



# Using Digital Cameras

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# Digital Cameras are Versatile Devices

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There is no incremental cost. Hence they can be used for

- Taking Pictures of Scenery, People, Pets, Events
- Taking Inventory
- Recording inspections, observations, progress of work
- “Seeing” inaccessible places
- Each camera has different features. This presentation specifically refers to Olympus model SP501.

# Digital Cameras have Many Features

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But they have relatively few buttons/switches

- The features are accessed by
  - ▶ Multi function buttons/switches
  - ▶ Menus and soft buttons
- Even the simplest looking cameras are usually more than “point and shoot”
- To get better pictures you must be willing to refer to the camera manual because in the beginning it is difficult to remember all the button operation and menu navigation

# Automatic Operation (Point & Shoot)

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Gives good results in most instances  
But all cameras require you to make some adjustments

- Zoom
- Focus and auto focus illuminator
- Flash
- Macro and super macro
- Self timer
- Digital Image Stabilization
- Image quality, image size, compression
- Audio Recording
- Normal camera settings



# Automatic Operation - 1

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## Zoom

- Zoom (Optical Zoom)
  - ▶ Brings the subject closer in. (A narrow beam of light)
  - ▶ Zoom achieved by lens, example 10x
- Digital Zoom
  - ▶ Not available in Automatic

# Automatic Operation - 2

## Subjects Difficult to Focus

- Subjects with low contrast
- Subjects with very bright area in the center
- Subjects with no vertical lines
- Subjects at different distances
- Subjects not in the center of the frame
  - ▶ All the above can be overcome by locking the focus on other objects at the same distance (pressing the shutter button halfway), composing the desired picture and then pressing the shutter button fully
- Subjects that are fast moving
  - ▶ You have to use the shutter priority mode, not automatic
- Subject is too dark
  - ▶ Auto Focus (AF) illuminator

# Automatic Operation - 3

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Flash Adjustments (The built in flash has to be popped up)

- Auto
- Red eye reduction
  - ▶ Emits a series of preflashes before the final flash
- Fill in flash
  - ▶ Turns on flash irrespective of lighting conditions - to reduce shadows on subject
- Red eye reduction with fill in flash
- No flash
  - ▶ Flash is turned off. Used when flash is not allowed or not desired



# Automatic Operation - 4

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## Macro and Super Macro

- Macro
  - ▶ Get close up to 2.88 inches
- Super Macro
  - ▶ Get close up to 1.1 inches



# Automatic Operation - 5

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## Self Timer

- OFF
  - ▶ Takes pictures as soon as you press the shutter button
- 12 Seconds
  - ▶ Allows you to get into the picture after you press the shutter button
- 2 Seconds
  - ▶ Prevents camera shake due to pressing the shutter button, movement of mirror inside camera (some camera models), movement of wobbly camera stand



# Automatic Operation - 6

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## Digital Image Stabilization (DIS)

- DIS ON
  - ▶ Blur recorded by the camera is reduced before saving the image to the memory
  - ▶ Cannot be used when shooting multiple pictures
- DIS OFF
  - ▶ Saves image to the memory immediately

# Automatic Operation - 7

Image Quality/Size and Compression, # of Images on 512MB card

- SHQ/3072x2304 pixels with low compression, # 98 (ISO  $\leq$  1600)
- HQ/3072x2304 pixels with standard compression, # 280 (ISO  $\leq$  1600)
- SQ1, each with low or standard compression
  - ▶ 2560x1960 pixels, # 142/420
  - ▶ 2304/1728 pixels, # 176/515
  - ▶ 2048x1536 pixels, # 221/652
- SQ2, each with low or standard compression
  - ▶ 1600x1200 pixels, # 363/1030
  - ▶ 1280x960 pixels, # 560/1597
  - ▶ 1024x768 pixels, #863/2457
  - ▶ 640x480 pixels, #2129/5324
- Use higher quality/size with low compression not merely for printing large pictures, but also to crop small portions of the image and printing it on 5x7" or 8x10" paper



# Automatic Operation - 8

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## Audio Recording

- When Audio Recording is turned ON in the Camera Menu:
  - ▶ Sound is recorded for 4 seconds after each picture is taken
- It will be played back along with the picture when viewed on computer or TV



# Scene Modes

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- Scene Modes are one step beyond Automatic Mode
- You tell the camera the kind of scene you have in front of you. (See next slide) The camera makes the appropriate settings
- The number of available scene modes depends on the model of the camera



