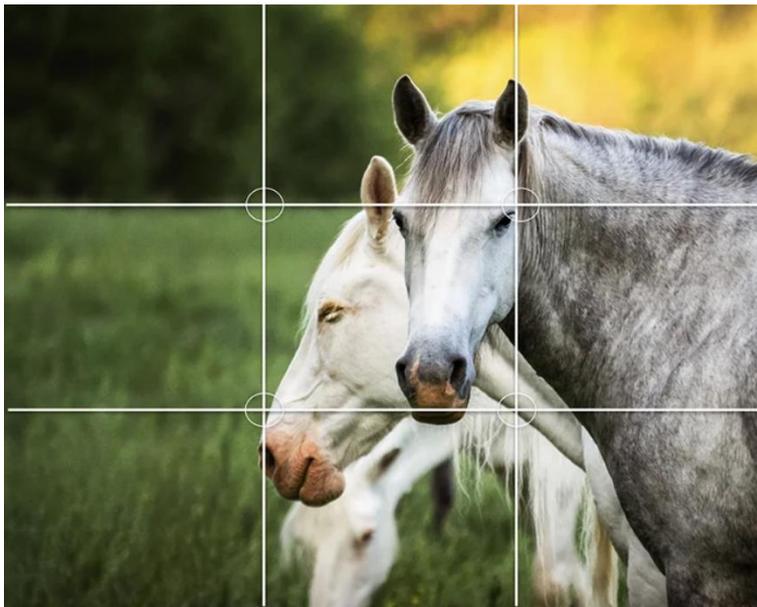


Figure 2.2. 22 Rule of third

2.2.5.2 Rule of Odds

Rule of odds is used to simplify complex scene which has multiple subjects. Rule of odds suggests to use odd number of subjects in photograph as compared to even number of subjects. This technique makes the photograph more appealing. Best number is suggested three but you can go up to 7 subjects.



Figure 2.2. 23 Rule of odds

2.2.5.3 Filling Frame with Subject

While taking photograph, you should try to fill the frame with subject in focus. There should be only enough surrounding in photograph to define location of the subject.



Figure 2.2. 24 Filling Frame with subject

2.2.5.4 Suitable Depth of Field

Depth of field is used to decide how much details of subject are to be revealed in the photograph. A shallow depth of field means subject is in focus and background is blurred. Deep depth of field means complete frame is in focus.



Figure 2.2. 25 Depth of field

2.2.5.5 Straighten Lines

The objects or surrounding of object that should be horizontal or vertical in photographs should be made so by post processing if the photograph captured has become tilted.



Figure 2.2. 26 Straighten lines

2.2.5.6 Balancing Elements

You should try to fill the voids in frame by including secondary non important subjects.



Figure 2.2. 27 Balancing

2.2.5.7 Leading Lines

Try to include natural lines that lead us to the subject. This generates a natural focusing sense in the photograph. These lines can be straight, curves, zigzags, and so on.



Figure 2.2. 28 Leading Lines

2.2.5.8 Symmetry and Patterns

Human eyes always search for symmetry and pattern in the surrounding and same is applied in photograph. So, you should try to capture symmetry, if possible, when taking photograph.



Figure 2.2. 29 Symmetry in photograph

2.2.5.9 Golden Rule

Golden rule also places the subject at important place in the photograph. This rule uses a mathematical ratio called golden ratio to define the position in photograph which is most important for viewer. As per this rule, the natural order favours a ratio of 1 to 1.618 for symmetry and patterns. When this ratio is applied to photography then it creates a spiral or grid which highlights main focus areas of frame. Some modern cameras display these grid lines or spiral when taking photograph. You should try to place the subject on these important locations in frame.



Figure 2.2. 30 Golden Rule Spiral

2.2.5.10 Left to Right Movement

You should always try to capture the objects when they are moving left to right. This is because we are adapted to read text from left to right and hence our works the same way for images.

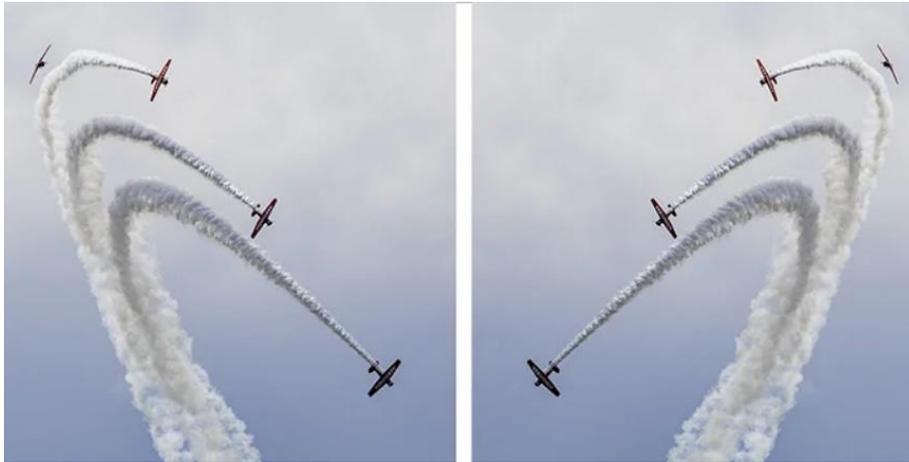


Figure 2.2. 31 Left to right movement

2.2.5.11 No Distractions in Frame

You should always try to avoid background or edge distractions from the frame when capturing a shot. See the image with and without distractions.

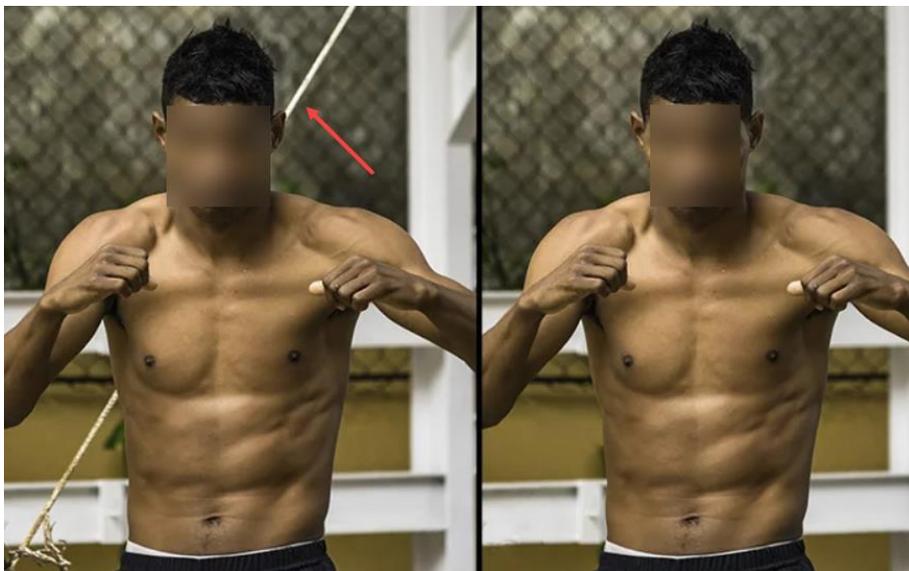


Figure 2.2. 32 Remove distractions

Exercise



1. Write a short note on different stages of camera evolution. Discuss in brief.

2. Discuss the functioning of digital camera.

3. How the frame rate of camera affects the photo/video quality?

4. What are the different types of digital cameras? Discuss in brief.

5. What do you mean by ISO in digital cameras? And how it defines the photo capability of camera?

6. Discuss some key factors of selecting the drone for photography.

7. What are the basic tools and equipments required for photography? Discuss in brief.

8. What do you mean by visual language of photography? Discuss in brief.

9. What are the different methods of exposure metering that are used to measure light in light meter?

10. Discuss the types of camera shots.

11. Write a note on golden rule while taking photographs.

Scan the QR code or click on the link(s) to check related video(s)



<https://www.youtube.com/watch?v=jJvUanigB1o>

History of Camera



<https://www.youtube.com/watch?v=0g1DprHBJAg>

Basic functioning of digital camera



https://www.youtube.com/watch?v=PF_Uf0XhY_w

Operating Digital Camera for First time



<https://www.youtube.com/watch?v=Sv3aVK7sIU4>

Types of Shots



<https://www.youtube.com/watch?v=fmaSryvySi8>

Composition Rules

3. Producing Still Images



Unit 3.1 – Producing Still Images



Key Learning Outcomes



At the end of this module, you will be able to:

1. Produces still images for different purpose like wedding ceremony, film shoots, and other events of importance.
2. Produce still images to be used for Hair/Make up and Costume Continuity, Continuity by script supervisor, art department, cinematographer, Dance, Stunt and Direction department.
3. Capturing series of still images used as visual account reflecting the progression of the work used as Pre-checks for Heads of Department to conclude for opinions on works in progress for later filming.
4. Capture series of exploratory images used by visual effects department to establish look and feel reference.
5. Capture the Character shot which is going to be central to the marketing campaign and central to recognition of the project's "brand".
6. Produce character shots through which audience can develop an attachment to the story and/or character and/or the supporting characters.
7. Ensemble Shot of two characters or majority of the project's cast which can/must establish for the audience the relationships that exist between the characters.
8. Capture episodic Shot that alludes to the drama, the comedy, the action of the show.
9. Still images which are used for publicity in the Electronic Publicity Kit, as well as on web sites, in TV and festival guides, on posters, and as cover art for a whole range of film merchandising.
10. Publicise still images which are used by the production company, publicity designers, the distributors and the broadcasters.
11. Production stills which are key to the successful marketing of films, television shows, and factual media.

UNIT 3.1: Producing Still Images

Unit Objectives

At the end of this unit, you will be able to:

1. Produces still images for different purpose like wedding ceremony, film shoots, and other events of importance.
2. Produce still images to be used for Hair/Make up and Costume Continuity, Continuity by script supervisor, art department, cinematographer, Dance, Stunt and Direction department.
3. Capturing series of still images used as visual account reflecting the progression of the work used as Pre-checks for Heads of Department to conclude for opinions on works in progress for later filming.
4. Capture series of exploratory images used by visual effects department to establish look and feel reference.
5. Capture the Character shot which is going to be central to the marketing campaign and central to recognition of the project's "brand".
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10. Publicise still images which are used by the production company, publicity designers, the distributors and the broadcasters.
11. Production stills which are key to the successful marketing of films, television shows, and factual media.

3.1.1 Still Image Production for Wedding Ceremony

Wedding photography includes many events and hence many techniques of photography are used. A wedding photography includes documentary, portraits, group photography, close-ups, event, and many other techniques. Wedding photography has no second chance so you need to get the best shots in one go before next part of wedding ceremony starts. Hence this job is very demanding and intricate. The equipment required in wedding ceremony are:

- A full frame DSLR or Mirrorless camera with ability to work with High ISO.
- A set of lenses with pre-set focus points for different occasions.
- A tripod to stabilize camera
- Fast memory card with enough storage based on duration of event
- Flash Light
- Photographic reflectors

After making sure you have all the items need for wedding event, prepare your workflow for photoshoot in advance. Following parameters can help you in deciding the workflow:

- Goal for wedding photography
- Commitments and timeline
- Wedding Pattern in work area
- Typical client and their behaviour
- Budget

Once, you have decided your workflow based on parameters, now you just need to execute your plan and keep flexibility in your plan for unavoidable unknowns like last minute shoot of family group photos. Various stages involved in a wedding ceremony photography are discussed next.

