

EEE.6.6 Optoelectronics

The course is organised in two parts. The first part introduces basic concepts from optics and semiconductor physics, while the second part investigates the operating characteristics of various optoelectronic devices. The program is designed to be delivered in thirteen weeks; its content will be spread over this period as follows:

Week 1: Wave and particle nature of light.

Week 2: Optical energy – optical power – optical spectrum.

Week 3: Refraction – diffraction – interference.

Week 4: Basic principles of geometrical optics.

Week 5: Energy structure in semiconductors. Direct and indirect band-gap.

Week 6: Optical phenomena in semiconductors (Part 1).

Week 7: Optical phenomena in semiconductors (Part 2).

Week 8: The light-dependent resistor.

Week 9: The photodiode.

Week 10: The light emitting diode.

Week 11: The solar cell.

Week 12: The phototransistor.

Week 13: Planar waveguides.