# Examples of Scene Modes

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Portrait

Self Portrait

Landscape

Landscape+Portrait

Sport

Night Scene

Night+Portrait

Indoor

Candle

Available Light

Museum

Sunset

Fireworks

Behind Glass

Documents

Shoot & Select 1

Shoot & Select 2

Shoot & Select 3

Beach

Snow



# Other Shooting Settings - 1

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Provides More Control in addition to all settings of Automatic Mode

- ISO Choices
- White Balance Settings (type of light)
- Metering Choices
- Focusing Choices
- Depth of Field Considerations
- Aperture Priority Mode (f-stop)
- Shutter Priority Mode
- Manual Mode
- Drive Choices



# Other Shooting Settings - 2

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Provides More Control in addition to all settings of Automatic Mode

- Digital Zoom
- Slow Flash
- Flash Intensity
- Panorama
- Sharpness Choices
- Contrast Choices
- Saturation Choices
- Time Lapse Shooting
- Noise Reduction





# ISO Choices

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Sensitivity corresponding to film speed

- Available in aperture priority, shutter priority and manual modes
- Choices are 50, 100, 200, 400, 800, 1600, 2500, 4000
- High settings may be introduce noise resulting in grainy images
- High settings limit your choice of image quality & compression



# White Balance

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Adjusting the color of the image

- Sunny
- Cloudy
- Tungsten lamp
- Fluorescent lamp 1 - daylight (homes)
- Fluorescent lamp 2 - neutral white (desk lamps)
- Fluorescent lamp 3 - white (offices)
- White balance compensation (intermediate settings) may be available in your camera
- Needs recalibration



# Metering Choices

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Changing the area for measuring the brightness

- ESP
  - ▶ Measures the brightness at the center and the surrounding areas separately to create an image with balanced brightness
- Center
  - ▶ Measures the brightness at the center and ignores the surrounding areas
- Weighted Center
  - ▶ Measures the brightness over a wide area with emphasis given the center

# Focusing Choices

## Where should the camera focus

- Auto Focus (AF)
  - ▶ iESP - The camera determines which subject to focus on within the viewing area
  - ▶ SPOT - The camera focuses on the AF area, usually the center
    - You can move the camera to bring the subject in the center, press the shutter half way (which locks the focus), move the camera to compose the image and then press the shutter all the way to take the picture
  - ▶ Area - You move the AF area anywhere in the viewing area and the camera always focuses on that area
- Manual Focus
  - ▶ Select manual focus from the menu
    - A scale shows up on the monitor/viewfinder
    - Move the focus mark up or down to the desired position
    - Take the picture

# Depth of Field

- The distance in front of and behind the subject that appears to be in focused
- Subjects are in focus not merely at the focus distance, but also for some distance in front and behind. This is called the depth of field
  - The depth of field is determined by:
    - ▶ The distance at which the camera is focused. The longer the distance, the greater the depth of field
    - ▶ The aperture. The smaller the aperture, the greater the depth of field
  - In digital cameras the monitor shows which subjects are in focus. You cannot do anything more than set the two variables mentioned above as desired
  - For example, to blur extraneous matter in the background, use shallow depth of focus



# Aperture Priority

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- You set the aperture (f-stop), the camera selects the shutter speed dependent on the available light and chosen ISO value
- Primarily used to control the depth of field



# Shutter Priority

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- You set the shutter speed, the camera selects the aperture depending on the available light and the chosen ISO value
- Higher speed selected to capture fast moving subjects
- Slower speed selected to capture movement e.g. flowing water



# Manual Mode

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- You take full control of all settings and choices in the camera
  - ▶ The camera may indicate whether you are over exposing or under exposing the image
- Can give the exact results you want
- You must know your camera well enough to make the settings within the available time to shoot the picture. (Know the buttons and navigate the menus)



# Drive Choices

Available in aperture priority, shutter priority and manual mode

- Single - shoots one picture at a time
- Continuous:
  - ▶ Normal - Keeps on taking pictures as fast as it can as long as the shutter button is kept pressed. Focus and exposure are locked at the first picture
  - ▶ High - Takes pictures at a faster speed than Normal
  - ▶ Auto Focus (AF) - Adjusts the focus for each picture. Hence speed is slower than Normal
  - ▶ Bracket - You select the number of pictures (3 or 5) and the exposure differential ( $\pm 0.3\text{EV}$ ,  $\pm 0.7\text{EV}$ ,  $\pm 0.0\text{EV}$ ). The camera will take the selected number of pictures each with the set exposure differential. Bracket is not available in Manual Mode



