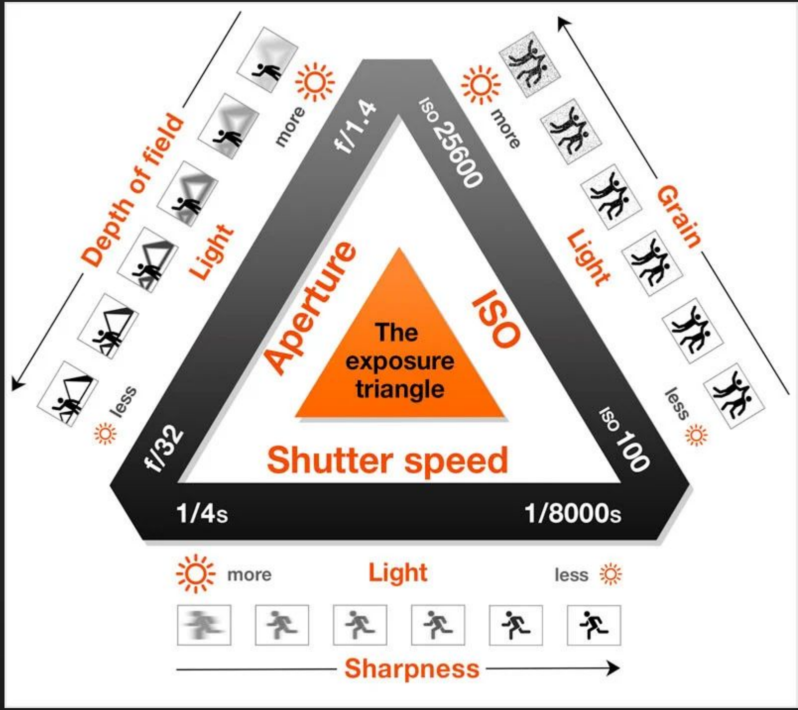
Let's dive into...

Shutter Speed & ISO

NTUA Photography Club

Welcome to the
5rd Photography Lesson

Remember the 3 pillars of Photography?



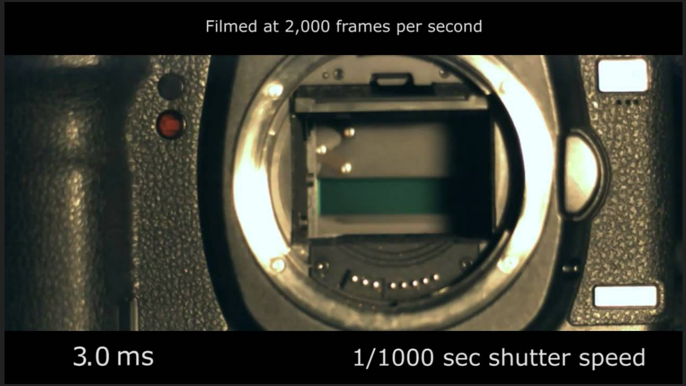
What is **Shutter Speed**?

The **shutter speed** refers to the speed with which the shutter opens and closes, it is therefore the **duration** of the exposure

- Short Duration -> **Fast** shutter speed -> **Frozen** Image & Less **light**
- Long Duration -> **Slow** shutter speed -> **Blurry** image & More **light**

What about the **Shutter**?

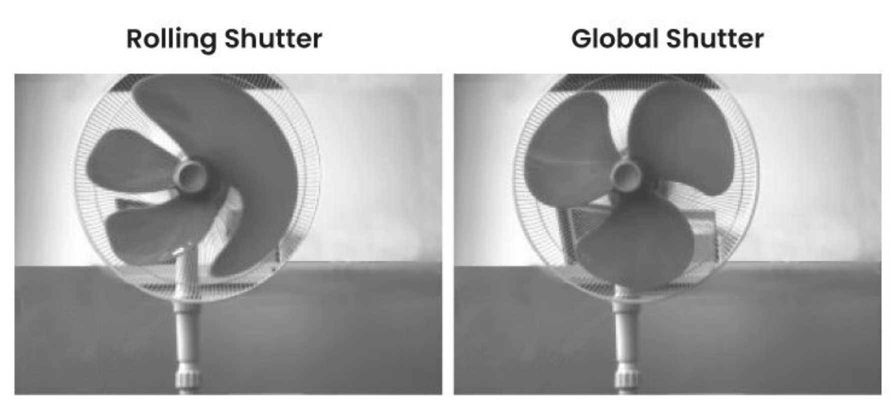
You can use either a **Mechanical** or an **Electronic** **Shutter**



