High Dynamic Range (HDR) imaging is a continuously evolving part of color—from the invention of HDR painting in the Renaissance to understanding scenes in non-uniform illumination to using multiple exposures to attempt to capture a wider range of scene information to recreating HDR scenes by integrating widely-used LCD with LED illumination. Today, the evolution continues in the current sales of HDR televisions using OLED and Quantum Dot technologies and the active area of HDR video standards.

HDR imaging records and displays more information than conventional imaging. Non-uniform illumination increases the range of light from a scene. HDR techniques are often associated with recording natural images. After a detailed description of the dynamic range problem in image acquisition, this course focuses on standard methods of creating and manipulating HDR images, replacing myths with scene measurements, camera images, and visual appearances. Measuring the actual physical limitations of scene capture, scene display, and the interaction of these systems with human vision are emphasized, as is the differences between single-pixel and spatial comparison HDR algorithms. The course presents measurements about the limits of accurate camera acquisition (range and color) and the usable range of light for displays presented to human vision. It discusses the principles of tone rendering and the role of HDR spatial comparisons.

Benefits:
- Explore the history of HDR imaging.
- Understand dynamic range and quantization: the ‘salame’ metaphor.
- Compare single and multiple-exposures for scene capture.
- Measure optical limits in acquisition and display (scene dependent effects of glare); of RAW capture in LDR and HDR scenes; and of human vision and calculate retinal luminance for models of vision.
- Discuss current HDR TV systems and standards: tone-rendering vs. spatial HDR methods.

Intended Audience: Anyone interested in using HDR imaging: science and applications. This includes students, color scientists, imaging researchers, medical imagers, software and hardware engineers, photographers, cinematographers, and production specialists.

Instructors: John McCann, McCann Imaging (US), and Alessandro Rizzi, Università degli Studi di Milano (Italy) | Sunday January 28, 3:45 – 5:45 PM

Course Level: Introductory/Intermediate | Fee: Member: $175 / Non-member: $200 / Student: $65 (*prices for all increase by $50 after January 8, 2018)

To register or learn more, visit www.ElectronicImaging.org