# Digital Zoom

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- Optical Zoom - up to 10x
- Digital Zoom - up to 50x (combined with optical zoom)
  - ▶ Digital Zoom has to be turned ON using the Camera Menu
  - ▶ ISO setting can be  $\leq 1600$
  - ▶ A portion of the original pixels are enlarged to fill the whole screen. Hence the image is not as sharp as with Normal zoom
- Note the limitations



# Slow Flash

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- Flash has to set to SLOW
  - ▶ Synchro set to Sync 1
    - Flash fires as soon as the shutter opens
  - ▶ Synchro set to Sync 2
    - Flash fires just before the shutter closes
- Typical use is get a streak of headlights or a streak of taillights of a moving car



# Flash Intensity

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- In the Camera Menu select Flash Intensity
  - ▶ It can be set to  $\pm 0$ ,  $\pm 0.3$ ,  $\pm 0.7$ ,  $\pm 1.0$ ,  $\pm 1.3$ ,  $\pm 1.7$ , or  $\pm 2.0$
- Use the negative settings when the subject is close to the camera
- Use the positive settings when the subject(s) is further away from the camera



# Panorama

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Taking a series of pictures to be combined later.  
Works when using Olympus brand memory card

- Select Panorama in the Camera Menu
  - ▶ Press one of the four-way buttons to tell the camera whether you are taking the series from left to right, right to left, up to down or down to up
  - ▶ Two vertical or horizontal lines towards the left/right or top/bottom show up in the monitor or view finder indicating the overlap you should have
- Take the series of pictures
- Later the Olympus software in the computer will join together the pictures into one

# Sharpness, Contrast, Saturation

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- In the Camera Menu, select Sharpness/ Contrast/ Saturation
  - ▶ Each of them can be set independently to  $\pm 1$ ,  $\pm 2$ ,  $\pm 3$ ,  $\pm 4$  or  $\pm 5$
- Get out of the Camera Menu and shoot the picture



# Time Lapse Shooting

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Take automatically a set number of pictures at a set interval of time

- In the Camera Menu select Timelapse
  - ▶ Turn in ON
  - ▶ In the next screen select Pictures using the left/right buttons
    - Select the number of pictures (from 2 to 99) using the up/down buttons
  - ▶ Select Interval using the left/right buttons
    - Select the time interval in minutes (from 1 to 99) using the up/down buttons
- Get out of the Camera Menu
- Place the camera on a tripod/stand, aim at the subject and press the shutter button
  - ▶ The camera will keep on taking the selected number of pictures at the selected interval

# Noise Reduction

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Reducing the noise during long exposures or high ISO setting

- Noise is a problem in digital camera sensors. It most commonly appears as either random colored dots sprinkled around the image or uneven coloration of what should be smoothly colored areas.
- To reduce noise, in the Camera Menu select Noise Reduction and turn it ON
- Get out of Camera Menu and take the picture
- Software will try and remove as much as possible before storing the image on the memory card



# White Balance Compensation

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Allows you to make a setting in between the discrete points

- In the Camera Menu select White Balance Compensation
  - ▶ A vertical scale shows up in the monitor/view finder
  - ▶ Using the top/bottom buttons of the 4-way switch move the point up (towards blue) or down (towards red) as desired
- Get out of the Camera Menu and shoot the picture



# Use Your Camera Manual

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Do not fight the manual

- Get familiar with:
  - ▶ The structure of the manual
  - ▶ Table of contents, index, tables
  - ▶ Watch for limitations mentioned at various places
  - ▶ Camera specifications - so that you know what can be done and what cannot be done
  - ▶ Make your own notes
- You can print a copy (from electronic copy) on letter size paper
- Using electronic copies allows you to search easily and enlarge text and icons to see them clearly

# Information Stored along with the Images

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When images are downloaded to a computer using a photographic software

- Hardware information
  - ▶ Camera make and model
- Shooting information
  - ▶ Shooting mode, focal length (focus), shutter speed, aperture (f-number), exposure compensation, flash, color space, ISO sensitivity, macro
- Image information
  - ▶ Format, image quality & compression, color depth, file size, file location (on your computer), shooting date, latest editing date
- Album(s) in which the image is included
- Information also available in the camera itself
- Use the information to improve your skill at taking pictures



# Other Features

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Not covered in this presentation

- Button(s) for custom settings
- Reset (resets all settings to factory defaults)
- Playback including slide shows and viewing on TV
- Organizing
- Editing within camera including copying, creating collages
- Recording movies
- Printing
- Face recognition technology including smiles and blinks
- Features available in other cameras