Mechanical	**Electronic**
MAX: 1/8000 Normal Flash use No rolling shutter effect Shutter Vibration	MAX: 1/32000 Silent Distorts image in high speed objects No Viewfinder Blackout Not for artificial light Higher fps

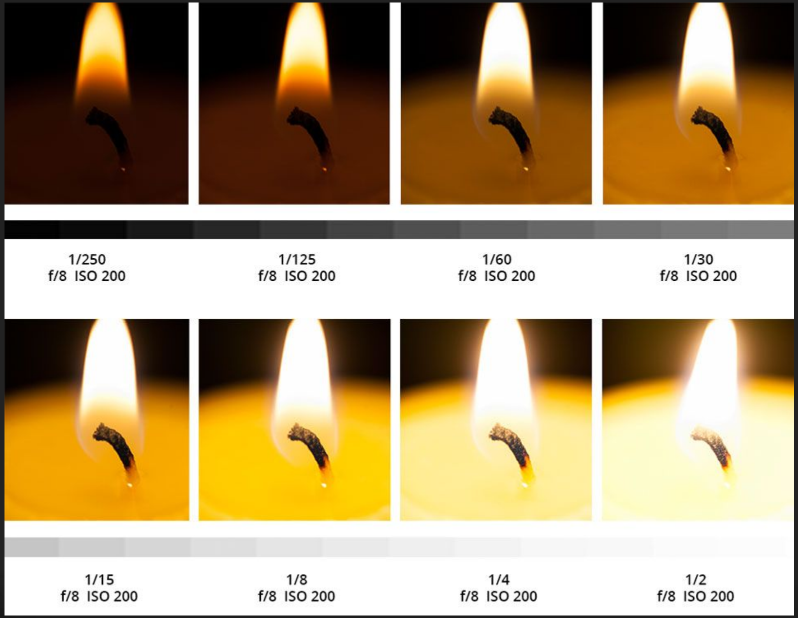
What about the **Shutter**?

The **Rolling Shutter** effect



What is **Shutter Speed**?

...with examples



SHUTTER SPEED CHEAT SHEET

Bulb	astrophotography, long exposure
5"-30"	light painting, sparklers
1"	fireworks
1/2	night time, little to no light
1/4	blurs motion
1/8	smooth waterfalls, rivers
1/15	low light
1/30	blurring fast motion
1/60	panning images
1/125	portraits
1/250	avergage situations
1/500	freezing slower subjects
1/1000	freezing faster subjects, sports
1/2000	freezing very quick subjects
1/4000	extreme freeze of action

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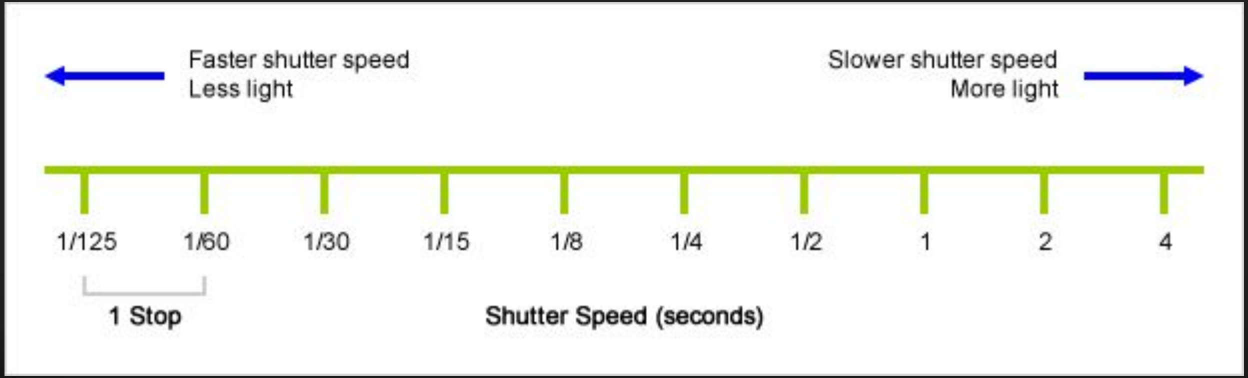
How to determine your **Shutter Speed**

Brightness!
The **darker** it is, the **slower** shutter you need
The **brighter** it is, the **faster** your shutter needs to be!

