Photography

A short history
What is photography?

• The art of producing images of objects on photosensitive surfaces.

• The art, practice or occupation of taking and printing photographs.
Renaissance times (1500’s)

- Camera Obscura, Latin for “dark room,” refers to a dark box in which light rays from an object pass through a small hole or lens to produce the image on the plate or film contained inside. When the light rays create the image within the camera obscura, the image is generated upside down.
Renaissance times (1500’s)

- Renaissance artists used to trace the image produced by light passing through the tiny hole and build their pictures on it, especially to form *perspective*.

School of Athens – Raphael
1st photographs

- The first permanent photograph is credited to Louis Jacque Daguerre.
- Daguerro type photograph
- Very fragile, took a long time to develop.
What do these photos have in common?
Film (1860s)

- Eastman Kodak developed the film, with the silver halide (light sensitive) chemicals on plastic paper.
- When exposed to light, the silver halide crystals formed a latent image, which was further developed by applying other chemicals to it.
Digital

- Digital photography uses an electronic image sensor (the CCD) to capture light.

- Digital photography allows a lot more editing than film photography.
Digital

- 1st CCD invented in 1973 by Fairchild.
- 1st experimental digital camera by Eastman Kodak 1975.
- 1st commercial digital camera – the Logitech Fotoman (1990)
Camera Types
Point and Shoot cameras

• Also called compact cameras.
• Mainly small cameras
• Designed for people who want to take pictures but do not want to have a complicated tool.
SLR and DSLR

• SLR means Single Lens Reflex.
• SLRs are generally larger cameras.
• Their main ability lies in accepting a very wide range of lenses.
• Tend to produce much better photos than compact cameras but cost a lot more.
Mirrorless Cameras

- Same image quality as most SLRs
- Cheaper than SLRs
- Much smaller
- Can use almost all lenses via adapters
<table>
<thead>
<tr>
<th></th>
<th>Compact camera</th>
<th>Mirrorless</th>
<th>DSLR</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Lenses</strong></td>
<td>Small, light, but lower quality lenses</td>
<td>Can accept almost all lenses ever made</td>
<td>Great lens versatility</td>
</tr>
<tr>
<td><strong>Ease of use</strong></td>
<td>Generally simple to use</td>
<td>Relatively complicated to use</td>
<td>Complicated to use</td>
</tr>
<tr>
<td><strong>Image quality</strong></td>
<td>Good to poor</td>
<td>Very good</td>
<td>Very good</td>
</tr>
<tr>
<td><strong>Speed in use</strong></td>
<td>Slow to good</td>
<td>Fast</td>
<td>Very fast</td>
</tr>
<tr>
<td><strong>Pricing</strong></td>
<td>Cheap to moderately expensive</td>
<td>Expensive</td>
<td>Expensive to extremely expensive</td>
</tr>
<tr>
<td><strong>Flexibility (Accessories)</strong></td>
<td>Very little (generally)</td>
<td>Moderate (increasing by the day)</td>
<td>Vast range of accessories</td>
</tr>
<tr>
<td></td>
<td>Compact camera</td>
<td>Mirrorless</td>
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<tr>
<td><strong>Viewfinder</strong></td>
<td>Uses the LCD at back. Susceptible to strong sunlight</td>
<td>Back LCD/High resolution Electronic Viewfinder</td>
<td>Optical viewfinder (generally best)</td>
</tr>
<tr>
<td><strong>Live view focus</strong></td>
<td>Fast</td>
<td>Fast</td>
<td>Slow to fast (depending on model)</td>
</tr>
<tr>
<td><strong>Video Capture</strong></td>
<td>Good, with auto focus</td>
<td>Very good</td>
<td>Good to very good (on units equipped with it.</td>
</tr>
<tr>
<td><strong>Size</strong></td>
<td>Small, easily portable</td>
<td>Small, but fit only in large pockets</td>
<td>Large cameras</td>
</tr>
</tbody>
</table>
Main camera manufactures

- Canon
- Nikon
- SONY
- Panasonic
- OLYMPUS
- PENTAX
- FUJIFILM
Other smaller producers

Kodak
Casio
Leica
Ricoh
Samsung
Sigma
Physical Camera parts

• Top of camera controls
• Rear camera controls
• Front controls
• Ergonomics
• Touch screen/Screen/Viewfinder
• Built in flash
• Hot shoe
• Microphone
• Speakers
• External connectors
• Ports
• Memory Card compartment
• Battery compartment
• Tripod shoe
• Lensmount
Internal equipment

• Metering system
• CCD sensor
• Dust cleaning equipment
• Processor
• Image stabilisation
• Autofocus
• Flash system
Sensor sizes

Medium format (Kodak KAF 3900 sensor)

35 mm "full frame"

APS-H (Canon)

APS-C (Nikon)

1/1.6"

1/2.5"

1/1.8"

1/1.7"

APS-C (Canon)

Foveon (Sigma)

Four Thirds System
Picture output

- JPEG
- RAW
Top of camera controls
Rear camera controls
Front camera controls

- Popup flash button
- Bracket button
- Infra-red reciever
Lens mount
View finder
LCD
Lenses

• All cameras must have a lens.

• Lenses are measured by their focal length in mm.

• There are many different types of lenses
Lens types

Zoom vs Prime

Ultra wide angle

Wide angle

Normal lens

Telephoto

Prime Lenses
Ultra wide lens

Ultra wide lenses: considered ultra wide if their focal length is shorter than the short side of the film/sensor they are imagining on e.g. 19 mm
Wide angle lenses

Useful for architecture photography
Also useful for landscapes and interior photography
Normal lens

Also called standard lens.

Mainly produced with a focal length of 50mm

Should project the same image as our eyes see it.

Most manufacturers have a multiple types of this lens.
Telephoto lens

Telephoto lenses are considered to start at 70mm.

They are generally the largest lenses.

They can extend up to 500 mm.

They are used to flatten the image and to create a large amount of blurring behind the subject.

Their downside is the heavy weight and their price.
Prime lenses

Lenses which have just one focal length.

Tend to have extremely high image quality

Much lighter and smaller (pancake lenses)

Mostly give excellent results in low light.

Are expensive for one focal length
Compact cameras

Compact cameras come with various focal lengths.

Beginner models usually sport a 3x lens, 37mm – 111mm.

Can range up to 24mm – 360mm in the travel zoom segment.

Ultrazoom compacts can have a focal range of 24mm – 1000mm.
Compact Camera types

Beginners

Travel zooms

Waterproof compacts

Enthusiast

Bridge Camera
Compact camera picture quality
Memory Cards

- SD Card
- Compact Flash
- MMC
- Memory Stick
- XD
- Smart Media
Important Photographers

Ansel Adams (1902-1984)

Highly influential master of the monochrome landscape. Particularly famous for his images celebrating the beauty and majesty of Yosemite National Park and his ‘Zone system’ for accurately calculating exposure.
Diane Arbus (1923-1971)

American documentary photographer who produced emotionally intense and often disturbing portraits of people on the margins of society, including giants, dwarves, circus performers and transsexuals.
Henri Cartier-Bresson (1908-2004)

Innovative and highly influential French photojournalist and portrait photographer. He co-founded the Magnum agency and is forever associated with the term ‘the decisive moment’.
Annie Leibovitz (born 1949)
Arguably the most famous portrait photographer working today, Leibovitz has photographed many of the world’s major celebrities, often in elaborate and imaginative set-ups.