Learn the Exposure Triangle





Facilitator Guide

Overview

Context:

Pine Tree Camera Club is a non-profit organization whose goal is to promote and share the passion of photography with as many people as possible. The club welcomes photographers of all levels, from beginners to seasoned professionals. Its mission is to teach and share the art of photography, all styles, from film to digital, including darkroom development and image editing software.

The club wants to develop a training offer for all levels, taught by experienced photographers and artists.

This session is the first part of a series of courses on creativity in photography and is aimed at photographers who want to free themselves from the automatic modes of their camera.

Audience:

6 to 12 beginner or intermediate photographers who have never used the manual mode of a camera. Some of them already own photographic equipment, but not all.

Location:

Club premises.

Time:

To be determined.

Length of the session:

2 to 3 hours.



Goal

Aim:

This session introduces the concept of the exposure triangle and its three components, before demonstrating how to use it and discussing variations in application. The course alternates between short theoretical and practical phases. Participants will practice each component independently and then, at the end of the session, will have the opportunity to apply what they have learned with the support of the trainer.

Learning Objectives:

At the end of this session, participants will be able to:

- take photographs in manual mode.
- use the concept of the exposure triangle and adjust its parameters to expose their photographs correctly in any situation.
- take control of their artistic expression and creativity in photography.

Evidence of learning:

Participants will demonstrate their learning by:

- varying the exposure settings on their camera set to manual mode on their own.
- producing correctly exposed images in different light conditions.

Overall Learning Outcome:

Participants will be able to use their camera in manual mode and properly expose their images.

Preparation

Environment:

Training will alternate between the club's meeting and projection room and the park just outside the premises. The room is large enough to allow for easy movement and photography in low light and/or artificial light conditions.

Technology:

Computer, projector, cameras (with charged batteries and empty memory cards) and lenses for the participants who do not have their own gear.

Resources:

- Session Slides (set up with the first slide)
- Facilitator Guide
- Workbook (one for each participant)
- Pens



Course Outline

I. Introduction (15 minutes)

•Welcome participants and provide an overview of the course.

•Ice-breaking activity: participants should be active and the activity should serve as a starting point to the workshop.

•Explain the importance of understanding the exposure triangle in photography.

II. Understanding the Exposure Triangle (10 minutes)

•Define the exposure triangle and its three elements: aperture, shutter speed, and ISO.

•Explain how each element affects exposure and image quality.

III. Aperture (30 minutes)

•Define aperture and its measurement in f-stops.

•Explain how aperture affects depth of field and image sharpness.

•Demonstrate how to use different aperture settings to achieve desired effects in photos.

• Provide hands-on practice for participants to adjust aperture settings on their own cameras.

IV. Shutter Speed (30 minutes)

•Define shutter speed and its measurement in seconds or fractions of a second.

•Explain how shutter speed affects motion blur and image sharpness.

•Demonstrate how to use different shutter speeds to capture different types of motion and achieve desired effects in photos.

• Provide hands-on practice for participants to adjust shutter speed settings on their own cameras.

V. ISO (30 minutes)

•Define ISO and its measurement on a scale from low to high.

• Explain how ISO affects image noise and image quality.

•Demonstrate how to use different ISO settings to achieve desired exposure in different lighting conditions.

Provide hands-on practice for

participants to adjust ISO settings on their own cameras.

Break (5 - 10 minutes)

VI. Putting it All Together (30 minutes)

•Explain how to balance aperture, shutter speed, and ISO to achieve desired exposure.

•Provide examples of different exposure settings for different types of photography (e.g., landscape, portrait, action).

•Allow participants to practice adjusting exposure settings on their own cameras.

VII. Conclusion (10 minutes)

•Recap the main points covered in the course.

• Provide resources for further learning and practice.

•Encourage participants to continue experimenting with exposure settings in their photography.



Encourage participants to take notes and ask questions throughout the session.

and technically sound photos.

settings.

Display the "Let's switch to Manual Mode!" sentence.

Explain that the training will be interactive, and participants will have the opportunity to ask questions and practice adjusting their camera

Emphasize the importance of understanding the exposure triangle in photography and how it can help participants take more creative





VVV













Slide n°12

Suggested time: 15 min.

Trainer Notes:

Demonstrate how to change the aperture on a camera in manual mode. Talk about the possible differences between models and brands.

Invite participants to practice what they have just learned with their camera in manual mode. Use either the room or the park just outside.

| | Learn the Exposure Triangle |
|--------|---|
| | Time to grab your camera and practice! |
| | Let's look at how to set different apertures and experiment with your camera! |
| | |
| Shutte | r Speed ISO Light Sensitivity |
| | * * * * * * * * |















Slide n°20-21-22-23-24

Suggested time: 5 min.

Trainer Notes:

Show the impact of ISO on noise and image quality by switching between slides 20 - 24.

