3.1.1.1 Pre-Wedding Photoshoot

A pre-wedding photoshoot as the name suggests is performed before wedding. This is the time when you can control the surround and other factors to get best photos. It is important to get detail shots at this stage. At this stage, you need to capture following items/objects/subjects.

- You need to capture the dress of bride with contrasting venues/scenarios.
- Capture bride and bridesmaids getting ready for wedding using your common sense. Some major shots at this time can be: bride touching hairs or performing make-up, bride putting on her shoes/sandals, and so on.
- Mother or dear of bride putting jewellery on the bride.
- First look of bride after fully dressed up.
- Capture groom and groomsmen getting ready. The shots will include groom adjusting cufflinks, putting on shoes, adjusting tie/sherwani/suit.
- Portraits of bride and groom individually.
- Group photos of bride, bridesmaids, and family members.
- Group photos of groom, groomsmen, and family members.
- Detail shots of rings, bridal jewellery, bridal dresses, any antique to be used in wedding, wedding invitation, and car if decorated for wedding.
- Always photograph bride and groom when they see each other for the first time at the occasion. You will need an assistant for this occasion.

3.1.1.2 At Wedding Ceremony

At this stage, you should keep a tight eye on the schedule of events and move between different spots at venue to capture the moments. Always take shots with different angles and compositions. Below is the list of shots to taken at wedding ceremony:

- Parents and grandparents entering the venue.
- Groom and groomsmen entering venue.
- Members of bridal group entering the venue.
- Close-up shot of rings bearer on both sides.

- Bride entering the venue and reaction of groom. To do this, place yourself about 3 feet from stage and take shots of bride first then turn around and take focus shots on groom's face.
- Ceremonial items based on their schedules.
- Wide angle shot of audience and entire venue.
- Keep an eye for emotions of family members sitting at front in audience and capture them as per the occasion.
- Capture the ring exchanges with multiple angles and frames. Include close-ups of individual hands with rings and when they are folded together.
- If Cristian wedding then capture the kiss, if Hindu wedding then varmala, and if from other religion and pick occasion accordingly.
- Capture Hindu Pheres and other rituals of the wedding with medium and close-up shots.

3.1.1.3 After Wedding

Once the wedding rituals are complete, you again get the time to control composition for photographs. At this stage, group photos and family poses are the target for photographs. Some of the important shots at this stage are given next.

- Get a list of family members from each side in advanced and take family poses for members from both sides.
- Close-up and Medium shots of couple together.
- Couples with bridal group and couple with groomsmen.
- Outdoors or secondary location photos of couple which will include a variety of different poses with full frame and close-ups of each pose for variety. Include both still poses and action poses. Note that these photos will later get their place in large frames hanging on walls for a long time so make them special.

3.1.1.4 At Reception

Once you are at the reception, at this stage, you need to capture events like cake cutting and dance from both sides. Some of the important shots for this stage are:

- Cake before being cut with candles and without candles using close-up shots.
- Venue with full frame shots.
- DJ, dance floor, and dance of members from both sides.
- Dinner table and dining couple with family members.
- Other special events if planned by client.

Once the event is complete, backup the files at two different storage medias and start editing them while keeping the client informed.

Note that you can apply same background knowledge to plan for corporate events, and other similar events.

3.1.2 Make Up Photography

When performing make-up photography of subject (model) it is advised that the subject is using High-Definition makeup with no SPF. As using SPF in makeup creates avoidable glare. Apply powder to give a matte finish and reduce unnecessary shine. Do not use shimmer at cheek bones or it will look like the model is sweating. You can use a light highlighter at cheekbones to give glow to cheek bones. Do not use frosted lipsticks as they will create shine on lips, you can use satin or matte lipsticks to do the job. Use matte eye shadows and natural lashes to enhance eyes in photograph.

Create a hair style matching your dress sense and location of photoshoot. If shooting for formal setup then make sure hairs are tied up neatly in an elegant updo. If shooting for casual location then let hair flow freely downward. If performing outdoor shooting then consider weather and accordingly select the hair style. Do not wear hair ties or bands that will leave mark on hairs.

After making sure the model is photo ready, now we need to setup photo composition.

3.1.2.1 Lighting

For makeup photography, it makes more sense to use natural light as much as possible. Depending on your location, identify the golden hours for photo shooting. When performing indoor shooting, find out the window with good natural light and light softening curtains.

If you are going to shoot in darker room then use a continuous light box or light that does not produce yellow glow. Use a small reflector in dark if there are dark circles coming near eyes of model.

3.1.2.2 Model Posing

When posing model for photoshoot, make sure the camera and model are in same frame level. You should not be required to point camera up or down for taking shots. You can use a modelling pose guide to decide on various poses for taking photograph.

3.1.2.3 Camera ISO

If you are shooting in a darker room then set ISO to 400+ and if you are shooting in a bright room then set ISO of camera to 100.

3.1.3 Still Photography for Visual Effects

Taking photos of an event in sequence can be used to generate visual effects in the film. You can later manipulate the sequence and orientations of these still photographs to give dramatic effects. Generally, software like Adobe After Effects are used to create visual effects.



Figure 3.1. 1 Still Photograph with Visual Effects

3.1.4 Photography for Marketing Campaign

Character shots are the still photographs used mainly for promotions and marketing campaigns. There are two categories in which character shots are taken: For promotion of a movie and promotion of a product. We will now discuss both the categories one by one.

3.1.4.1 Character Shot for Movie Promotion

As you know character shots for movie promotion are clicked during the production of movie. These shots fulfil two purposes in movie success: the shots are used for promotion of movie and the shots are used regularly by director and assistant crew to keep continuity in cast wardrobe, makeup, and appearance. A still photographer takes very high-definition photographs of the cast during movie production which cannot be extracted from frames of video recorded by video recorder camera. The photos take by still photographer find various uses for promotion as given next.

- Used in theatrical release poster.
- Used on DVD box
- Used as official website photos
- Used in billboards
- Used in printed advertisements
- Used in press and media releases

Still photographers working with movie crew must minimize their presence at the production site. This is because there are actors concentrating on their scene, directors and assistant crew deep into their job, and most important of them a boom microphone that can hear click of your camera. Just one click sound can cause distraction and whole scene has to be repeated. This is achieved by sound proofing material wrapped to the camera, installing muffles, using sound blimps that can reduce sound of camera motor which is running the shutter. A still photographer produces more than 2000 photos per week that can be used as marketable media. Most of the work here depends on creativity of photographer and exploration for new ideas.

3.1.4.2. Product Photography

If you have visited Amazon, Flipkart or any other ecommerce site then you will find various images of the product which make you feel them rather than see them. This work of still photography is under the umbrella of product photography. For performing product photography, you will need a DSLR or Mirrorless camera, a 100mm lens for macro photos, a 24-70mm lens for standard zoom, a universal tripod for 3 axis camera movement, a colour checker to make white balance adjustments during post processing, a foldable table to place product during photoshoot so that all the images are consistent, glue/tape to hold the product in desired orientation on the table, a light box if you want a better control on lighting of object, and a light flash.

If you have a large object to be photographed and do not have enough lighting then you can take multiple shots of the object with light coming from different directions. After collecting all the lighted images, you can superimpose them in a post processing software to get final image.



Figure 3.1. 2 Superimposed images of same product

You can use speedlight for small objects to dramatic shadow and light effects in the image.



Figure 3.1. 3 Using Speedlight for product photography

When photographing a food product, you should use a reflector with light source to eliminate as much shadow as possible.



Figure 3.1. 4 Food Product photography

Exercise



1. What are the equipment and parameters required for photoshoot in wedding ceremony?

2. What do you do in pre-wedding shoot?

3. Discuss the list of shots to be taken at wedding ceremony and after wedding ceremony.

4. What are the values of ISO to be set while shooting in darker room and bright room?

5. What are the things required for performing product photography?

6. Why should we use reflector while taking photographs?

Scan the QR code or click on the link(s) to check related video(s)



<https://www.youtube.com/watch?v=TSOxIcdcgC>

Wedding Photography



<https://www.youtube.com/watch?v=y-rDYt8ZKFQ>

Product Photography

4. Applying Drone Techniques for Still Photography



Unit 4.1 – Drone Techniques for Still Photography



Key Learning Outcomes



At the end of this module, you will be able to:

1. Describe drone technology and its uses.
2. Analyse scope for its uses including legal provisions.
3. Prepare pre-fly checklist like fly zone, weather, surroundings, etc.
4. Demonstrate its resolution, scale and applicable projection.
5. Confirm location for photography and discuss barriers.
6. Plan in line with the requirement of the events like launch session, weddings, conferences, meeting etc.
7. Oversees the security, operation and maintenance of equipment utilized for photography.
8. Discuss features available in drone and required drone.
9. Demonstrate drive of drone and its stationary (motionless) position and angles to capture image and necessary tools requirements including lightings.
10. Interpret safe operation of drone and its legal measures/restrictions.
11. Ensure drone settings like camera, battery, firmware, analyse difference between copyrighted material, fair use, intellectual property, and derivative works.
12. Investigate whether need of permission to use any of their digital assets.
13. Define range of shooting area and plan of sequences as well as suitable landing pad.
14. Interpret instructions given by the clients for the required mood, theme and feel.
15. Drive drone slowly to take photographs in sequence and in stationary need, motion control.
16. Use the FPV to frame up the shot.
17. Capture images which reflect lead performer/s attitude, body language, style, expression, movement, performance, timing, etc.
18. Produce a series of exploratory images which will be used during production, postproduction of the film by various departments.

UNIT 4.1: Drone Techniques for Still Photography

Unit Objectives



At the end of this unit, you will be able to:

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3. Prepare pre-fly checklist like fly zone, weather, surroundings, etc.
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5. Confirm location for photography and discuss barriers.
6. Plan in line with the requirement of the events like launch session, weddings, conferences, meeting etc.
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8. Discuss features available in drone and required drone.
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4.1.1 Introduction to Drones

Drones are also known as unmanned aerial vehicles (UAVs). A drone is a small robot capable of flying and navigating via a remote control. Some of the basic components that you will find in various drones are given next.

- A battery or a fuelled power source
- Electronic speed controller
- GPS chip
- A camera
- A remote controller
- Lightweight composite frames

- Rotors and Propellers
- An array of sensors like proximity sensor, altitude sensor, accelerometer, light sensor, and so on.

A drone can have following features based on the applications:

- High performance camera with capabilities like zoom, gimbal stabilization and so on.
- AI (artificial intelligence) module which can detect and follow objects.
- AR (Augmented Reality) feature which allows to superimpose virtual objects on the camera feed.
- Raw format storage capabilities
- Maximum Flight time and flight speed
- Maximum hover duration
- Maximum altitude
- Live video feed capabilities

4.1.2 Types of Drones

There are mainly four types of drones: Multi rotor drones, Fixed wing drones, Single rotor drones, and Fixed wing hybrid. The structure and features of these drones are discussed next.