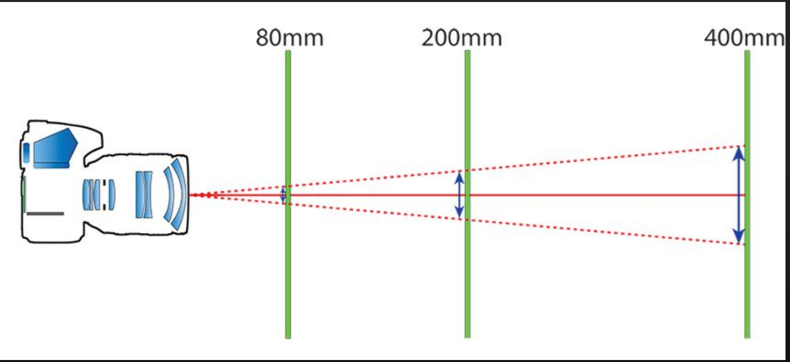
Pro info!
Double shutter speed means one stop down.



How to determine your **Shutter Speed**

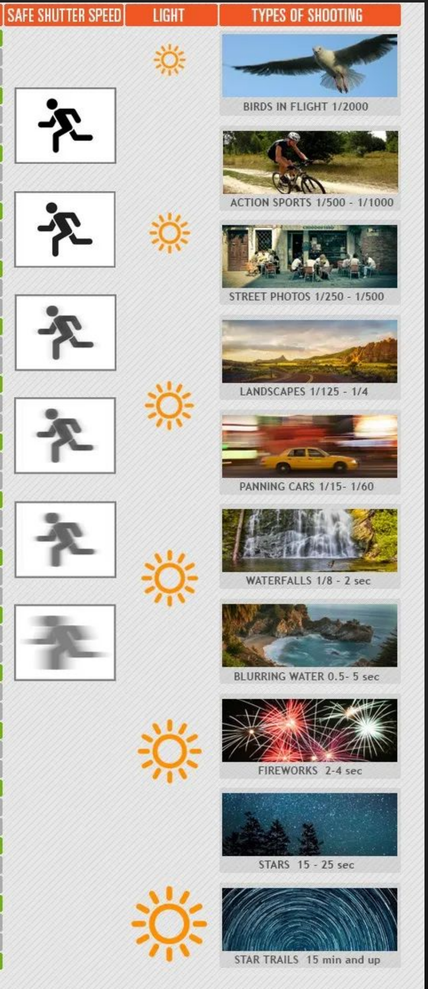
Motion!
If you want a **still (frozen)** subject, you will need a **fast** shutter speed.
If you want a **blurred** or **smooth** image, you will need a **slow** shutter speed!

Pro tip!
Follow the **Reciprocal Rule:**
For a focal length of 400mm, you will need a shutter of 1/400 (to eliminate the camera shake from your hands)



How to determine your **Shutter Speed**

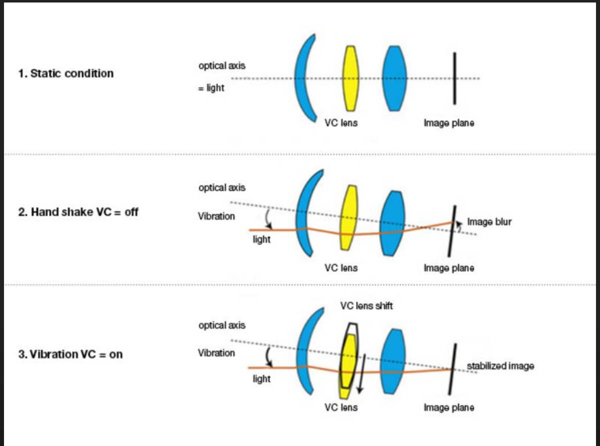
FULL STOP	1/2 STOP	1/3 STOP
1/2000	1/2000	1/2000
		1/1600
	1/1500	
		1/1250
1/1000	1/1000	1/1000
		1/800
	1/750	
		1/640
1/500	1/500	1/500
		1/400
	1/350	
		1/320
1/250	1/250	1/250
		1/200
	1/180	
		1/160
1/125	1/125	1/125
		1/100
	1/90	
		1/80
1/60	1/60	1/60
		1/50
	1/45	
		1/40
1/30	1/30	1/30
		1/25
	1/20	
		1/20
1/15	1/15	1/15
		1/13
	1/10	
		1/10
1/8	1/8	1/8
		1/6
	1/6	
		1/5
1/4	1/4	1/4
		0.3
	1/3000	
		0.4
0.5	0.5	0.5
		0.6
	0.3	
		0.8
1	1	1
		1.3
	1.5	
		1.6
2	2	2
		2.5
	3	
		3.2
4	4	4
		5
	6	6
8	8	8
	10	10
		13
15	15	15
	20	20
		25
30	30	30

