INTERNATIONAL SCHOOL OF PHOTONICS
COCHIN UNIVERSITY OF SCIENCE & TECHNOLOGY

SYLLABUS

1.   MATHEMATICAL PHYSICS

Curvilinear coordinates, tensors, matrices, linear vector space, operators, eigen values and eigen vectors, Bessel, Legendre and Hermite Polynomials. Functions of a complex variables. Fourier series, Fourier Transform and Laplace Transform, solving different equations using FT and LT.

2.   BASIC ELECTRONICS

Power Circuits, SCR, TRIAC, Power Control, Voltage regulators, BJT, FET amplifiers, Operational amplifier-differential amplifier, analog computations – active filters-logarithmic amplifiers, wave form generators.

3.   BASIC SOLID STATE PHYSICS

Crystal structure, Lattice vibrations, Free electron theory of metals, Band theory of solids. Effective mass, electrons and holes, semiconductors.

4   ELECTRODYNAMICS AND OPTICS

Maxwell's equations, Reflection and refraction of Electromagnetic wave in nonconducting and conducting media, wave guides modes in a wave guide. Q-factor, Oscillating dipoles.

Fraunhoffer and Fresnel diffractions. Jone's matrices. Gaussian beam, theory of coherence.