



**MICHAEL LOVERME**  
Memorial Foundation

# Digital Camera Equipment & Usage

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# Agenda

- \* About the Michael LoVerme Foundation
- \* Advantages of Digital Cameras
- \* Types of Digital Cameras
- \* Digital Camera Sensors
- \* Digital Camera Comparisons
- \* Lenses
- \* Other Camera Equipment
- \* Aperture
- \* Shutter Speed
- \* Film Speed (ISO)

# Michael LoVerme on Photography



\* <http://michaelloverme.com/category/videos/>

# What Camera Should I buy?

- \* Film cameras are quickly disappearing
  - \* Places that sell film and developing are harder to find
  - \* Increasing in price
- \* Consider a Digital Camera
  - \* No film to buy
  - \* But need a storage device (usually SD card)
  - \* Need long term Storage – Hard Disk / DVDR / Cloud
  - \* Can print via color printer or make photo prints at a local Drug Store or Walmart

# I want a Digital Camera

- \* Types of Digital Cameras
  - \* Point and Shoot (Compact)
  - \* DSLR
    - \* Compact, Medium, Large
  - \* How about my Smart Phone camera?

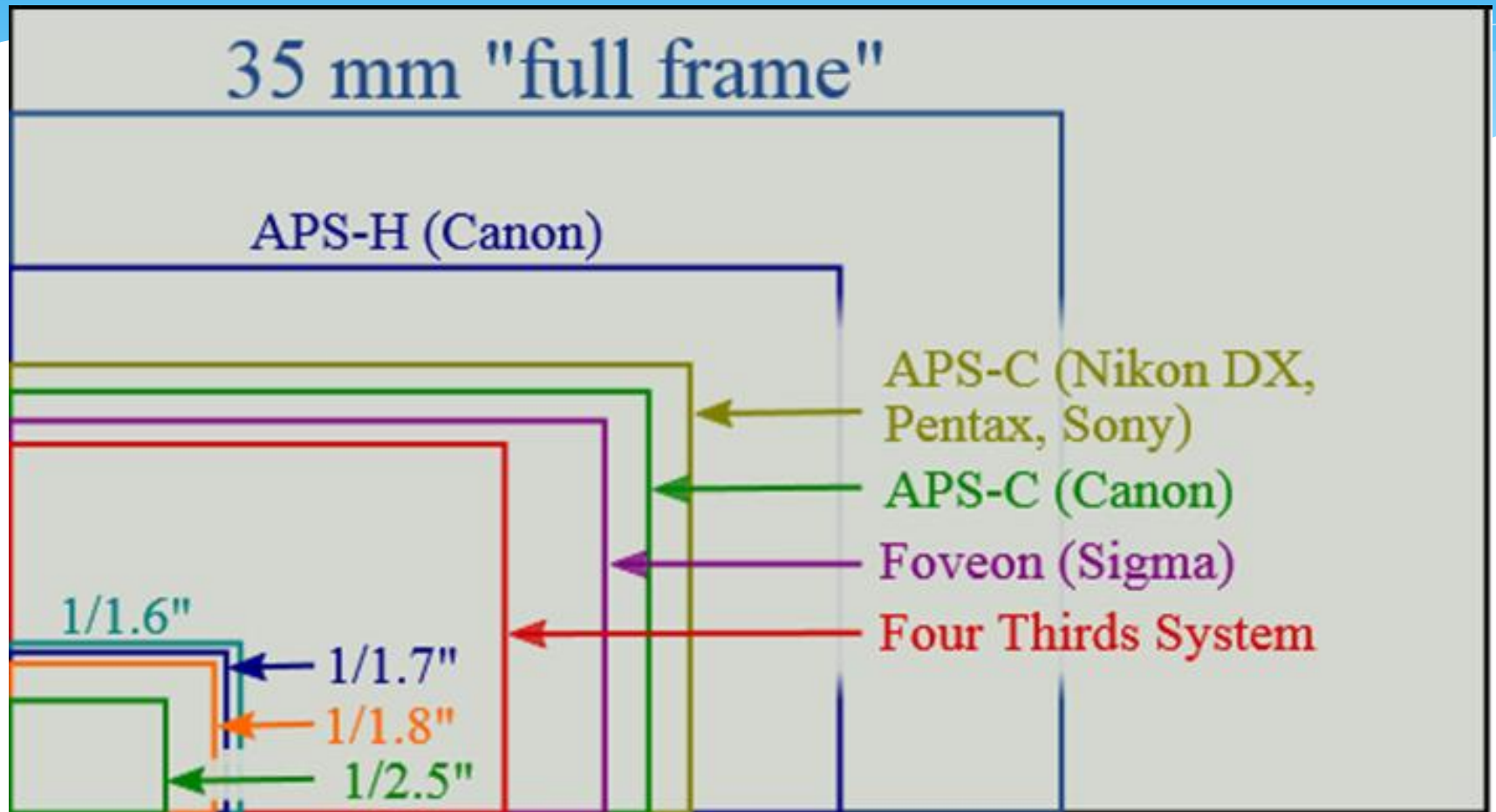
# Point-And-Shoot vs. DSLR

- \* Point-And-Shoot - Compact
  - \* Smaller, Lighter, Cheaper
  - \* Similar megapixel sensor sizes available
    - \* But pixels are not the same as DSLRs
  - \* If it has a viewfinder, it does NOT view through the main lens
  - \* Some are waterproof
  - \* Very small sensor
  - \* Fixed lens included, usually with electronic zoom
    - \* Optical Zoom vs. Digital Zoom
  - \* All images compressed (Not RAW)
  - \* Can take very good pictures

