

## Visual signals in animals: A receiver's perspective

Theoretical and practical workshop  
February 20 al 24, 2017 – Universidad de Costa Rica  
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If you have ever wondered why animals are so colourful and how they might perceive their world, this workshop is for you!

In the theoretical part of the workshop you will learn: 1) how to properly describe light and colours, 2) the proper way to measure light and colours, 3) how animals differ in their visual systems, 4) how to model the visual experience of animals, and 5) how to approach different research questions in visual ecology. In the practical part of the workshop you will 1) learn to use spectrophotometers, 2) how to measure different reflecting surfaces, 3) quantify colours, 4) build visual models to compare how different species perceive different colours, 5) learn how to use the appropriate measures when answering animal vision questions?

Date	Topic	Details
Monday AM 8:00-12:00	Light and colour	What is light? How do we describe colours? What is a visual environment?
Monday PM 13:00-17:00	Intro to spectrometers	How does a spectrophotometer work? What kind of measurements can we make? What setup parameters are important?
Tuesday AM 8:00-12:00	How to measure light	Difference between radiance and irradiance; Units of measurements; Differences among spectrophotometers
Tuesday PM 13:00-17:00	Spectrophotometer practice	Measure surfaces of different quality to understand the pitfalls (specular, diffuse surfaces), issues with scale (small and large patches)
Wednesday AM 8:00-12:00	Animal eyes	What is the variation in animal lens, retina, oil pigments, photoreceptor properties and why does it matter?
Wednesday PM 13:00-17:00	Colour metrics	How do we describe the physical properties of colours? Simple and advanced colourmetrics: Hue, Chroma, Brightness
Thursday AM 8:00-12:00	Visual modelling	What do we need to know to estimate the visual capabilities of different animals?
Thursday PM 13:00-17:00	Visual modelling	How do we parameterize visual models and how do we interpret their outputs? How do we visualize various colourspaces?
Friday AM 8:00-12:00	Incorporating theory/practice	What type of colour measuring protocol should I use? What are the main concerns/pitfalls? How do I develop a sampling scheme?
Friday PM 13:00-17:00	Metrics or model?	Do I use colourmetrics or visual models? What kind of model and why?