4.1.2.1 Multi Rotor Drones

A multi rotor drone has minimum 3 to 8 rotors. These are the cheapest and most easily available drones in the market. There are even Do It Yourself (DIY) kits available for these drones. These drones provide easy control, vertical line up/down motion, side to side motion, rotation about the drone axis, ability to fly close to buildings and structures, and take multiple payloads. These drones are useful for Photography and videography, thermal reporting, surveillance, and 3D scanning of landscape. Their disadvantage is low flying time limited to maximum 30 minutes.



Figure 4.1. 1 Multi rotor drone

4.1.2.2 Fixed Wing Drones

Fixed wing drones look like miniature aeroplanes. They are designed to fly large distance rather than hovering at one place. These drones can fly at high altitude and can take heavier payloads. These drones are useful for area mapping, drone survey, and security. These drones are not useful for photography or videography.



Figure 4.1. 2 Fixed Wing Drone

4.1.2.3 Single Rotor Drones

These drones look like smaller helicopters. They are strong and durable. These drones have single large rotor to control altitude and flight while a small tail rotor to control direction and stability. These drones can take heavy payloads with better efficiency. They can also be powered by gas. These drones vibrate so they are not suitable for photography.



Figure 4.1. 3 Single Rotor Drone

4.1.2.4 Fixed Wing Hybrid Drones

These drones are combination of fixed wing and rotor-based designs. In this type of drone, rotor is attached to fixed wing. These drones can take off and land vertically and they can cover large distance. This technology is new and hence quite costly.



Figure 4.1. 4 Hybrid drone

There are various other sub types of drones available in marked based on application. For the profession of still photographer, you will need Photography Drones. These drones are generally equipped with 4K camera which can take high resolution pictures.

4.1.3 Rules for Drone Operation in India

Every country has its own set of rules for drone operation to ensure public safety and national security. In India, the rules for drone operation are given next.

- For operating nano drones heavier than 250 gram and non-commercial micro drones weighing more than 2KG, you will need remote pilot certificate. Note that you will need certificate from DGCA in India.
- Minimum age to fly a drone is 18 years.
- In India, all the flying zones are marked in three colours; Red, Yellow, and Green. The red zone is the area where military base, nuclear power plants, and other sensitive establishments exist. No one is allowed to fly drones in these areas. Yellow zones are controlled areas where you will need permission from aviation ministry or other regulatory officials. Green zone is the area where you can fly drones without needing permissions. You can check these zones on website of Indian Ministry of Civil Aviation (MoCA).
- Nano drones and micro drones cannot fly above 50 feet and faster than 25 m/s.
- Failure to comply with rules can cause a fine of 1 Lakh INR and jail.

4.1.4 Operating A Small Drone



Operating a drone is similar to playing video game with a remote controller. If you are proficient in that then you learn to operate drone in no time. The steps to operate a drone are given next.

4.1.4.1 Pre-flight Checks

- Check the range of transmitter (remote controller). You can either check the manual of drone or you can perform a quick test in open field to know limits.



Figure 4.1. 5 Remote Controller of drone

- Full charge the batteries of drone and remote controller. Check the maximum fly time of drone at full charge from its manual.



Figure 4.1. 6 Charging Remote and Drone

- If you are flying drone indoor then indoor then remove any obstacles that can cause accidents.

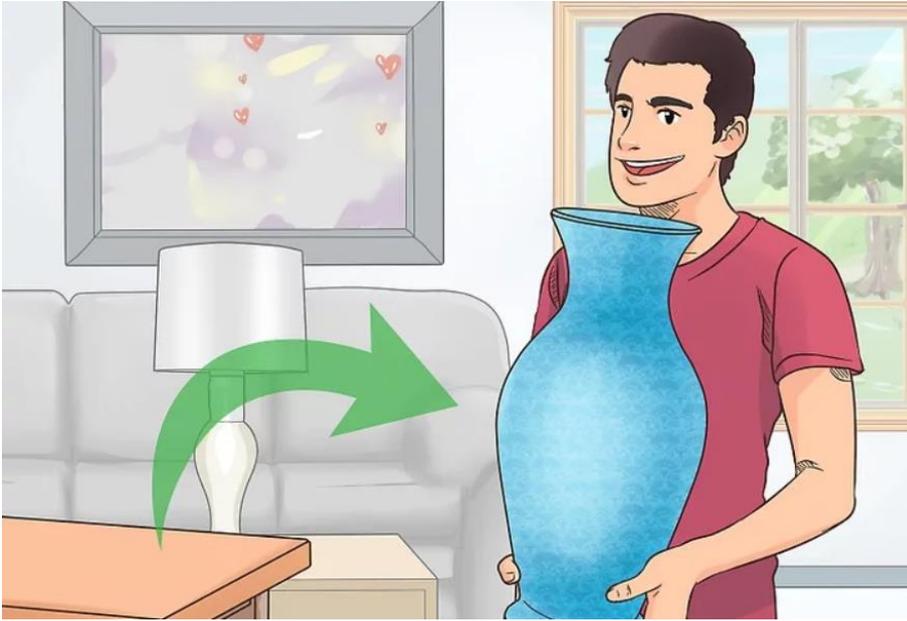


Figure 4.1. 7 Remove obstacles

- Turn on the drone and place it on a table with its back lights facing towards you.

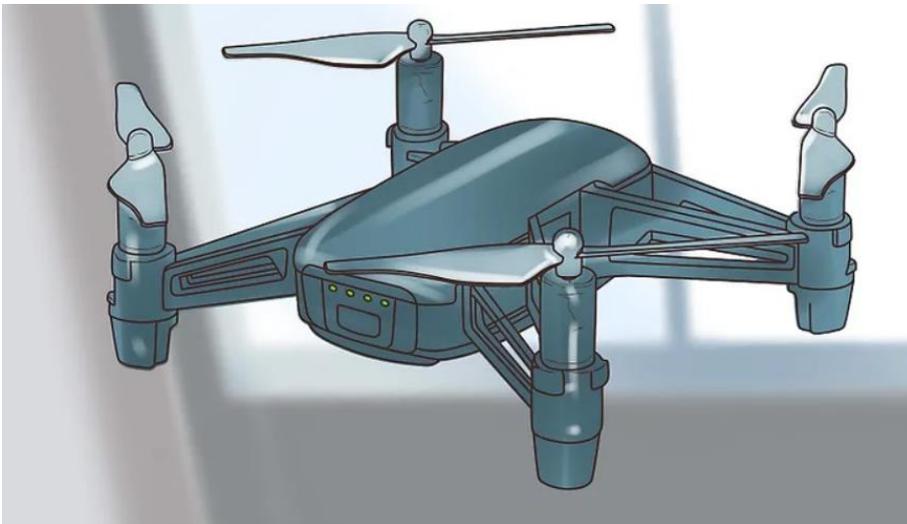


Figure 4.1. 8 Drone Lights

- Turn on the remote controller and check to make sure it is connected with drone. There may be some indicator lights or notifications to show that.



Figure 4.1. 9 Turning on remote controller

4.1.4.2 Drone Flying Practice

- Start drone in empty room and try various buttons on the remote controller to understand their functioning.



Figure 4.1. 10 Flying drone in empty room

- Push the left joystick forward to increase elevation of drone and push it backward to decrease the elevation of drone. If the drone is highly responsive to the joystick, then use gentle pressure while using joystick.



Figure 4.1. 11 Changing elevation of drone

- Similarly, use the right joystick to move drone left and right. Note that you should always use soft motion for this manoeuvre.



Figure 4.1. 12 Moving drone left and right

- Practice these motions and try to stabilize the drone in various patterns. Use shapes like box, circle, trapezoid, and so on to get better control of the drone.



Figure 4.1. 13 Practicing drone control

4.1.5 Aerial Photography using Drone

- Check the capabilities and limitations of your drone. You can check these parameters in the use manual of camera drone.

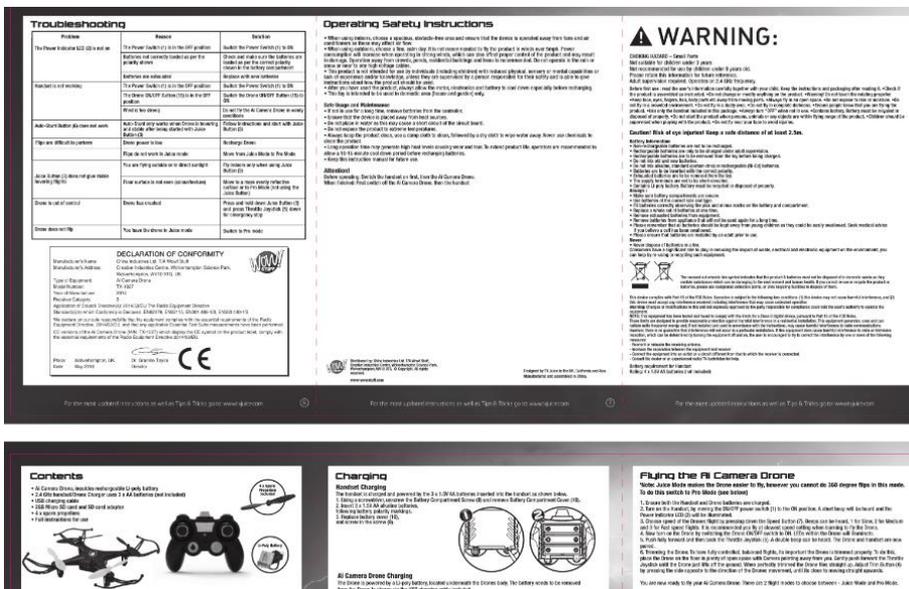


Figure 4.1. 14 Camera Drone Manual

- Prepare a pre-flight check list. Sample parameters for check list are shown next.

FLIGHT CHECKLIST



WHILE AT HOME

- Check Weather
- Drone Batt. Charged
- Controller Charged
- App Updated
- Firmware Updated
- SD Card Formatted
- All Gear Ready
- Check NOTAMS
- Research Flight Area
- Get Permissions

BEFORE TAKEOFF

- Notify Spectators
- Unpack Equipment
- Insert SD Card
- Remove Gimbal Lock
- Inspect Drone
(batt fitted, props secure, no cracks)
- Calibrate Compass
- Check Satellite Strength
- Check Signal Strength
- Ensure RTH is set
- Specify Lost sig. Action

AFTER TAKEOFF

- Hover Nearby for 20 seconds.
- Listen & Watch for any Abnormalities
- Test Controls
- Continuously Monitor Signal Strength
- Keep Drone Within Visual Line of Sight

ONCE LANDED

- Turn off the Drone, Then the Controller
- Ensure Desired Footage was Captured
- Inspect Drone for any Damage
- Fasten Gimbal Lock
- Pack Equipment & Log Flight

Figure 4.1. 15 Drone flight checklist

- Perform test drive of your drone and try to make different shapes in air to ensure proper functioning of drone.
- Use drone photography techniques to take photos.

4.1.6 Tips for Drone Photography

- Check the weather forecast for selected location in advance to know conditions.
- Always shoot in raw format so that modifications can be performed easily during post processing.
- Use the rule of third grid for composition as discussed earlier.
- Drone cameras usually have small sensors and they cannot function well with high ISO. So, you should keep ISO to 100 because there is enough lighting at the height.
- Use the Auto Exposure Bracketing (AEB) feature of drone if available for taking realistic shots.
- If your drone camera is capable of taking panoramic photos then you should always collect some high-quality panoramic photos.
- Take shots in different aspect ratios and frames like 3:2, 4:3, and 16:9.
- Use different camera filters depending on lighting conditions.
- Seek for symmetry and patterns when taking shots.
- Move drone to different positions getting different shades and shadows in photos.
- Keep your shutter speed to fast so that you get focused images without effect of drone vibrations caused by drone motors.