# DSLR (Digital Single Lens Reflex)

- \* Various sizes - Compact, Medium, Large
- \* Large price range \$500 to \$7,000+
- \* Larger sensors – Higher quality pictures
  - \* APS-C or Full-Frame
- \* Removable lenses
  - \* Higher quality & versatility
- \* Allows use of lens filters
  - \* Lens protection, polarizing, colors, special effects
- \* You see what the sensor sees
- \* External Flash option

# It's all about the Sensor





# Camera Comparison



**Canon PowerShot SX700 HS**



**Nikon D5200**



**Nikon D800**



**Nikon D4s**

# Camera Comparison

Camera	Canon PowerShot SX700 HS	Nikon D5200	Nikon D800	Nikon D4s
Price	\$295 (Amazon.com)	\$697 w/ 18-55mm lens \$597 body only (Amazon.com)	\$2,797 body only (Amazon.com)	\$6,497 body only (Amazon.com)
Date Introduced	Feb 12, 2014	Nov 6, 2012	Feb 7, 2012	Feb 25, 2014
Body type	<b>Compact</b>	<b>Compact SLR</b>	<b>Mid-size SLR</b>	<b>Large SLR</b>
Effective pixels	16 megapixels	24 megapixels	36 megapixels	16 megapixels
Sensor photo detectors	17 megapixels	25 megapixels	37 megapixels	17 megapixels
Sensor Size	<b>1/2.3" (6.17 x 4.55 mm)</b>	<b>APS-C (23.5 x 15.6 mm)</b>	<b>Full frame (35.9 x 24mm)</b>	<b>Full frame (35.9 x 24 mm)</b>
Sensor type	BSI-CMOS	CMOS	CMOS	CMOS
Processor	Digic 6	Expeed 3	Expeed 3	Expeed 4
Uncompressed format	No	RAW	RAW	RAW, TIFF
Number of focus points	9	39	51	51
Lens mount		Nikon F	Nikon F	Nikon F
Articulated LCD	Fixed	Fully articulated	Fixed	Fixed
Screen size	3"	3"	3.2"	3.2"
Continuous drive	8.5 fps	3 fps	4 fps	11 fps
Remote control		Yes (Optional ML-L3 or WR-R10)	Yes (Optional, wired or wireless)	Yes (wired or wireless)
Environmentally sealed	No	No	Yes (Water and dust resistant)	Yes (Water and dust resistant)
Weight	269 g (0.59 lb / 9.49 oz)	555 g (1.22 lb / 19.58oz)	1000 g (2.20 lb / 35.27oz)	1350g (2.98 lb / 47.62 oz.)
Dimensions	113 x 66 x 35 mm (4.45 x 2.6 x 1.38")	129 x 98 x 78 mm (5.08 x 3.86 x 3.07")	146 x 123 x 82 mm(5.75 x 4.84 x 3.23")	160 x 157 x 91 mm(6.3 x 6.18 x 3.58")

# Removable Lenses

- \* Types of Removable Lenses
  - \* Wide angle < 50mm
  - \* Normal 50mm – 60mm
  - \* Telephoto > 60mm
  - \* Zoom
  - \* Macro (close-ups)
- \* Lenses are matched to Sensor size

# Lens Focal Length Comparison

WIDE



15mm  
Fisheye



20mm



28mm



35mm



50mm



85mm



# Lens Focal Length Comparison



135mm



18°



200mm



12°



300mm



8° 15'



400mm



6° 10'



600mm



4° 10'



1200mm



2° 5'

TELE

# Handy DSLR Options

- \* Lens filters
  - \* *Tip: Always keep a UV filter on your lens to protect it from scratching and to keep it clean*
  - \* Polarization – cuts reflective glare
  - \* Colors for special effects
- \* Remote Control / Cable Release
- \* Camera Case
- \* Tripod – matched to size/weight of your camera
- \* Monopod
- \* Camera control software via USB

# Mechanics of Aperture

- \* Also known as F-stop or Focal Ratio
- \* Analogous to the eye's pupil
- \* It is the size of the hole in the lens
- \* Big hole – lots of light
- \* Little hole – very little light
- \* Common F-Stops:
  - \* 2, 2.8, 4, 5.6, 8, 11, 16
  - \* *Tip: Generally, the lower the F Number available, the better the lens. Buy the best lens you can afford.*

