

## Course Details

**Department:** Elector Optical Engineering.

**Course Name:** LABVIEW for Optical System Engineers.

**Weekly Ours:** 3.

**Teaching Modes:** Both frontal and laboratory sessions.

**Related Courses:** Any programming course such as C, FORTRAN, Matlab...

**Minimum Passing Mark:** 65.

**Assignments:** 3-4 homework, 3 laboratory sessions and a final exam.

**Teaching Institute:** Ben Gurion University of the Negev.

## Syllabus

The purpose of this course is to give the students the tools and information required to automate electro optic devices and systems using LABVIEW. Introduction to the basic parts of a virtual instrument (VI) – front panel, block diagram, controls, indicators and programming functions such as while loops, for loops, sequence and case structures. Debugging techniques and error checking. Timing and iterative data transfer, 1 and 2 dimensional arrays, array functions, string functions, registers, feedback nodes type definitions and clusters. Text programming. Plotting and storing data; files functions (save, write, read...), files formats and sub Vis. Sequential programing, state machine, parallelism, race condition, control reference, local, global and shared variables as well as functional global variables. Events driven programming and software synchronization of data transfer. Property and Invoke nodes. Creating a stand-alone application. Communicating with RS232 serial devices using LabVIEW: design a simple software to control a stepper motor, a tunable laser and a function generator through the RS232 interface including a lab session. Design a simple software to control a power meter through the USB interface. Design a simple software to control FireWire and GigE cameras including advanced attribute programing (trigger in/out, frame rate, frame size, etc...).

**Bibliography:** LABVIEW Core 1, LABVIEW Core 2, LABVIEW VISION, LABVEIW SERIAL.