Trainer Notes:

Explain the impact of changing aperture on the EV scale.







Trainer Notes:

Explain the impact of changing ISO on the EV scale.









Trainer Notes:

Click on each thumbnail to enlarge the images and data associated. Discuss the impact of each element of the exposure triangle on the exposure. Explain that it is up to the photographer to evaluate the situation and decide which parameter to alter.







experimenting with exposure settings in their photography.

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Additional Information

I. Introduction

Greet the participants and introduce yourself as the instructor.

Ask the participants if they have any experience with photography and if they have heard of the exposure triangle.

Start an ice-breaking activity: participants should be active, and the activity should serve as a starting point to the workshop. Explain that the purpose of this training is to help participants understand the exposure triangle and how to use it to create better photos.

Provide an overview of what will be covered in the training session.

Explain that the training will be interactive, and participants will have the opportunity to ask questions and practice adjusting their camera settings.

Emphasize the importance of understanding the exposure triangle in photography and how it can help participants take more creative and technically sound photos.

Encourage participants to take notes and ask questions throughout the session.

II. Understanding the Exposure Triangle

A. Define the exposure triangle and its three elements: aperture, shutter speed, and ISO

Explain that the exposure triangle refers to the relationship between aperture, shutter speed, and ISO, which all affect how much light enters the camera and thus the final exposure of the image.

Define each element:

Aperture: the opening in the lens through which light enters the camera, measured in f-stops (e.g., f/2.8, f/4, f/5.6, etc.).

Shutter speed: the amount of time the camera's shutter is open, measured in seconds or fractions of a second (e.g., 1/100s, 1/250s, 1s, etc.).

ISO: the camera's sensitivity to light, measured on a scale from low (e.g., ISO 100) to high (e.g., ISO 3200 or higher).

B. Explain how each element affects exposure and image quality

Aperture: larger apertures (smaller f-stop numbers) let in more light and result in a shallower depth of field, which can blur the background and make the subject stand out more. Smaller apertures (larger f-stop numbers) let in less light and result in a wider depth of field, which can keep more of the scene in focus.

Shutter speed: faster shutter speeds freeze motion and reduce motion blur, while slower shutter speeds blur motion and can create a sense of movement in the image. Faster shutter speeds also let in less light, while slower shutter speeds let in more light. ISO: higher ISOs can be used in low-light situations to capture brighter images, but they also introduce more noise or graininess into the image, which can reduce image quality.

III. Aperture

A. Definition of Aperture

Define aperture and its measurement in f-stops: Aperture refers to the opening in the lens through which light passes to reach the camera's sensor. It is measured in f-stops, which is a ratio of the focal length to the diameter of the aperture. A larger aperture has a lower f-stop number, and a smaller aperture has a higher f-stop number.

B. Effects of Aperture

Explain how aperture affects depth of field and image sharpness: Aperture plays a key role in determining the depth of field in a photograph.

A wider aperture (lower f-stop number) will result in a shallow depth of field, with only a small part of the image in focus and the rest blurred. This effect is often used in portrait photography to isolate the subject from the background.

A narrower aperture (higher f-stop number) will result in a deeper depth of field, with more of the image in focus. This is often used in landscape photography to ensure everything from the foreground to the background is sharp.

Additionally, extreme apertures (very wide or very narrow) can result in image sharpness issues, such as softness or diffraction.

C. Aperture Settings

Demonstrate how to use different aperture settings to achieve desired effects in photos: on older systems of cameras and lenses,

aperture can be changed directly on the lens by rotating a dedicated section of the barrel. On most modern digital systems (reflex or mirrorless), aperture can be changed by activating a dial and most lenses do not offer the possibility to set aperture on their barrel.

D. Hands-on Practice

Participants can experiment with different aperture settings to achieve their desired effect, such as taking a portrait with a shallow depth of field or a "landscape" with a deep depth of field.

IV. Shutter Speed

A. Definition of Shutter Speed

Explain that shutter speed refers to the amount of time the camera's shutter is open to allow light to reach the camera sensor or film.

B. Effects of Shutter Speed

Explain that shutter speed affects how motion is captured in a photograph.

Describe how faster shutter speeds freeze motion, while slower shutter speeds create motion blur.

Show examples of photographs taken at different shutter speeds to illustrate the effects of motion blur and freezing motion.

C. Motion Blur

Explain how to create motion blur using slow shutter speeds.

Provide examples of situations where motion blur can be used creatively, such as capturing the movement of flowing water or creating a sense of motion in a moving subject.

D. Freezing Motion

Explain how to freeze motion using fast shutter speeds.

Provide examples of situations where fast shutter speeds are necessary, such as sports photography or capturing fast-moving wildlife.

E. <u>Shutter Speed and Exposure</u>

Explain how shutter speed affects exposure.