Exercise



1. What is Drone? Discuss its components and features.

2. What are the different types of drones? Discuss them in brief.

3. What are the rules and regulations for operating drones in India?

4. Discuss the pre-flight checks while operating drone.

5. Discuss some tips and tricks while performing photography with drone.

Scan the QR code or click on the link(s) to check related video(s)



<https://www.youtube.com/watch?v=rlz9dBQQeaE>

Operating Drone



<https://www.youtube.com/watch?v=C-YMfVlvC00>

Aerial Photography using Drone

5. Handling Digital Images



Unit 5.1 – Digital Image Refinement and Storage



Key Learning Outcomes



At the end of this module, you will be able to:

1. Plan, set-up and control digital workflow to maximise effectiveness and efficiency.
2. Import digital images from a camera to a digital workstation and make basic technical adjustments or corrections like adjusting or correcting exposure, colour balance, brightness and contrast, sharpening the image.
3. Make minor repairs to images or dealing with unwanted effects to the imported images to optimise them for future use.
4. Assess individual images for their visual and aesthetic qualities, composition and impact in relation to their likely or intended use, for their ability to tell a story or complement each other, when they are intended to be used together as a picture feature or montage.
5. Implement, use and maintain digital colour management procedures to maintain colour accuracy from image capture to output.
6. Use creative retouching tools for artistic and commercial purposes like retouching for fashion, beauty or advertising photography, image compositing, the use of CGI and the creation of 3D imaging.
7. Add key metadata including copyright and other crucial information such as picture number, caption and credit in image files.
8. Prepare image output and transmission of digital files.
9. Store, conserve and preserve images by using different types of image asset management systems.

UNIT 5.1: Digital Image Refinement and Storage

Unit Objectives



At the end of this unit, you will be able to:

1. Plan, set-up and control digital workflow to maximise effectiveness and efficiency.
2. Import digital images from a camera to a digital workstation and make basic technical adjustments or corrections like adjusting or correcting exposure, colour balance, brightness and contrast, sharpening the image.
3. Make minor repairs to images or dealing with unwanted effects to the imported images to optimise them for future use.
4. Assess individual images for their visual and aesthetic qualities, composition and impact in relation to their likely or intended use, for their ability to tell a story or complement each other, when they are intended to be used together as a picture feature or montage.
5. Implement, use and maintain digital colour management procedures to maintain colour accuracy from image capture to output.
6. Use creative retouching tools for artistic and commercial purposes like retouching for fashion, beauty or advertising photography, image compositing, the use of CGI and the creation of 3D imaging.
7. Add key metadata including copyright and other crucial information such as picture number, caption and credit in image files.
8. Prepare image output and transmission of digital files.
9. Store, conserve and preserve images by using different types of image asset management systems.

5.1.1 Organizing Digital Photos

Once you are done taking photos, the next step is to organize all those photos and make amendments. Here are some guidelines for organizing digital photos.

- Download an image organizer. It can be an open-source software to manage digital images like XnView or you can use Picasa from Google to do the job.

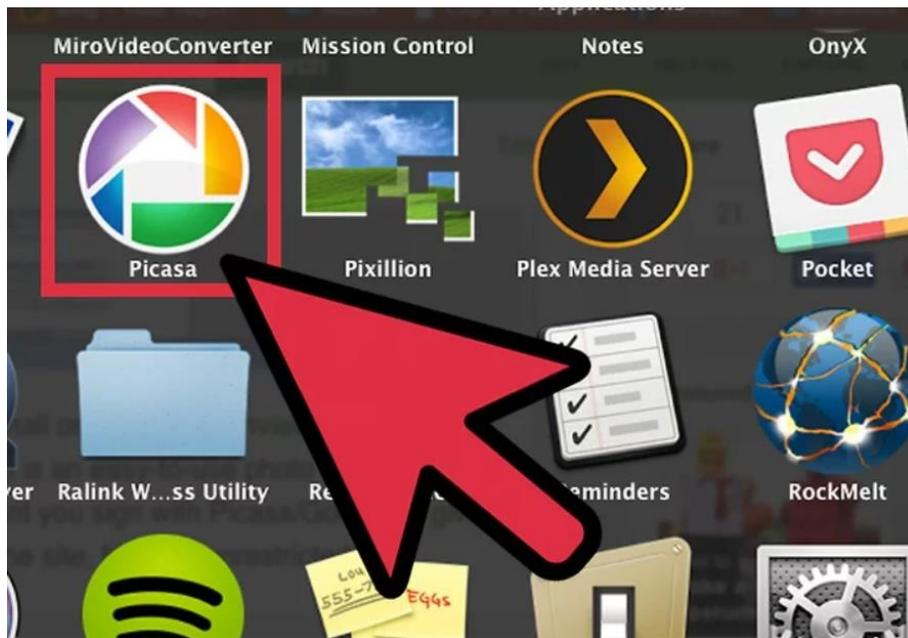


Figure 5.1. 1 Picasa software

- Transfer your photos in computer folder named by current date and time. You can also include name of client in folder name.

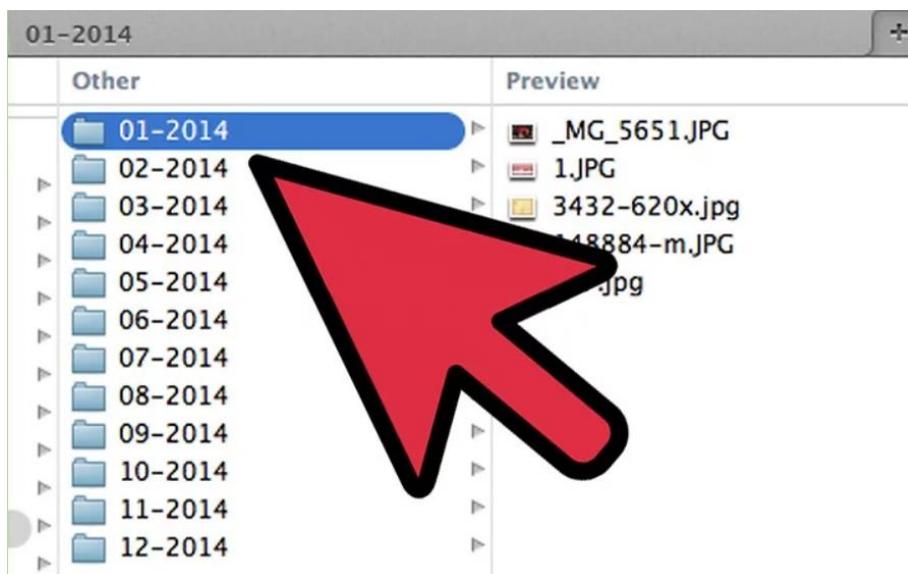


Figure 5.1. 2 Folder named by date

- Take backup of your photos by burning them on a CD or DVD.

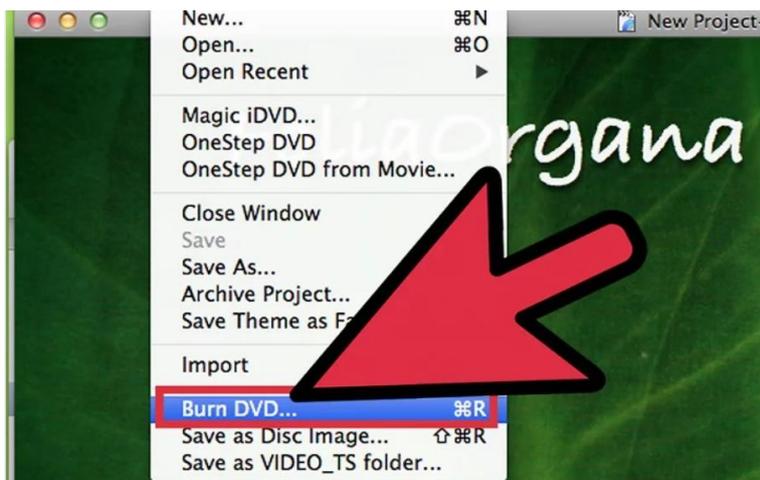


Figure 5.1. 3 Burn DVD option

- Check previews of photos taken by camera and copy your best shots into a different folder named with a “selected” suffix.
- You can create another backup of photos on Google drive or other free cloud storage portal.

5.1.2 Digital Image Refinement

There are various software available in market to perform refinement of photos. In this book, we will work on Photoshop software but you can apply the same knowledge to other post processing software as well.

5.1.2.1 Improving Colour Contrast

- Open the image in Adobe Photoshop.
- Click on the Brightness/Contrast option from Image > Adjustments menu in the menu bar. The Brightness and contrast dialog box will be displayed.
- Set desired values for brightness and contrast to the level where lightest and darkest areas of photo are clearly distinct.

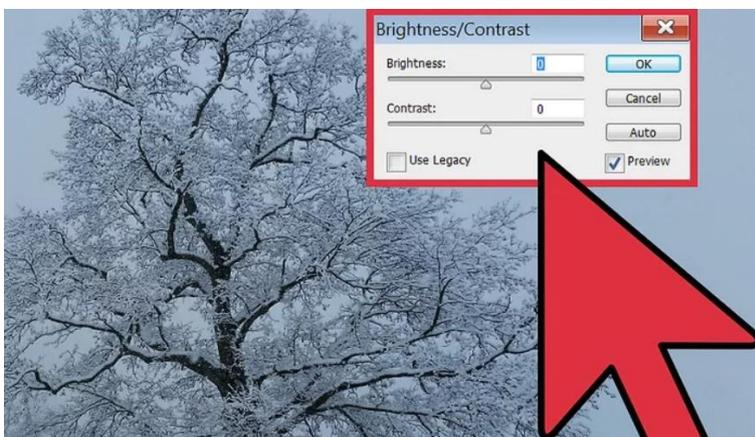


Figure 5.1. 4 Adjusting contrast and brightness

- Increase colour saturation of image to display colour more vibrant and eye catchy. In Photoshop, select the Hue/Saturation option from Image > Adjustments menu. Increase the saturation by small value and then check the preview before adjustment to find desired saturation level.

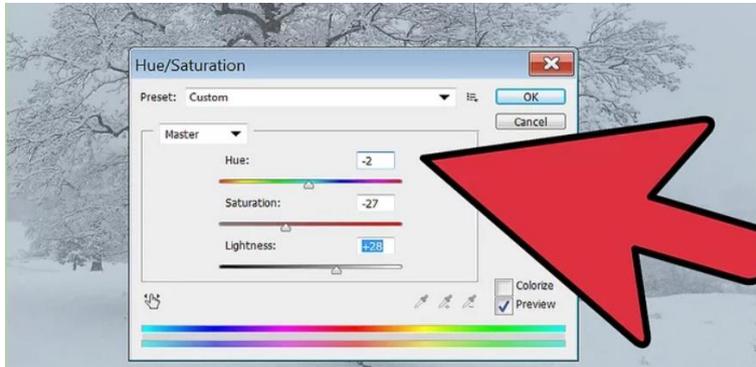


Figure 5.1. 5 Hue Saturation options

- If there is some tint in photograph from any unwanted colour then adjust the hue in dialog box to correct that.
- Remove overly bright and weak dark areas from the photo using Shadows/Highlights option available in the Image > Adjustments menu. Decrease the shadow value to make dark areas lighter and increase the highlight value to darken bright areas.