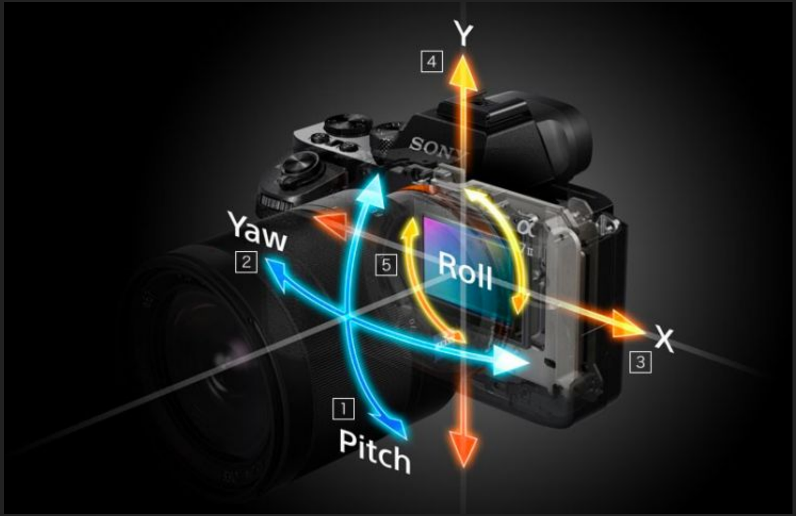


What else can I do about
Camera Shake?

Stabilization!

- Lens Stabilization (IS, VR, OS)
- In Body Stabilization





Using different **Shutter Speeds**

Fast Shutter (Wildlife, Sports)

S.Pytel

NIKON D300 @ 400mm, ISO 200, 1/1600, f/4.0

Using different **Shutter Speeds**

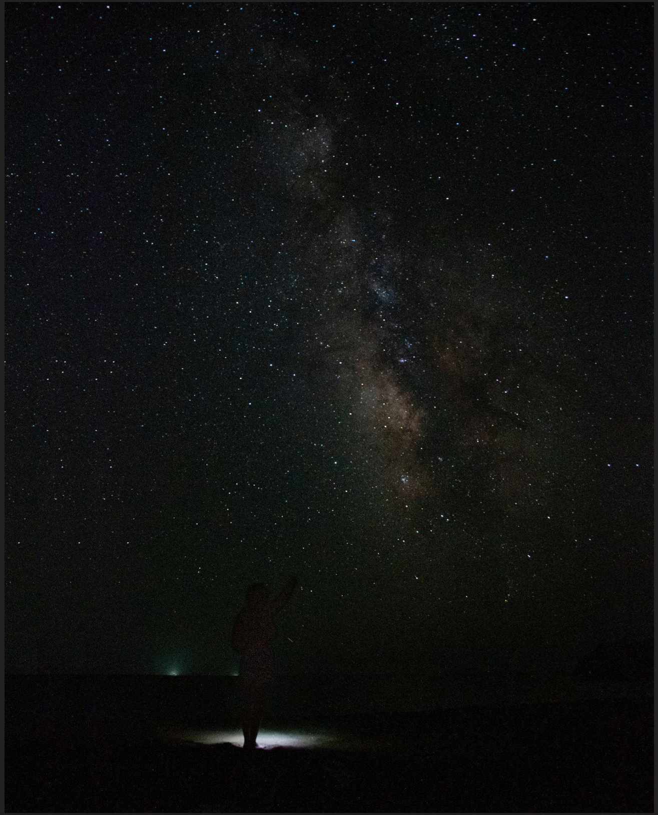
Fast Shutter with Motion Blur (Racing, Sports, Artistic)

Using different **Shutter Speeds**

Panning (Racing, Street) (try 1/30)

Using different
Shutter Speeds

Long Exposure: Astrophotography



Using different
Shutter Speeds

Long Exposure: Lightpainting

Using different

Shutter Speeds

Long Exposure: Light Trails

Using different **Shutter Speeds**

Long Exposure: Steel Wool

Using different
Shutter Speeds

Long Exposure: Daytime

What is **ISO**?