# Creativity of Aperture

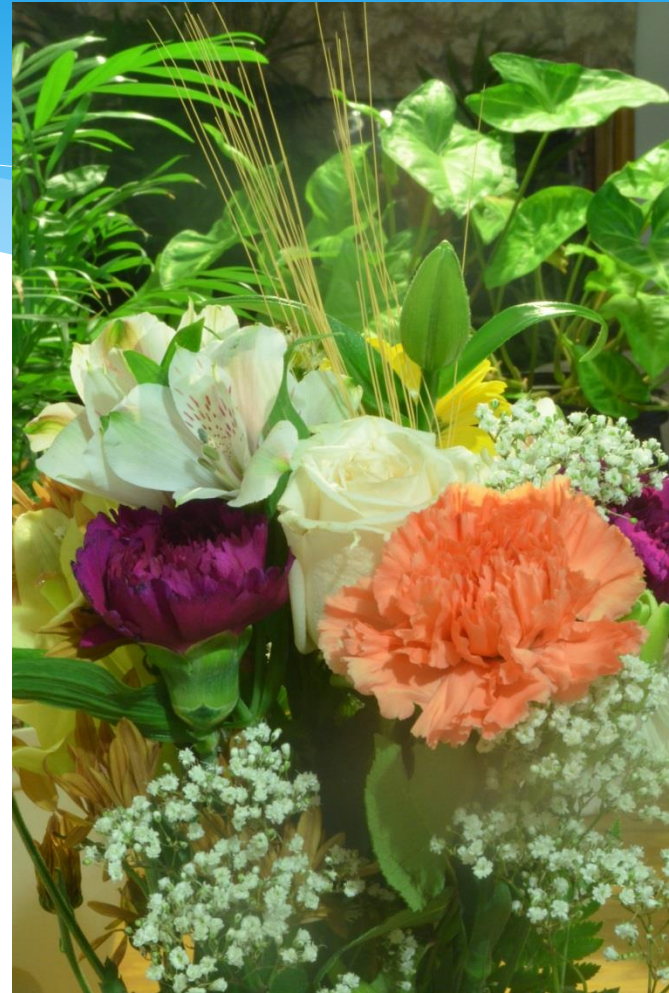
- \* Why have a variable aperture?
- \* Depth-of-Field
  - \* Amount of objects at varying distances that are in focus
  - \* Increases with higher F-Stops
- \* At F2 just your subject will be in focus
- \* At F16 just about everything will be in focus



# Creativity of Aperture



Aperture: F/5.6  
Speed: ½ Sec  
ISO: 2000



Aperture: F/36  
Speed: 5 Sec  
ISO: 2000

# Fixing your Aperture

- \* Use “Aperture-Priority” Mode
- \* You select the Aperture
- \* Camera selects the shutter speed
- \* You or camera selects the ISO

# Mechanics of Shutter Speed

- \* How long the shutter remains open
- \* Usually expressed as a fraction:
  - \*  $1/30$ ,  $1/60$ ,  $1/125$ ,  $1/250$ ,  $1/500$ ,  $1/1000$
- \* Film Cameras delete the “1/” to save space on the dial
- \* Shutter speeds slower than  $1/30$  usually require support – Tripod or Monopod
- \* Demonstration:
  - \* Nikon FM slow and fast Shutter Speeds

# Creativity of Shutter Speed

- \* Very slow shutter speeds allow blurring of moving objects
  - \* Waterfalls
  - \* Automobile headlights and tail lights
  - \* Movement of the stars
- \* Very fast shutter speeds freeze fast moving objects
  - \* Baseball batter swinging
  - \* Water Fountain

# Creativity of Shutter Speed



Source: paulos.net

Automobile headlights and tail lights

# Fixing your Shutter Speed

- \* Use “Shutter-Priority” Mode
- \* You select the Shutter Speed
- \* Camera selects the Aperture
- \* You or camera selects the ISO

# Film Speed - ISO

(Formerly known as ASA)

- \* Film's or Sensor's sensitivity to light
- \* Higher ISO requires less light
- \* Use High ISO to avoid using a flash
- \* Very high ISOs introduce noise (grain)
- \* Example ISO settings
  - \* Film: 25, 64, 100, 200, 400, 800, 1000
  - \* Digital: Auto, 100 – 6400+

# Summary Demonstration

**Canon**  
Because It Counts

## Take Creative Control of your photos

A Canon DSLR in Auto mode produces amazing photos, but real creative control comes when you step outside of Auto. Learn the basic elements of Exposure and how simple adjustments create beautiful photo effects.



**LEARN > GET STARTED**

See how Exposure settings can change a photo



**PLAY**

Adjust camera settings, take the shot and get feedback



**CHALLENGE**

Test yourself against the clock.

<http://www.canonoutsideofauto.ca/>



# Questions?

# Thank you!

Don't forget!  
FREE Computer Clinic  
10 AM – 4 PM Saturday, March 28  
John O'Leary Adult Community Center