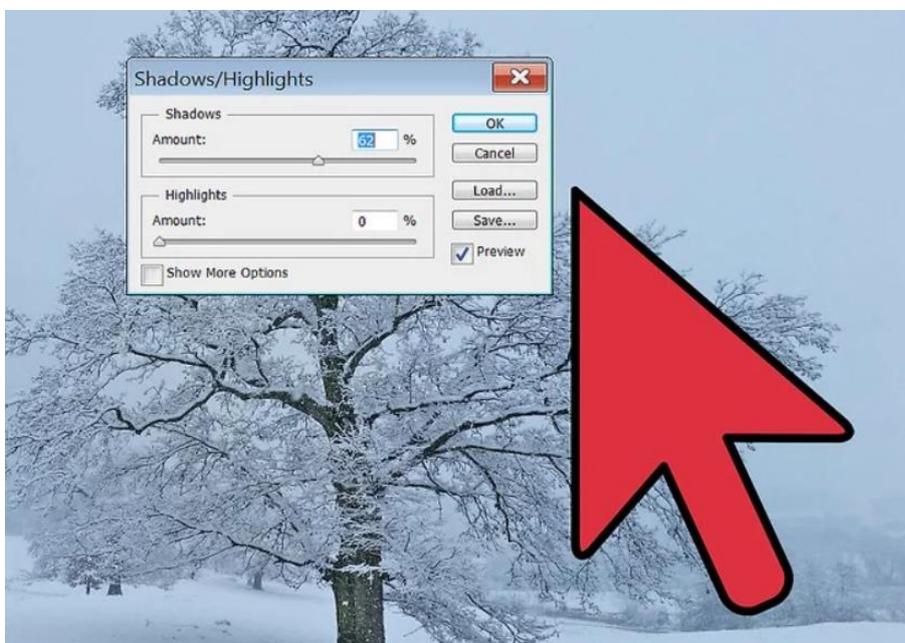


Figure 5.1. 6 Shadows and Highlights

- Sharpen the semi blurry and out of focus photos using the Sharpen tool in Filter > Sharpen menu.

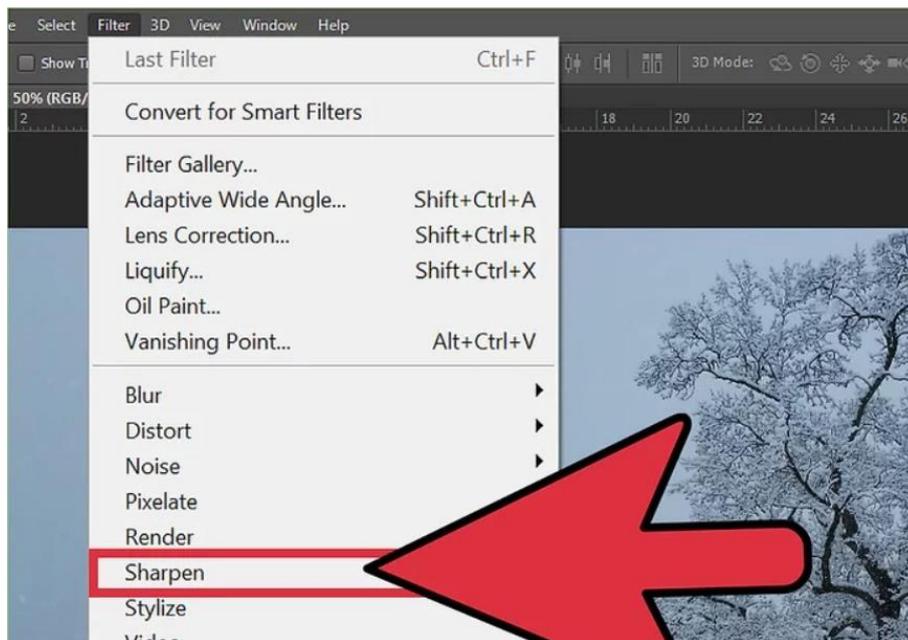


Figure 5.1. 7 Sharpen tool

- Shrink the image if you have taken a full frame shot and want to improve quality of image. Click on the Image Size tool from Image menu to perform this action. Shrink the image by 20 to 30% for achieving better pixel density.

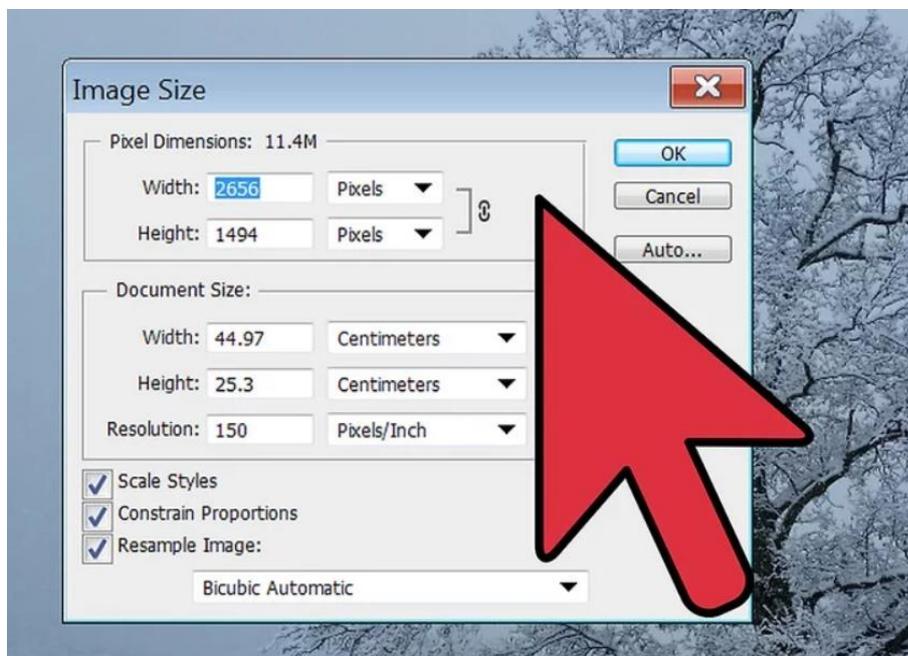


Figure 5.1. 8 Image size adjustment

5.1.2.2 Improving Composition

- Crop the photo to place subjects on rule of third focus points. You can either press C in photoshop or you can select the **Crop** tool from left toolbar to activate the cropping options.

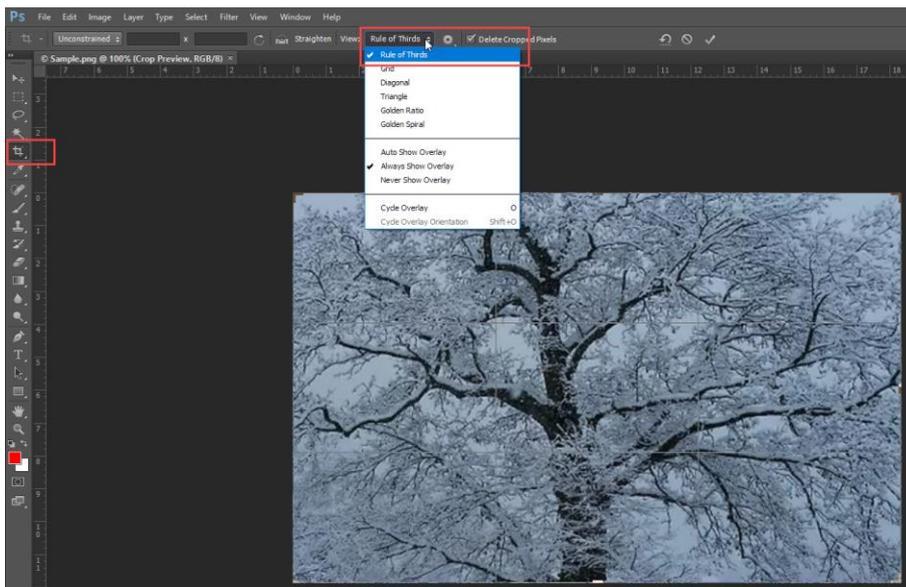


Figure 5.1. 9 Cropping with rule of thirds

- Clean the red eyes in portrait to compose portrait photos. The tool is available under Patch tools in photoshop.



Figure 5.1. 10 Red eye tool

- Use the Spot Healing Brush tool in Patch category of Toolbar in Photoshop to clean pimples on subject's face and other small issues.

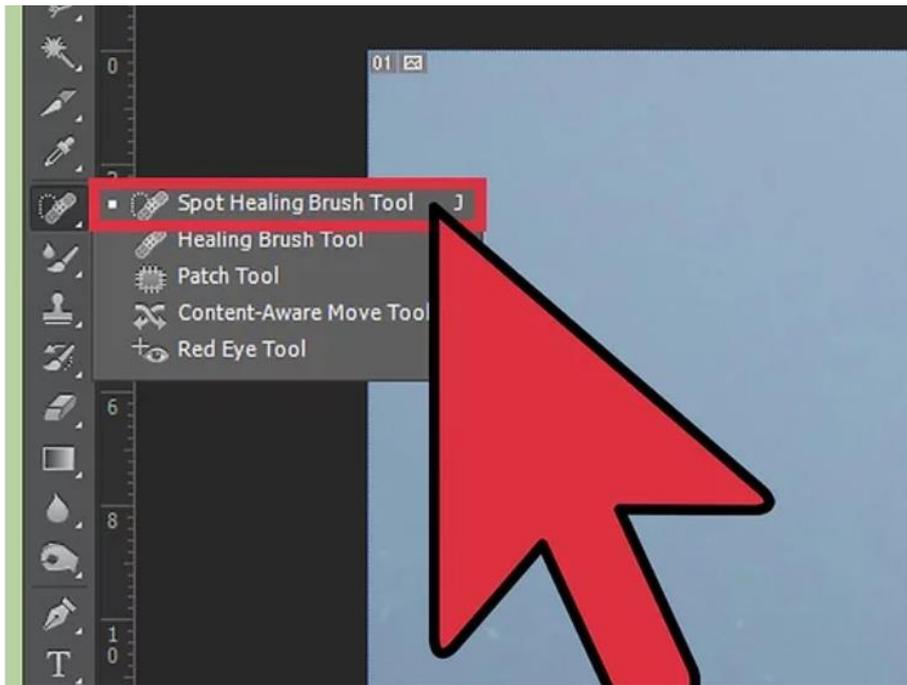


Figure 5.1. 11 Spot Healing Brush tool

Exercise



1. Discuss some guidelines for organizing digital photos.

2. How can you increase the color saturation of image in photoshop?

3. How can you clean pimples on subject's face in photoshop?

4. What do you do to the image in photoshop for achieving better pixel density?

Scan the QR code or click on the link(s) to check related video(s)



<https://www.youtube.com/watch?v=-jS5JjOuCx4>

Digital Image Refinement

6. Developing and Maintaining Portfolio



Unit 6.1 – Developing and Maintaining Portfolio



Key Learning Outcomes

At the end of this module, you will be able to:

1. Prepare portfolio, recording, show reel, etc.
2. Choose best headshots and performance shots to showcase.
3. Create unique portfolio which speaks to a range of audiences.
4. Apply social media network like YouTube / LinkedIn for promotional purposes.
5. Promote themselves through networking.
6. Approach associations for becoming a member.
7. Approach clients (producers /casting directors / dance director etc.) in a professional manner.
8. Be on time and in suggested dress for audition / presentation.
9. Be ready to cold-read as per project requirement(s) in line with the expertise.
10. Be ready for presentation /screen test, voice test etc., wherever required during audition/interviewing.
11. Negotiate for remuneration of contract / work order aligned with the assignments.
12. Recognize common components of an assignment contract including term and duration of project.
13. Collaborate with others to determine technical details of production.