Describe how changing the shutter speed can be used to compensate for changes in aperture (or ISO settings) to achieve the desired exposure.

F. Shutter Speed Settings

Explain the range of shutter speed settings available on most cameras.

Provide guidance on selecting appropriate shutter speeds for different types of photography, such as using a fast shutter speed for action photography and a slower shutter speed for landscape photography.

G. Hands-on Practice

Provide participants with cameras and allow them to experiment with different shutter speed settings in various lighting conditions. Encourage participants to capture both motion blur and frozen motion to gain a better understanding of the effects of shutter speed.

V. ISO

A. Definition of ISO

ISO stands for International Organization for Standardization, which is the organization that sets standards for camera sensor sensitivity. In photography, ISO refers to the camera's sensitivity to light. A lower ISO value (e.g., 100) means the camera is less sensitive to light, while a higher ISO value (e.g., 1600) means the camera is more sensitive to light. Essentially, a higher ISO allows you to capture images in lower light conditions without having to use a slower shutter speed or a wider aperture.

B. Effects of ISO on Exposure

Discuss how ISO affects exposure: ISO affects exposure by controlling the amount of light that reaches the camera's sensor. A higher ISO allows more light to be captured, resulting in a brighter image.

C. Effects of ISO on Image Quality

ISO also increases the amount of digital noise in the image, which can degrade image quality. So, while a higher ISO can be useful in low-light situations, it's important to be aware of the trade-off between increased brightness and decreased image quality.

D. Image Noise

As mentioned, higher ISO values can result in more digital noise, which can make images appear grainy or pixelated. Conversely, lower ISO values result in less noise and a cleaner, sharper image. When using a high ISO, it's important to balance the need for a brighter image with the potential loss of quality.

Mention denoising technology software and how to use them to reduce noise in images.

E. Examples of ISO effects

Provide examples of different ISO values and their effects: For example, a higher ISO might be used in low-light situations where a faster shutter speed and wider aperture aren't sufficient to achieve proper exposure. A lower ISO might be used in bright outdoor conditions where there is plenty of available light.

F. Hands-on Practice

Participants can experiment with different ISO values to see how they affect exposure and image quality in different lighting situations. Overall, understanding how ISO works and how it affects exposure and image quality is crucial for achieving the desired results in photography. By experimenting with different ISO values and considering the trade-offs involved, photographers can make informed decisions about how to capture the best possible images in a variety of lighting conditions.

VI. Putting it All Together

A. Understanding Exposure Value (EV)

Define Exposure Value (EV) and how it relates to the exposure triangle. Explain how to use the Exposure Value Scale to adjust the exposure settings.

B. Balancing Aperture, Shutter Speed, and ISO

Discuss how to adjust aperture, shutter speed, and ISO to balance them for the desired exposure. Show examples of different exposure settings and how they affect the final image. Demonstrate how to adjust each setting to achieve the desired effect in different lighting conditions.

C. Shooting Modes

Discuss the different shooting modes on a camera (e.g., manual, aperture priority, shutter priority) and when to use them Demonstrate how to adjust exposure settings in different shooting modes

D. Depth of Field and Motion Blur

Explain how to use aperture and shutter speed to control depth of field and motion blur in photos Show examples of how different settings can affect the final image

E. White Balance and Metering Modes

Discuss the importance of white balance and how to adjust it for different lighting conditions Explain different metering modes and how to use them to achieve the desired exposure

F. Practice Session

Allow participants to practice adjusting exposure settings on their cameras Provide feedback and suggestions for improvement

VII. Conclusion

A. Recap the main points covered in the training

Remind participants of the three elements of the exposure triangle: aperture, shutter speed, and ISO, and how each affects exposure and image quality

Summarize the main concepts covered under each element, such as how aperture affects depth of field and image sharpness, how shutter speed affects motion blur and image sharpness, and how ISO affects image noise and image quality

Reiterate the importance of balancing the three elements to achieve the desired exposure and effect in photographs

B. Provide resources for further learning and practice

Recommend online resources or books that provide in-depth information on the exposure triangle, such as photography blogs, forums, or instructional videos on YouTube

Suggest additional exercises or photo assignments that participants can use to practice and apply their knowledge of the exposure triangle in different situations or lighting conditions

Share information on photography workshops or meet-ups in the local community that offer opportunities for participants to network with other photographers and learn from experienced mentors

C. Encourage participants to continue experimenting with exposure settings in their photography

Emphasize the importance of practice and experimentation in improving one's photography skills Encourage participants to continue taking photos in different settings and situations, and to adjust their exposure settings to achieve different effects or moods in their photographs

Provide feedback or critique on participants' photos to help them identify areas for improvement and develop their own style and vision in photography.

By including these elements in the conclusion of the training, you can help ensure that participants leave with a solid understanding of the exposure triangle and the skills and resources to continue practicing and refining their photography skills.