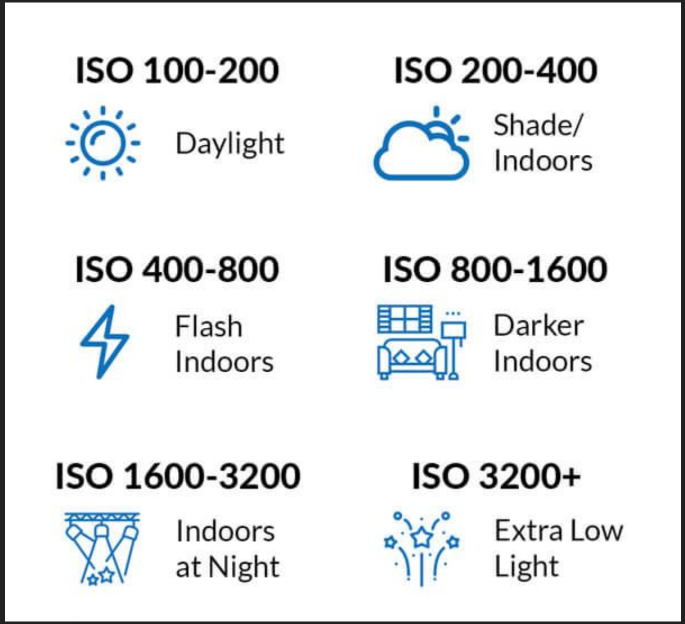
ISO refers to *your camera's* ***"sensitivity to light"***. The **higher** the ISO, the **more sensitive** your camera sensor becomes, and the **brighter** your photos appear.

While ISO is mostly discussed in a digital context, **film** cameras use ISO, as well

High ISO -> Brighter Image **BUT**
High ISO -> Grain in the image
-> Color fringes

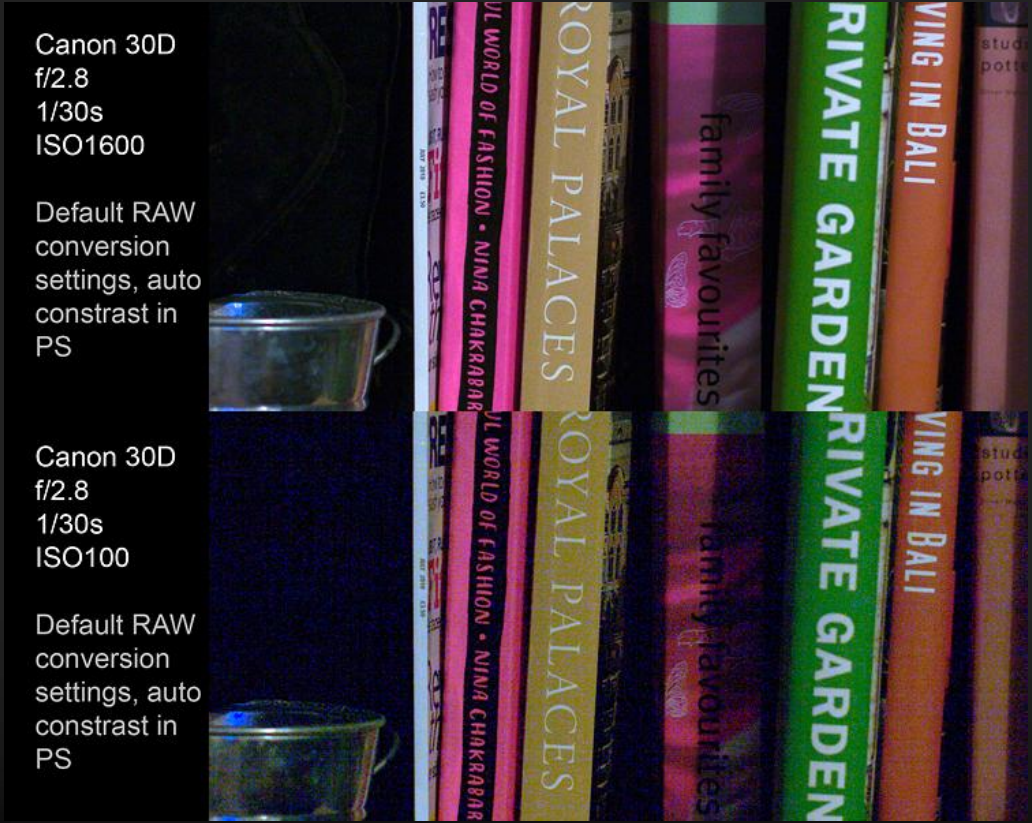
What is **ISO**?

...with examples



High **ISO** vs brightening in **Post**?

High ISO will almost always produce better results! (shoot RAW)



It's time for a…

WORKSHOP!

Aperture (Coffee)	**Shutter Speed** (Light Painting)	**ISO** (Portraits in the dark)
• Everything sharp • Shallow depth of field • Bokeh	• Sparkles Still • Sparkles Long • Steel Wool • Party tricks	• Same exposure different ISO • Portrait in the dark