UNIT 6.1: Developing and Maintaining Portfolio

Unit Objectives



At the end of this unit, you will be able to:

1. Prepare portfolio, recording, show reel, etc.
2. Choose best headshots and performance shots to showcase.
3. Create unique portfolio which speaks to a range of audiences.
4. Apply social media network like YouTube / LinkedIn for promotional purposes.
5. Promote themselves through networking.
6. Approach associations for becoming a member.
7. Approach clients (producers /casting directors / dance director etc.) in a professional manner.
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9. Be ready to cold-read as per project requirement(s) in line with the expertise.
10. Be ready for presentation /screen test, voice test etc., wherever required during audition/interviewing.
11. Negotiate for remuneration of contract / work order aligned with the assignments.
12. Recognize common components of an assignment contract including term and duration of project.
13. Collaborate with others to determine technical details of production.

6.1.1 Developing and Maintaining Portfolio

The first step in creating a portfolio is to decide your goal for creating portfolio. In simple terms, you need to decide your field of operation for which portfolio is being created. If you are targeting portrait photography market then your portfolio will be different from real estate photographer.

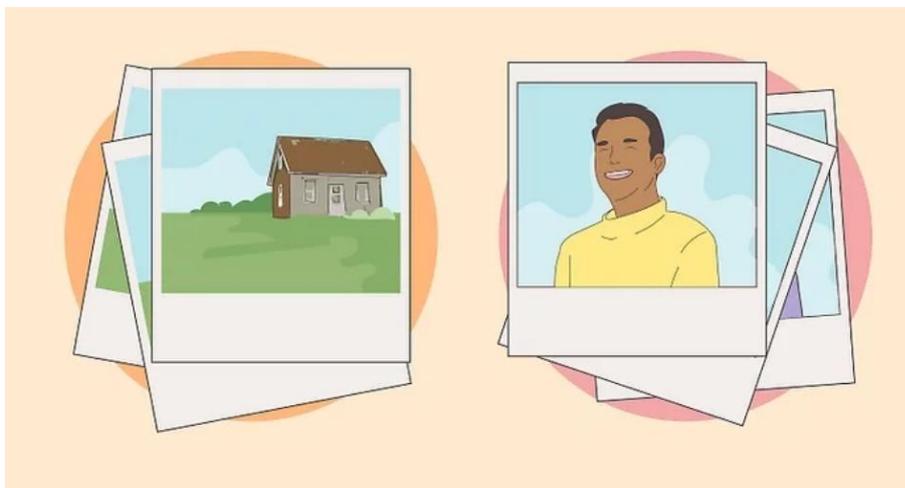


Figure 6.1. 1 Deciding portfolio goal

After deciding goal, pick your best photographs from the niche selected for portfolio. If you are targeting portrait market then pick best portrait photos from your collection.

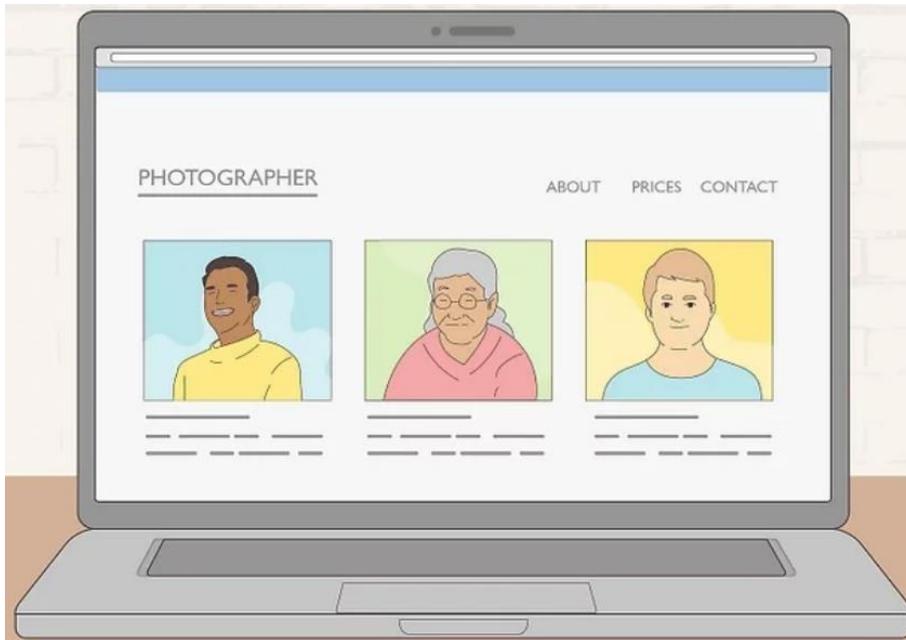


Figure 6.1. 2 Picking photos

Check the other photographers in your niche on internet and compare their portfolios. Note the good elements of portfolios of other websites and then organize your portfolio accordingly.

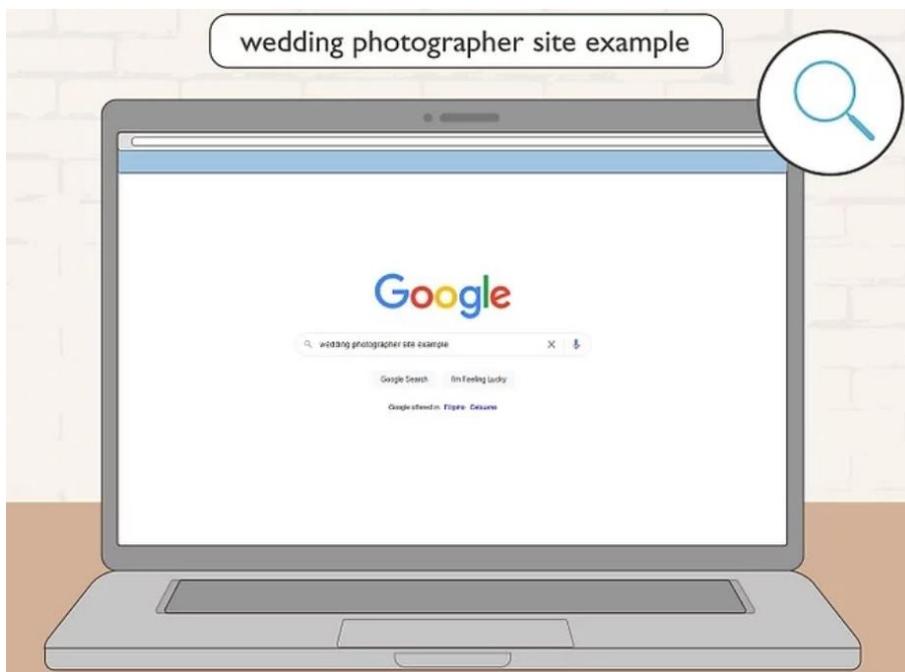


Figure 6.1. 3 Searching profiles for portfolio

Now, search photos matching your specialization in your selected photo collection and put them in a different folder.

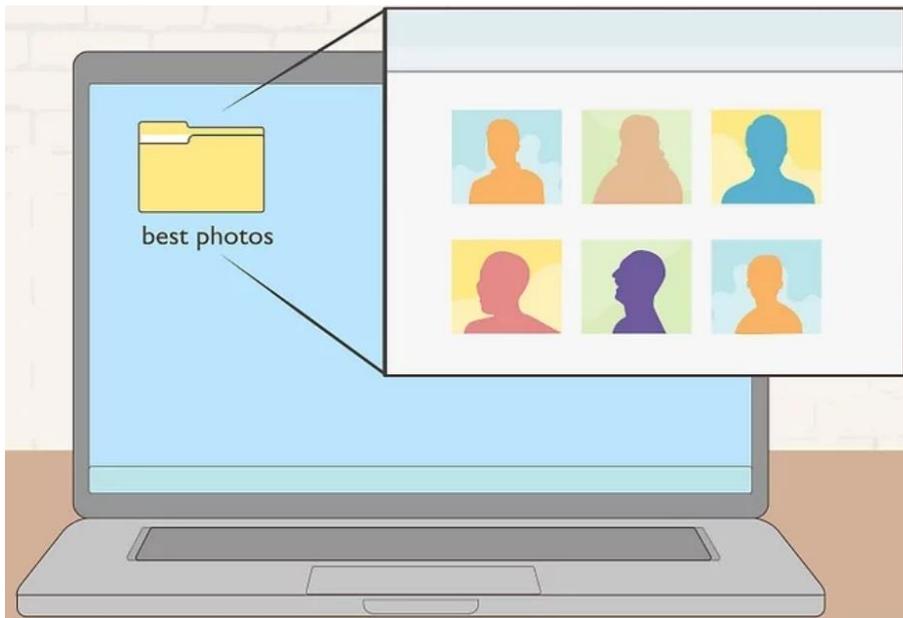


Figure 6.1. 4 Selecting specialization

Identify a website builder to be used for creating your web portfolio.

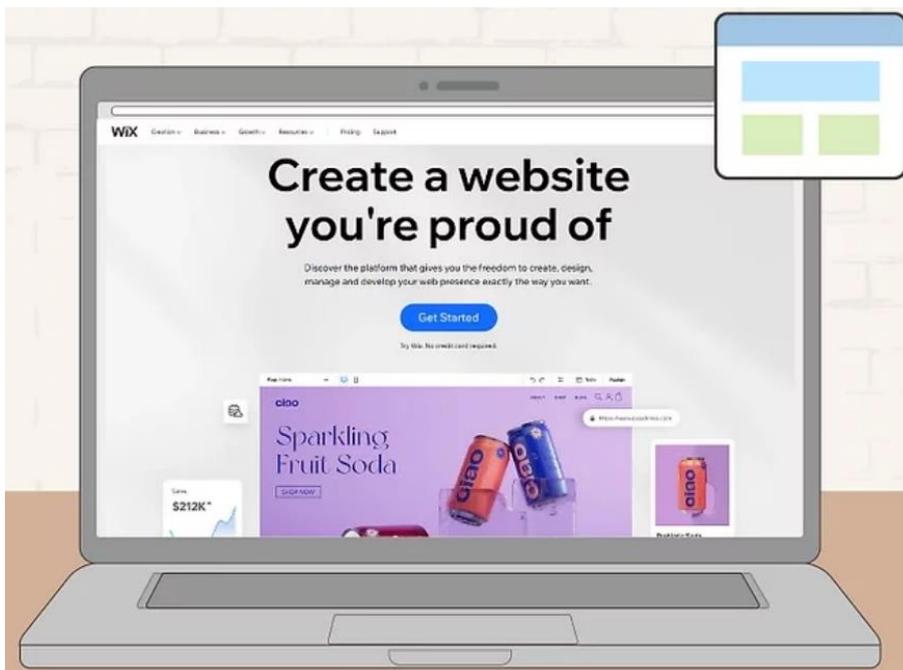


Figure 6.1. 5 Website builder

Select a simple web theme and put your photos in easily accessible way.



