## **Optical Characterization of Semiconductors**

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## ABSTRACT

This short course will cover some basic optical spectroscopic techniques used in the study of semiconductor materials and devices. Broadly speaking these involve spectrally resolved luminescence, transmittance, reflectance and photo-current/voltage kind of measurements and their variants. The emphasis in the first part will be on the physical principles involved in the measurements and the kind of information that one can obtain from such techniques. In terms of material systems, the course will focus on how these techniques are useful for characterizing quantum confining semiconductor nano-structures such as quantum wells, wires and dots. The use of polarization resolved and spatially resolved measurements will be discussed. The second part will be devoted to understanding experimental aspects, including the main instruments used in a typical optical spectroscopy measurement setup and low level signal detection techniques.