**IALA Model Course on Lights**

**Overview**

Part 1 - Light of the eye

Part 2 - Photometric Units

Part 3 - Light Sources

Part 4 - Optical Projection Apparatus

Part 5 - Practical, including Focussing

Part 1

* The Electro magnetic spectrum and visible light
* The Eye and how it works
* Eye Response
* Colour Vision
* Measuring Light
* Spectroradiometry
* Colourimetry
* Photometry
* Spectroradiometry
* Chromaticity
* IALA Colour Boundaries
* Photometry

Part 2

* Luminous intensity
* Candela
* Luminance and Brightness
* Angles
* Inverse Square Law
* Luminous flux – Lumen – Lux – illuminence
* Measuring Luminous intensity

Part 3

* Tungsten Filament Lamps
* Advantages / Disadvantages
* Tungsten Halogen Lamps
* Advantages / Disadvantages
* Handling
* The Halogen Cycle
* Filament construction
* Common failures
* Filament lamp operating conditions
* Discharge Lamps
* Advantages / Disadvantages
* HID
* Mercury Vapour
* Metal Halide
* High Pressure Sodium
* Lamp clusters
* LEDs
* Advantages / Disadvantages
* Phosphide
* Nitride
* White LEDs and plasma conversion
* Red, Green, Blue
* LED Characteristics
* LED Clusters
* Efficiency of Spectra
* Comparison of different light sources
* Spectral distribution of different sources
* Diffusers and Filters
* Etched envelope
* Reeded diffusers
* Coloured filters

Part 4

* Zone of utilisation
* Arc
* Vertical Angle
* Forming a beam
* Why?
* Forming a beam
* Simple lens projector
* Simple Mirror projector
* Beam divergence
* Fan beam
* Cylindrical lenses
* Pencil Beam
* Convex lenses
* Fresnel lenses
* Catadioptric
* Dioptic (drum)
* Optic orders (sizes)
* Typical ranges of given optics
* Rhythmic characters
* Fixed
* Rotating
* Sectors and filters

Part 5

* Focussing – Horizontal & Vertical
* Lamp Voltage
* Common faults / failures
* Handling light sources

IALA Recommendations

E-110 On the Rhythmic characters of Lights on AtoNs

E-2001-5 On Marine Signal lights

Guidelines

1043 - On light sources used in Visual AtoNs

1041 - On Sector Lights

1048 - On LED Technologies and their use in signal lights

1049 - On the use of Modern Light sources in traditional lighthouse optics

1069 - Synchronisation of Lights

Manuals

IALA NAVGUIDE