Figure 6.1. 6 Placing photos on web

Label each photo with caption that denotes your skills and suits the search engine optimization.

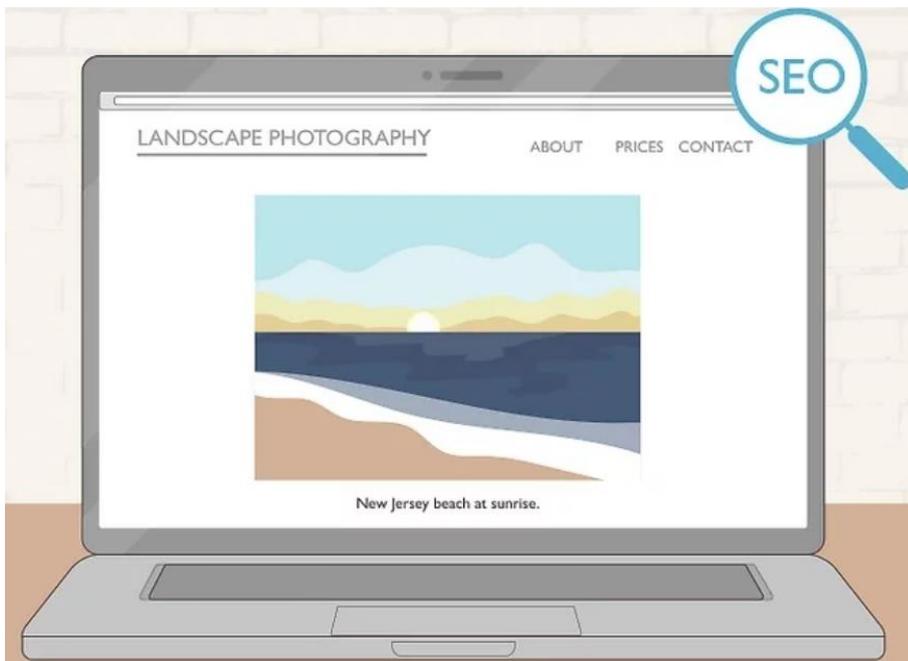


Figure 6.1. 7 Labelling photos

Create an about me page and write about yourself, address, skills, certificates, and other professional details.



Figure 6.1. 8 About me page

List your price and contact details in separate pages.

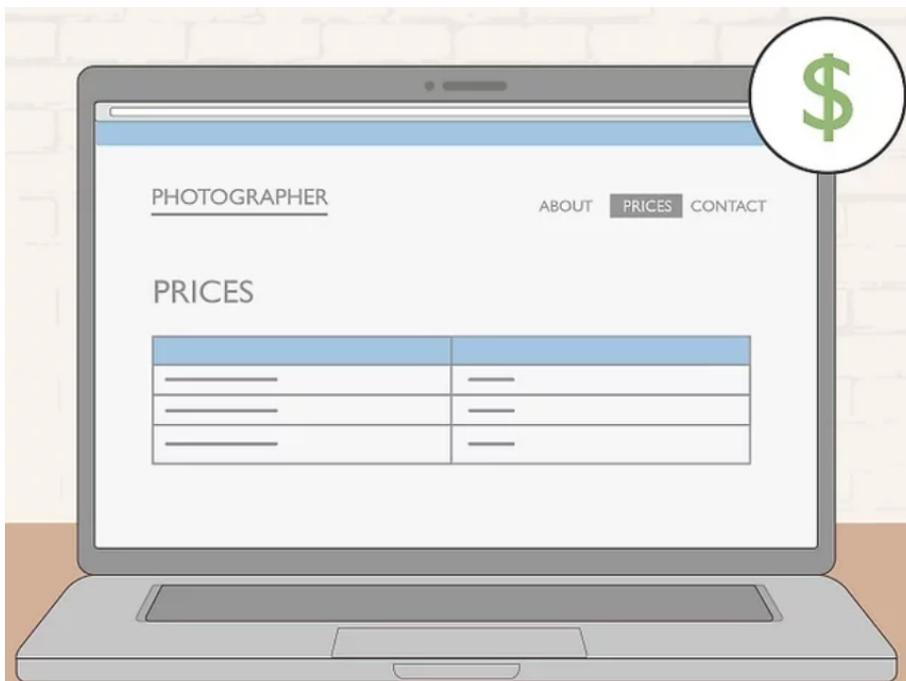


Figure 6.1. 9 Price page



Figure 6.1. 10 Contact page

Test and publish your website. Add your website address in your visiting card.

Exercise



1. Write a short note on developing and maintaining the portfolio.

Scan the QR code or click on the link(s) to check related video(s)



<https://www.youtube.com/watch?v=s7IFOzr44r8>

Developing and Maintaining Portfolio



7. Health & Safety Comply with Workplace

Unit 7.1 – Safety, Health, and Hygiene

Unit 7.2 – First Aid



Key Learning Outcomes



At the end of this module, you will be able to:

1. Observing and understand the current health, safety, security policies and procedure of organization.
2. Understand the safe working practices pertaining to own occupation.
3. Understand the government rules and policies related to the health and safety including emergency procedures for accidents, illness, fires or others.
4. Identifying the person responsible for health and safety in the working area, including those persons whom to contact in emergency.
5. Identifying the security signals in the workplace fire alarms, staircases, fire warden stations, first aid and medical rooms.
6. Identifying the possible work hazards in the working area which can cause risk to others health and safety.
7. Ensuring own and others health and safety in the workplace through precautionary measures.
8. Identify and recommend the basic terms and opportunities to the designated person of your workplace for improving health, safety, and security.
9. Identify and correct the cause of accidents, illness, and fires in your working area and within the limits of individual's authority.

UNIT 7.1: Maintain Workplace Health and Safety

Unit Objectives



At the end of this unit, you will be able to:

1. Observing and understand the current health, safety, security policies and procedure of organization.
2. Ensuring own and others health and safety in the workplace through precautionary measures.
3. Identify and recommend the basic terms and opportunities to the designated person of your workplace for improving health, safety, and security.

7.1.1 Introduction

Emergency evacuation is needed when staying within the building not safe anymore. Every organization has an evacuation procedure. Every organization has a safe place within the organization compound or outside the organization compound where all employees are expected to assemble in case of an emergency evacuation. The team leader guides the team and takes them to safe place. It is very important in these cases, to assemble at the safe area immediately.

If you do not reach the safe area on time, the team leader who is responsible for your safety will send someone to look for you. This will put the other person's life in danger.

Conditions for Evacuation

Emergencies which require immediate evacuation includes:

- Explosions
- Fires
- Earthquakes
- Hurricanes
- Floods
- Workplace violence
- Toxic material releases
- Tornadoes
- Civil disturbances

Every company has:

- **An evacuation policy.** All the TLs are responsible for informing their employees about it. When the TL is informing you about these details, pay attention. This negligence could cost lives.
- **A designated place for emergencies.** Ensure that you know where it is.
- **A “buddy system” for individuals with special needs or disabilities.** If you are a buddy to someone, ensure that your buddy is safely out of the premises with you.

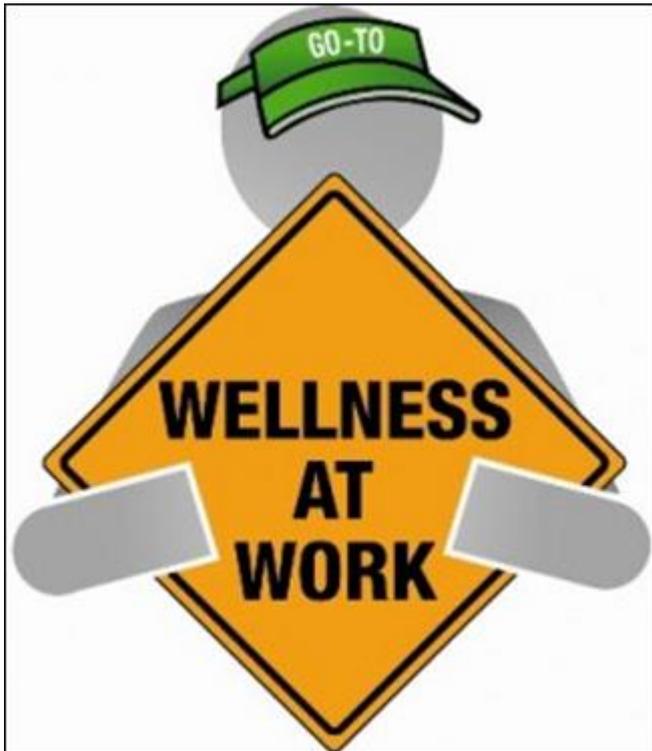


Figure 7.1.1 Conditions for evacuation

- **Floor plans with evacuation routes in work areas.** Ensure that you understand it so that you can use it in time of need.
- **Assembly areas.** These are the areas where you are required to assemble after evacuation.
- **Periodic evacuation drills.** Ensure that you pay attention during those drills. You need to save your life and you can be helpful in saving someone else's life too.

7.1.2 Mock Drills/ Evacuations

The responsibility of the safety of the workers in case of emergency is on the fire safety and evacuation workers. These workers need to go through the training to know the duties and responsibilities. In a workplace, the practice drill should be done in every 3 months under simulated fire conditions so that the workers know the techniques of saving their and other life. By practicing in the fire drills, all the workers are able to know the lifesaving method required in case of emergency.

These exercises are designed to check the staff response as per emergency. It is also a test of the emergency staff, working staff and other members of the fire safety department. Sometimes the drill is not successful but that's okay because humans learn from previous mistakes. But it is important for all the members that they correct their mistakes on time. Sometimes all the mistakes were not done by the members of staff, the mistake is done by the faulty equipment and safety plans. But, there is a need for staff training periodically.



Figure 7.1.2 Mock Drills

There are two vital components for preparing the fire safety plan which are written below:

1. An emergency action plan, which tells the procedure to be optimized in case of emergency.
2. A fire prevention plan, which tells the methods to be optimized to cool the fire as soon as possible.

You need to participate in arranged by organization for your personal safety and also for others safety. These drills help you in understanding the fire safety and evacuation plans sketch staff duties and accountabilities in time of emergency. Continuing training is required to help safeguard that the employees are conscious of those duties and responsibilities. Firefighting trainings serve as a prospect for staff members to validate, under replicated fire conditions, that they can perform those duties and responsibilities safely and efficiently. It's also a time for the workers or employee to demonstrate about the defend-in-place strategies and also the workers are able to take advantage of facility's fire protection features and exit facilities to protect the people in their care.

Fare excellent exercise designed to evaluate staff response to a replicated emergency. The fare is also a test of facility's fire safety/evacuation strategies and staff training programs. It is not essential that all run smoothly. That's okay, so long as staff and the organization understand from them and correct mistakes made. It's vital, therefore, that there be an analysis of each drill so that any problems met can be addressed. Perhaps the problems are due to unfinished or out-dated fire safety/emigration plans. Perhaps there's a need for further training of staff.

The two essential components of a fire preparedness plan are the following:

1. An emergency action plan, which details what to do when a fire occurs.
2. A fire prevention plan, which describes what to do to prevent a fire from occurring.

7.1.3 Medical Emergencies

Everyone plans for emergencies. That is the reason why we keep a first aid kit with ourselves. At work, however one is exposed to a lot of stress and physical activity. This could lead to certain medical emergencies. It's better to be prepared with the first aid measures and knowledge of implementing them on ourselves and on others. This module equips you with that information. Pay attention to these medical emergency procedures to understand how to conduct you in these crucial movements. Pay attention during these sessions. You might be able to save your own and your friend lives.

7.1.3.1 In case of Medical Emergency

A medical emergency is a situation in which a worker met in accident and needs medical help. The medical injury may be severe or life threatening. Some situation where:

- Person is not inhaling
- Heart attack or stock
- Heavy or severe bleeding
- Electric Shock
- In case of Poisoning
- Person gets somebody Burn

In case of medical emergency, the person or victim requires the immediate help. Sometime the person need attention before the you call the emergency helpline.

It is important to know or remember the number of emergency helpline or Emergency Medical Service (EMS) for the safety of self and other workers.

DON'T

- Let the victim to eat or drink anything.
- Confine the victim
- splash any fluid on victim face or on injury.
- shift the victim to another area or place unless it is the only way to protect the victim.

Bleeding

- Apply any type of pressure on the wound of victim with the help of bandage or any other means.
- Elevate the wound to slow the bleeding.
- When necessary, apply pressure on the pressure points near wound to block excess bleeding.

Fainting

- Fainting is a loss of consciousness which is due to temporary reduction flow of blood in the victim's brain.
- The unconsciousness of the victim may led to more injury in the workplace.

- Slow pulse of the victim.
- The pale, cold skin and sweating of the victim.

Causes of fainting:

- Eating or drinking lack of fluids which is also known as dehydration.
- The low blood pressure of victim.
- Due to lack of sleep.
- Over exhaustion of the worker

First Aid for Fainting:

- Lie down the victim on the back and raise the legs above his heart level.
- Ensure the clearance of victim's nose.
- Check for indication of coughing, or breathing problem.
- Loose the tight cloths like neck ties, collars, and belts.
- If the victim remains unconscious from the 1 minute, call the EMS as soon as possible.

Shock

The shock occurs in the human body on the failure of circulatory system. When insufficient amount of oxygen is reached in the body tissue, the shocks also occur. This condition is treated as soon as possible if not, it may lead to organ failure, and may cause death. Shock becomes worse by fear and pain of victim.

First Aid for shock:

- If possible, keep the victims in lying down position.
- Raise the legs 10-12 inches from the ground level unless you suspect a injury in back and bone.
- If the victim is feeling cold then cover him. If the victim is feeling hot then don't make suffocation by covering him.
- If the victim starts vomiting then move the victim to the suitable place.
- Loosen the tight clothing.

Muscle Cramps

- Stretch out the affected muscle of the victim to counterbalance the cramp part of the body.
- Firmly massage the cramped muscle.
- Apply some kind of moist heat on the affected area.
- If the cramp remains in the muscle, get medical help as soon as possible.
- Rest- avoids movements and activities that cause pain.
- Apply the ice on the cramped muscle it may reduce the pain and swelling of the muscle.
- Applying the light compression like elastic bandage on the affected area may reduce the swelling.
- Raising the affected area above the heart level may reduce the swelling as well as pain.

Fractures

As we all know about the fracture that is the crack or break in the bone.

Dislocation

A dislocation occurs when the bone slips out from the specified location. It generally occurs in the shoulders, thumb, elbow, fingers, lower jaw and other movable joints.

First Aid for Dislocations & Fractures:

- Immobilize the effected part.
- Stabilize the effected part
- Use a cloth as a sling.
- Use board as a sling.

7.1.4 First Aid

First aid is the assistance given to any person suffering a sudden illness or injury with care provided to preserve life, prevent the condition from worsening, or promote recovery.

Kits vary in contents but most kits have the following items:

- Band-aids / Adhesive bandages
- Gauze pads and tape
- Scissors, cold pack
- Wound bandage / compress
- Eye pads / eye wash solution
- First aid / burn cream
- Antibiotic ointment
- Face shield or barrier mask for providing CPR
- Forceps / tweezers
- Disposable thermometers
- First aid instruction booklet

7.1.5 Personal Protective Equipment's (PPE)

Personal protective equipment (PPE) refers to protective clothing, helmets, goggles, or other garments or equipment designed to protect the wearer's body from injury or infection. The safety by protective equipment includes electrical, heat, physical, biohazards, chemicals, and airborne particulate matter.



Figure 7.1.3 Personal Protective Equipment's

In the workplace, there are many situations which require immediate first aid to the victim and many countries have made some regulation, legislation, and guidance which specify the minimum level of first aid to be given to the victim. For this, the worker needs the special training and area for achieving the immediate first aid. Go achieve this, the training should be given by specialist first aid officer and necessary training given by learning institute. The training of first aid does not need any type of specific tools and equipment but may involve the improvisation with material offered at the time of training.

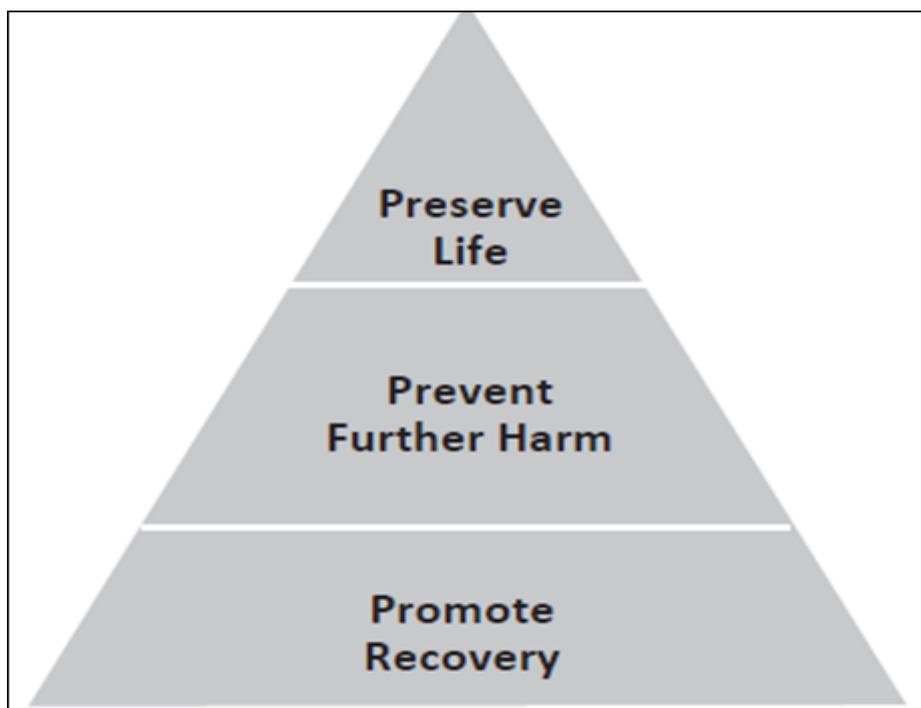


Figure 7.1.4 First Aid pyramid

While delivering First Aid always remember:

- To prevent from degradation.
- Act deliberately and confidently with the victim.
- The timings of Golden Hour should be first 60 minutes from an accident.
- The timings of Platinum Period should be first 15 minutes following an accident.
- Prevent the body shock and choking.
- Stop bleeding from the wound.
- Loosen the clothes of victim.
- Regulate the respiratory system of the victim.
- Avoid crowding near the victim.
- Take the victim to safe place or hospital near the workplace.
- Attend the emergencies situation with ease and without fear.
- Always remember to not overdo. Because the person giving the first aid is not doctor.

3. What is an accident and what are the types of accidents?

4. Discuss the types of fire-extinguishers and their uses?

5. Write a short note on health and hygiene?

6. What are the common components of First-Aid kit?

7. What are the symptoms of shock and what should be the first-aid?

8. What are the symptoms of heat exhaustion and what should be the first-aid?

Scan the QR code or click on the link(s) to check related video(s)



<https://www.youtube.com/watch?v=dCi5fP9D7hM>

Emergency Evacuation



<https://www.youtube.com/watch?v=Q62UwEPPnrg>

First Aid

8. Annexure



Annexure 1 – Details of QR codes given in the Units



Annexure 1: Details of QR codes given in Units

Module Name	Unit Name	Name of Topic	URL	Page No.	QR Code
Module 1. Introduction	UNIT 1.1: Introduction to Media & Entertainment	1.1.1 Media and Entertainment Sector in India	https://www.youtube.com/watch?v=0XbpzVPNjrl	14	 Introduction to Media and Entertainment Sector
	UNIT 1.2: Duties and Responsibilities of Still Photographer	1.2.1 Introduction to Still Photographer Job Role	https://www.youtube.com/watch?v=FEenQA0QUS6M	14	 Duties and Responsibilities of Still Photographer
Module 2. Photographic Equipment and camera techniques	UNIT 2.1: Camera and Equipment	2.1.1 History of Camera	https://www.youtube.com/watch?v=jJvUanigB1o	64	 History of Camera
		2.1.2 Basic functioning of Digital Camera	https://www.youtube.com/watch?v=0g1DprHBJAg	64	 Basic functioning of digital camera
		2.1.5 Professional Camera Menus	https://www.youtube.com/watch?v=PF_Uf0XhY_w	64	 Operating Digital Camera for First time

	UNIT 2.2: Camera Techniques and Methods	2.2.3 Camera Framing Methods	https://www.youtube.com/watch?v=Sv3aVK7sIU4	64	 Types of Shots
		2.2.5 Composition Rules	https://www.youtube.com/watch?v=fmaSryvySi8	64	 Composition Rules
Module 3. Producing Still Images	UNIT 3.1: Producing Still Images	3.1.1 Still Image Production for Wedding Ceremony	https://www.youtube.com/watch?v=TSOxslcdcgc	76	 Wedding Photography
		3.1.4 Photography for Marketing Campaign	https://www.youtube.com/watch?v=y-rDYt8ZKFQ	76	 Product Photography
Module 4. Applying Drone Techniques for Still Photography	UNIT 4.1: Drone Techniques for Still Photography	4.1.4 Operating A Small Drone	https://www.youtube.com/watch?v=rIz9dBQQeaE	91	 Operating Drone
		4.1.5 Aerial Photography using Drone	https://www.youtube.com/watch?v=C-YMfVlvC00	91	 Aerial Photography using Drone

Module 5. Handling Digital Images	UNIT 5.1: Digital Image Refinement and Storage	5.1.2 Digital Image Refinement	https://www.youtube.com/watch?v=-jS5JjOuCx4	102	 Digital Image Refinement
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